# Federal Subsistence Board Work Session

**August 15 - 16, 2019**

**U.S. Fish and Wildlife Service Alaska Region building**

**Anchorage, Alaska**

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**FEDERAL SUBSISTENCE BOARD**
**WORK SESSION and EXECUTIVE SESSION**
Gordon Watson Conference Room
U.S. Fish and Wildlife Service Regional Office
1011 East Tudor Road
Anchorage, Alaska 99503
Thursday, August 15, 2019 – 9:00AM to 5:00PM
Friday, August 16, 2018 – 9:00AM – Finish (if needed)
Teleconference (888) 566-1030, passcode 3344290

**WORK SESSION AGENDA**
*** Indicates Action Item**

1. Review and Adopt Agenda*

2. Information Exchange

3. Action on Regional Advisory Council Annual Report Replies* (Katerina Wessels)
    a. Southeast Alaska
    b. Southcentral Alaska
    c. Kodiak/Aleutians
    d. Bristol Bay
    e. Yukon Kuskokwim Delta
    f. Western Interior
    g. Seward Peninsula
    h. Northwest Arctic
    i. Eastern Interior
    j. North Slope

4. Revisions to Nonrural Determination Policy* (Jennifer Hardin and Robbin La Vine)
    a. Threshold Criteria
    b. Table 1 Timeline Process Description
    c. Threshold Assessment Template

5. Wildlife Temporary Special Action Request WSA19-01 – Unit 18 Moose* (Suzanne Worker and Pippa Kenner)

6. Wildlife Temporary Special Action Request WSA19-02 – Unit 2 Wolves* (Lisa Maas and Pippa Kenner)

7. Wildlife Temporary Special Action Request WSA19-04 – Unit 23 Moose* (Megan Klosterman and Pippa Kenner)

8. Other Business

    a. Federal Subsistence Outreach Update–Informational Videos (Theo Matuskowitz and Caron McKee)
    b. 2019 Federal Subsistence Fisheries Update (OSM Fisheries Division)

**EXECUTIVE SESSION AGENDA**
**Remainder of August Meeting**
*** Indicates Action Item**

1. Review Agenda

2. Action on Council Nominations* (Katerina Wessels)
    a. Southeast Alaska
    b. Southcentral Alaska
    c. Kodiak/Aleutians
    d. Bristol Bay
    e. Yukon Kuskokwim Delta
    f. Western Interior
    g. Seward Peninsula
    h. Northwest Arctic
    i. Eastern Interior
    j. North Slope

3. Charter Review
    a. Western Interior Charter Revision Request* (Katerina Wessels)

4. Adjourn

**Audio Access Information**
**(Work Session Only):**
**Toll-Free: 1-888-566-1030**
**Pass Code: 3344290**

**Federal Subsistence Board**
**1011 East Tudor Road, MS 121**
**Anchorage, Alaska 99503 - 6199**

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OSM 19054.KW

Donald Hernandez, Chair
Southeast Alaska Subsistence
Regional Advisory Council
c/o Office of Subsistence Management
1011 East Tudor Road, MS 121
Anchorage, Alaska 99503-6199

Dear Chairman Hernandez:

This letter responds to the Southeast Alaska Subsistence Regional Advisory Council's (Council) fiscal year 2018 Annual Report. The Secretaries of the Interior and Agriculture have delegated to the Federal Subsistence Board (Board) the responsibility to respond to these reports. The Board appreciates your effort in developing the Annual Report. Annual Reports allow the Board to become aware of the issues outside of the regulatory process that affect subsistence users in your region. We value this opportunity to review the issues concerning your region.

## 1. Concerns about subsistence shrimp

*The State of Alaska recently enacted restrictions in District 13A, B and C, out of conservation concerns for the shrimp stock in District 13C. The Council received public testimony, including comments from the Sitka Fish and Game Advisory Committee, regarding limits and restrictions placed on subsistence harvesting of shrimp under State regulations. There is a concern that the restrictions were based on anecdotal information and that the restrictions violate the Alaska subsistence statute that provides for a subsistence preference. Instead of enforcing law that prohibits illegal use of subsistence harvest (anecdotal information), additional restrictions were placed on the legitimate or legal subsistence harvesters, making it difficult to meet their subsistence needs. The reallocation of the resource seems to be away from a subsistence harvester to the commercial industry. Tier 2 of the State subsistence regulations provides that if there is not enough resource to meet everyone's needs, elimination/restriction starts with other user groups before the subsistence harvest is restricted. The State chose to limit the subsistence harvesters to two five-gallon buckets per trip, requiring more trips to try to meet needs—this approach is not cost-effective. Subsistence users are also required to fill out harvest reports with*

*date, location and volume harvested, and there is a concern that this information will be used to establish an Amount Necessary for Subsistence (ANS). Lastly, "personal use" and "subsistence" are lumped into one category, contrary to State law distinguishing those two user groups.*

*Subsistence users are disturbed by these restrictions and the risk of similar actions taking place in other areas of Southeast Alaska in the future. The Council was informed that the Sitka Advisory Committee is attempting to pursue a review with the Board of Fisheries; however, the next Southeast cycle is another two years away. In the meantime, the Advisory Committee would like to see this matter in front of the public for more comments. It is anticipated that the Council will continue to hear more on the matter in the future, as there is a genuine fear that the increasing popularity of the harvest of shrimp in this area will result in a decline of the shrimp resource because of the commercial fishery. The State should recognize this subsistence resource and take that into consideration when managing it.*

*The Council expects to inform this Board in future Annual Reports of similar examples where users are restricted in State managed subsistence fisheries. The Council has been hearing public testimony on the State's violations of the Alaska State subsistence statute, and it intends to follow the issue closely to monitor how the State is providing subsistence priority. The Council will continue to keep this Board informed of specific actions occurring in the Southeast.*

**Response:**

Thank you for bringing this issue to the attention of the Board. Although this issue is outside the authority of the Board, it is within the charge of the Council to act as a forum for all subsistence concerns in the region. The Board encourages the Council to write a letter directly to the Alaska Board of Fisheries (BOF) to express the concerns that it has received. The Council may also consider submitting a proposal to the BOF during its next Southeast cycle to address the issue that has been voiced by subsistence users.

## 2. Potential for Extra-Territorial Jurisdiction for Herring Harvest in Sitka Sound

*The Council received public testimony regarding the ongoing concern about the lack of herring harvest in the Sitka Sound. A representative of the Sitka Tribe of Alaska, Kaagwaantaan Clan (who is also a Council member), provided the history of the Kaagwaantaan and Kiks.adi Clans' attempts to present information and persuade the Alaska Board of Fisheries to enact regulations which would protect the herring resource for subsistence use in the Sitka Sound area. As the herring resource continues to decline for subsistence users, the representative conveyed that the Kaagwaantaan Clan would like to request that the Federal government take over management of herring in the Sitka Sound area through extra-territorial jurisdiction (ETJ). The Clan would like to receive staff support from the Federal government. A hard copy and digital copy of the Federal Subsistence Board's procedure for extra-territorial jurisdiction[1], as well as an example*

1 *Federal Subsistence Board Procedures Addressing Petitions for Secretarial Extension of Jurisdiction for the Implementation of a Federal Subsistence Priority*, approved by the Federal Subsistence Board on July 18, 2005.

*of such a petition, was provided to the representative as an aid to help the Kaagwaantaan Clan and the Sitka Tribe of Alaska move forward with drafting an extra-territorial petition.*

*For several years, the Council has heard public testimony regarding the scarcity of herring in Sitka Sound. That testimony shows both a failure to meet subsistence needs with this resource and a causal connection between that failure and activities occurring outside of Federal waters. The Council wishes to advise this Board that it may soon see a request for extra-territorial jurisdiction regarding this matter. If this occurs, the Council looks forward to participating in the ETJ process as expressed in the Board's procedures.*

**Response:**

Thank you for bringing this issue to the attention of the Board. The Council and the Board have historically worked on Sitka Sound Herring issues. As a result, the Federal marine waters in Sitka Sound, specifically in the Makhnati Island Area, have been closed by the Board to the harvest of herring and herring spawn to all but Federally qualified subsistence users. If the Kaagwaantaan Clan or any other entity chooses to petition the Secretaries of the Interior and Agriculture to implement Extraterritorial Jurisdiction, the Board will utilize the procedures contained in the attachment[2] and any additional direction provided by the Secretaries when developing recommendations. The Board and staff will work closely with the Council through the process.

**3. <u>Commenting on Proposed Roadless Rule for Tongass</u>**

*The Council has received information through hearings conducted by the U.S. Forest Service, as well as a formal presentation to the Council at its fall 2018 meeting, regarding the proposed Alaska Roadless Rule (Proposed Rule). The Proposed Rule has been submitted to replace the national 2001 Roadless Rule as it applies to Alaska. The 2001 rule was adopted to protect the social and ecological values and characteristics of inventoried roadless areas by prohibiting, with some exceptions, road reconstruction and timber harvest on inventoried roadless areas on National Forest System lands nationwide. The Proposed Rule would rescind many of those protections, and Council members have received several comments from their respective communities expressing concerns about impacts of the Proposed Rule to subsistence resources in the Tongass National Forest.*

*Due to the timing of its scheduled meeting, the Council could not provide public comment on this Proposed Rule. The Council Coordinator was informed that no extensions to the public comment period were being granted so the Council will not have an opportunity to provide public comment as a Federal Advisory Committee Act (FACA) committee on the scoping portion of the Proposed Rule.*

*As the Board is aware, this Council has a right and responsibility under Section 805 of ANILCA to comment on policy and management plans affecting subsistence resources in this region. The*

2 *Federal Subsistence Board Procedures Addressing Petitions for Secretarial Extension of Jurisdiction for the Implementation of a Federal Subsistence Priority*, approved by the Federal Subsistence Board on July 18, 2005.

*Council intends to follow that mandate and make its recommendations through the course of whatever opportunities can be pursued and will try to make timely comments, though not necessarily following the timelines given by the Planning Committee for the Proposed Rule.*

*The proposed timeline for this Proposed Rule was not created with the Council's regular public meeting schedule in mind, and as such may require the Council to call a special meeting to provide comments. The next available public comment period will not occur until after release of the Draft Environmental Impact Statement (EIS) in approximately June 2019. Based on information provided at the fall 2018 meeting, the alternatives and related impacts will not likely be known at the Council's winter meeting. As such, the Council will not have the opportunity to receive information on the proposed alternatives, ask questions, deliberate on the information, and develop formal comments on impacts to subsistence resources from road construction and anticipated timber development that may result from implementing the Proposed Rule. In order to fulfill its Section 805 obligations, the Council will need to call a special meeting to be fully engaged in the issue. As a FACA committee, the Council is extremely concerned with its limited ability to provide substantial and timely input on a matter that may have significant impacts on subsistence uses of Federal public lands in this region. This hindering of our ability to meaningfully participate is a direct result of the agency's unusually-accelerated review under the National Environmental Policy Act.*

*The Council has received scientific testimony and been presented research from various sources regarding the impacts of timber harvests. Additionally, the Council has heard testimony over the years from subsistence users, imparting local and traditional ecological knowledge. All of these sources, along with the knowledge and awareness of the Council members themselves, have equipped this Council with a wealth of information for the region which should be included in the analyses conducted on this matter for the Draft Environmental Impact Statement.*

*Congress, through enacting Section 805, and the Secretaries, through appointing the membership of this Council, have recognized that the Council has specialized knowledge and should have a meaningful role in providing input on any significant restrictions of subsistence uses and providing information to minimize adverse impacts upon subsistence uses and resources. As such, the Council feels that it is obligated to make that knowledge known through public comment on this matter. Therefore, the Council has drafted a letter to the U.S. Forest Service regarding the Proposed Rule. This initial comment is based on years of testimony and discussion of development and its impact on subsistence resources. The Council through its letter also conveyed its concern about the process, specifically, the timeline and expedited review. Of great importance and dismay to the Council was that both the scoping and Draft EIS comment periods fell outside the Council's meeting cycles*

*The Council requests that the Board support any special meeting(s) that need to be held so that the Council can timely respond to anticipated deadlines generated from this most-important process; specifically relating to providing comments to the alternatives that are proposed in the Draft Environmental Impact Statement.*

**Response:**

The Board recognizes the Council's responsibility in fulfilling its role as a Federal Advisory Committee and appreciates its efforts to provide meaningful input regarding subsistence use and resources as outlined in Section 805 of ANILCA. The next opportunity to provide specific information for consideration through public comment on the Alaska Roadless Rule will be after the release of the Draft Environmental Impact Statement (DEIS), which is anticipated to be late summer/early fall 2019. It is the Board's understanding that the Council intends to call a special telephonic meeting to discuss the DEIS and preferred alternative so that it may develop detailed comments. The Board requests that the Office of Subsistence Management (OSM) assist the Council with this meeting to ensure that the Council develop on record and submit public comments within the formal public comment period.

**4. State Recognition of Chinook Salmon as Important Subsistence Resource**

*At its fall meeting, the Council heard testimony regarding the State's closure of the Chinook Salmon fishery near Angoon. The testimony reflected that the procedures employed by the State in enacting the closure lacked due process. Subsistence users were the only user group not given an opportunity to weigh in on the issue. The Federal Subsistence Board has already recognized the customary and traditional use of Chinook Salmon throughout the Southeast Region. The Council would like to know of any options available where it could ask the State to recognize this customary and traditional use of Chinook Salmon in its management of this important subsistence resource. Further, the Council would like this Board to encourage the State to notify local tribes and communities of an impending closure, so these subsistence users have an opportunity to recommend a subsistence preference, if allowed and appropriate, in a circumstance of conservation concern.*

**Response:**

The State recognizes customary and traditional uses of Chinook Salmon in the Angoon area and is therefore mandated to manage Chinook Salmon for a subsistence preference; however, the State allows only the incidental harvest of Chinook Salmon (*5 AAC 01.730. Subsistence fishing permits*). While there are no State subsistence harvest seasons or limits for Chinook Salmon, regulations state:

> *(b) Permits will not be issued for the taking of coho salmon from the Taku River and Stikine River drainages, or for king salmon. However king or coho salmon taken incidentally by gear operated under terms of a subsistence permit for other salmon are legally taken and possessed for subsistence purposes as described in (j) of this section (5 AAC 01.730. Subsistence fishing permits).*
>
> . . .
>
> *(j) Salmon, trout, or char taken incidentally by gear operated under the terms of a subsistence permit for salmon are legally taken and possessed for subsistence purposes, except that the possession limit for king salmon is two fish. A holder of a subsistence salmon permit must report any salmon, trout, or char taken in this manner on the permit holder's permit calendar.*

The Council can consider submitting a proposal to the Alaska Board of Fisheries to modify these State regulations. The next scheduled meeting to modify finfish regulations in Southeast Alaska is in January 2021. The deadline for submitting proposals in April 10, 2020.

**5. Staff support present at Council meetings**

*In its previous Annual Report, the Council shared its concern regarding funding for consistent technical staff support at Council meetings and provided examples of the impact that this lack of in-person staff had on its work. This Board responded, "The Board agrees with the Council that it is important to have appropriate Federal staff at the Council meetings to work with the Council. While there have been reductions in Federal travel budgets, the Council can expect continuing biological support at its meetings."*

*Based on observations at its latest meeting, the Council would like to revisit this issue. In particular, the Council continued extensive engagement on Unit 2 wolf management issues, and, despite the issue being on the agenda, the Council lacked Federal staff support to assist in discussion with the working group. This is the second time that Unit 2 wolf discussions were on the agenda, but Federal biologist support, consistently experienced at higher levels in previous years, was not available. Likewise, the Council was surprised that the Sitka-based Federal fisheries biologist, who wrote one of the analyses, was not present at the meeting. The Council would like to address any disconnects that are preventing Federal staff from attending the Council meetings, in person. The Council relies on this technical expertise, especially during the regulatory decision-making processes.*

*The Council wants to stress that Title VIII of ANILCA and its implementing regulations require that the Regional Advisory Councils are provided adequate staffing support. Section 805 requires that "adequate qualified staff" are assigned "to the regional advisory councils and [that they] make timely distribution of all available relevant technical and scientific support data" to the Councils. The regulations require the Board specifically to provide "available and appropriate technical assistance to the Regional Councils" 50 C.F.R. §100.10(e)(2); 36 C.F.R. §242. 10(e)(2).*

*The Council has observed that over time, there are fewer Federal biological staff attending the meetings, resulting in less opportunity for discussions with the biologists who perform the Program's work. While some Federal staff have been able to participate by phone, communication and understanding between technical staff and Council members has often been difficult when only conducted telephonically. Several Council members have individually commented on the importance of having staff physically present to be available for on-the-spot questions, presentations, and working group activities that occur outside of the public meeting. The relationships and trust that the Council built with various U.S. Forest Service staff over the years are important to fulfill the obligations of the Council.*

*The Council therefore requests that the Board more proactively explore ways to improve on-site technical support and reverse this recent pattern of declining support. Whether such support is provided or not should be considered in light of statutory and regulatory obligations cited above.*

**Response:**

The Board agrees with the Council that it is important to have appropriate Federal staff at the Council meetings to work with the Council. As observed at the recent March 2019 SEARAC meeting in Wrangell, Alaska, many Federal agency personnel were present, at least eight Forest Service employees, two OSM employees, and one BIA employee, to provide assistance and present information to the Council. Federal staff assisted the Council in drafting nine wildlife regulatory proposals, eight letters, and one temporary special action request, as well as helping with other duties to facilitate a successful meeting. While there have been reductions in Federal travel budgets, the Council can expect continuing support at meetings and during the year.

## 6. Council Representation at State Regulatory Meetings

*In its last Annual Report, the Council stressed the importance of having its members attend State regulatory meetings such as the Alaska Board of Game and Board of Fisheries to represent its interests. In reply, the Board noted that such requests for travel funding would be provided budget-depending and on a case-by-case basis. As a follow up, the Council would like to note that at its fall meeting, it stated on the record the need to send one of its members to attend the January Board of Game meeting in Petersburg to represent the Council on Proposal 43, related to Unit 2 wolf management. The Council submitted a request to the Office of Subsistence Management for travel funding, and was pleased to hear that the funding was approved. The Council would like to express its gratitude for the opportunity to send a Council member to engage directly with the Alaska Board of Game on this very important wildlife management issue.*

**Response:**

The Board agrees that Regional Advisory Council representation is important at Alaska Board of Game and Board of Fisheries meetings, especially when discussion topics may impact Federally qualified subsistence users. As previously noted, support for travel will be determined on a case-by-case basis for Council members to attend Alaska Board of Fisheries and Board of Game meetings. The Council must provide reasonable justification to participate in person when a State Board will be considering a proposal that the Council has submitted or when a proposal may impact Federally qualified subsistence users in their Region. Feel free to submit your requests for this additional travel with justification to both the OSM Assistant Regional Director and the Forest Service, Federal Subsistence Management Program Coordinator.

## 7. Concern about Water Contaminants

*The Council has discussed concerns regarding water and land contaminants in the waters and lands throughout Southeast Alaska at several of its recent meetings and has weighed in on these*

*areas of concern, from identifying issues in its annual reports to sending correspondence related to Transboundary Mining issues. At its fall meeting, the Council additionally elected to send three letters to address various issues related to water quality and pollution. One letter to the U.S. Forest Service urges that agency to facilitate the repeat of the 1981 baseline study that looked at what the natural levels of certain contaminants were in Hawk Inlet area. A second letter was sent to the Alaska Department of Environmental Conservation to comment on the issue of airborne fugitive dust, regarding the lead dust blowing from the Greens Creek mine (which ranks in the top ten on the EPA's Toxic Release Inventory). A third letter was sent to the Alaska Department of Environmental Conservation to find out if the previous seal sampling done in Hawk Inlet could be replicated.*

*The Council is charged with commenting and making recommendations on impacts to subsistence resources and, as such, will continue to explore water quality issues as they impact subsistence resources. This is both a conservation concern and a public health concern, because eating too much seal or salmon could bioaccumulate toxins. If subsistence users eat less seal or salmon because of the concern over these potential toxins, this could have a direct impact on the subsistence resources available to the user.*

**Response:**

The Board appreciates your continued effort to utilize the Council process as a platform to voice regional subsistence concerns. The Board is grateful for your Council's continued diligence and efforts to reach out to other agencies so they may hear the voices and concerns of subsistence users from your region.

**8. <u>Climate Change</u>**

*The effects of change in climate continue to be a unified concern across Southeast Alaska. Council members and their respective communities have observed many abnormalities and trends and would like additional information and data to determine what effect climate change is having on subsistence resources. Specifically, this Council is requesting information on general climate change effects including melting glaciers, warmer streams for salmon, and habitat changes for fish and wildlife.*

*The Council would like to inform the Board that it has also established a standing working group on climate change. It was created out of a need to be able to regularly discuss and raise issues related to climate change and make suggestions for future presentations to learn more about what is happening in Southeast Alaska to habitat and subsistence resources. The working group would not make recommendations on how to address climate change, but would develop a body of expertise in the Council and could make recommendations in the future on various rulemaking or NEPA processes that could involve impacts of climate change. The Council voted to have the membership of the working group include Robert Schroeder, Cathy Needham, John Yeager, and Don Hernandez, as well as Blake LaPerriere from the public (Sitka resident).*

**Response:**

The Board acknowledges that the Council is seeking information on the effects of climate change—including melting glaciers, warming streams, and general habitat changes—on subsistence resources in Southeast Alaska, and supports its creation of a working group on climate change. Within the last five years, almost all of the Regional Advisory Councils have expressed an interest in developing greater understanding and documentation of climate change effects in their regions.

Your Council can identify and request to invite representatives from State, Federal, non-governmental, and research organizations to give presentations on climate change ecology in your region at its regular meetings. An initial list of candidate organizations is included below and OSM staff can facilitate these communications:

- Alaska Center for Climate Assessment and Policy
- Alaska Climate Adaptations Science Center
- Local Environmental Observer Network
- Scenarios Network for Alaska + Arctic Planning

**9. <u>Youth in Council Membership</u>**

*The Council has enjoyed recent participation by local youth at its meetings. The Council recognizes the contributions of these young adults and values their input, experiences, and thoughts regarding their use of subsistence resources. The Council would like to continue this engagement and would like to investigate the possibility of facilitating the recruitment of youth in Council membership.*

*Title VIII of ANILCA expresses the importance for local and regional participation. Section 805(a)(3)(B) notes one function of the Council is "the provision of a forum for the expression of opinions and recommendations by persons interested in any matter related to the subsistence uses of fish and wildlife within the region." In addition to providing a forum, the Council would like to know if this expression of opinions could be sought through active participation as a Council member. Acknowledging that years of experience help applicants rank higher in scoring for membership, this Council asks this Board if there are opportunities for less-experienced persons to serve on the Council. The additional input and insight would be valuable in conducting Council business while providing an opportunity for youth or other interested persons to actively learn, participate, and gain valuable experience.*

**Response:**

The Board appreciates your advice regarding the value of a multitude of perspectives in natural resource management, including the value of knowledge held by youth. The Board too has been humbled and inspired by the youth who have come before it in recent years. These young people are passionate about conservation and subsistence, and their perspectives are frequently unique. Formal membership on the Subsistence Regional Advisory Councils requires a minimum age of 18, though youth can apply the year before they are seated. This does not prevent the Council from seeking the knowledge and advice of all age groups. We encourage your Council to continue to invite youth testimony at your meetings, to hold meetings in or near schools

whenever possible, and to engage with the youth throughout your regions. The Board also encourages OSM to reach out to local educators, whenever possible, to inform them of upcoming meetings and opportunities.

Finally, the Board encourages your Council to seek opportunities for youth interaction and education. Some of our members recently participated in a mock Federal Subsistence Board meeting hosted by the University of Alaska Fairbanks. The students did a wonderful job of walking a proposal through the process. Anytime your members have a chance to teach our young people about subsistence and the Federal Subsistence Management Program please take the opportunity to do so. These are learning opportunities for youth and adults alike.

In closing, I want to thank you and your Council for your continued involvement and diligence in matters regarding the Federal Subsistence Management Program. I speak for the entire Board in expressing our appreciation for your efforts and am confident that the subsistence users of the Southeast Region are well represented through your work.

Sincerely,

Anthony Christianson
Chair

Enclosure

cc: Federal Subsistence Board
Thomas Doolittle, Acting Assistant Regional Director, Office of Subsistence Management
Thomas Whitford, Acting Deputy Assistant Regional Director
Office of Subsistence Management
Jennifer Hardin, PhD, Subsistence Policy Coordinator, Office of Subsistence Management
Steven Fadden, Acting Council Coordination Division Supervisor,
Office of Subsistence Management
Chris McKee, Wildlife Division Supervisor, Office of Subsistence Management
Greg Risdahl, Fisheries Division Supervisor, Office of Subsistence Management
George Pappas, State Subsistence Liaison, Office of Subsistence Management
DeAnna Perry, Council Coordinator, U.S. Forest Service
Southeast Alaska Subsistence Regional Advisory Council
Benjamin Mulligan, Deputy Commissioner, Alaska Department of Fish and Game
Mark Burch, Special Project Coordinator, Alaska Department of Fish and Game
Interagency Staff Committee
Administrative Record

# Enclosure 1

# FEDERAL SUBSISTENCE BOARD PROCEDURES ADDRESSING PETITIONS FOR SECRETARIAL EXTENSION OF JURISDICTION FOR THE IMPLEMENTATION OF A FEDERAL SUBSISTENCE PRIORITY

The US Code Title 5 Section 553(e); 7 CFR 1.28; and 43 CFR 14 allow citizens to petition the Secretaries of the Interior and Agriculture (Secretaries). The Secretaries will accept for consideration petitions to exert authority over hunting, fishing, or trapping activities occurring on non-Federal lands when such petitions indicate that those activities may be interfering with subsistence hunting, fishing, or trapping on the Federal public lands and waters to such an extent as to result in a failure to provide the subsistence priority as specified in Title VIII of the Alaska National Interest Lands Conservation Act.

The Secretaries carefully review each case and use a very high threshold when making their decision whether to extend Federal jurisdiction. Petitioners should submit sufficient facts and/or analytic standards to document both the failure to maintain a subsistence priority and how the failure relates to activities occurring off of Federal lands.

The Federal Subsistence Management Regulations for Public Lands in Alaska (36 CFR Part 242 and 50 CFR Part 100, §____.10) clarify that the Secretaries have not delegated the authority to restrict or eliminate activities occurring on non-Federal lands to the Federal Subsistence Board (Board). However, §____.10(d)(4)(xvii) of those regulations gives the Board the authority to evaluate whether activities on non-Federal lands may interfere with subsistence activities on Federal public lands or waters, to consult with the State of Alaska, the Regional Councils, and other Federal agencies, and to make recommendations to the Secretaries.

The Board will utilize the following procedures and any additional directions provided by the Secretaries when developing recommendations on a request for extension of Federal jurisdiction.

## PROCEDURES

1. Petitions should be addressed to the Secretaries of the Interior and Agriculture as follows:

Secretary of the Interior and Secretary of Agriculture
c/o Chair, Federal Subsistence Board
U.S. Fish and Wildlife Service, Office of Subsistence Management
1101 East Tudor Road, MS 121
Anchorage, AK 99503-6199

2. Each petition must clearly identify the affected subsistence activity, the Federal public lands or waters where that activity occurs, and how the subsistence priority has been harmed so as to result in a failure. Each petition should present substantial evidence demonstrating that the failure of the subsistence priority is specifically due to a hunting, fishing, or trapping activity that is occurring off of Federal public lands or waters. The information should describe what the interfering activity is, where and when it is taking place, and how it is causing the failure of the subsistence priority on the Federal public lands and waters.

3. Each petition should describe the desired result from Secretarial extension of jurisdiction and propose Federal regulations which would accommodate the subsistence priority.

4. The Board, upon receipt of such a petition, will forward the petition to the Secretaries, notify the State of Alaska and affected Regional Council(s), and may issue a notice to the general public of the request for extension of Federal jurisdiction.

5. If the Secretaries believe that public comment on the issue or extensive analysis will aid in consideration of the petition, they may request the Federal Subsistence Board to hold public meetings to solicit comments and to develop a more detailed analysis of the issue.

6. If directed to do so by the Secretaries, the Board and staff may conduct additional research and assemble information that assists in a thorough analysis. In developing their recommendation to the Secretaries, the Board may meet in public session and accept testimony on the petition.

7. Following review of all information, staff analyses, and public comments, the Board will forward their confidential recommendation to the Secretaries.

Following receipt of a recommendation from the Board, the Secretaries will promptly notify the petitioners of their final decision relative to the petition. A Secretarial decision constitutes the final administrative remedy for any petition.

Approved by the Federal Subsistence Board on July 18, 2005.

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# Federal Subsistence Board

**1011 East Tudor Road, MS 121**
**Anchorage, Alaska 99503 - 6199**

**FISH and WILDLIFE SERVICE**
**BUREAU of LAND MANAGEMENT**
**NATIONAL PARK SERVICE**
**BUREAU of INDIAN AFFAIRS**

**FOREST SERVICE**

OSM 19055.KW

Richard Encelewski, Chair
Southcentral Alaska Subsistence
Regional Advisory Council
c/o Office of Subsistence Management
1011 East Tudor Road, MS 121
Anchorage, Alaska 99503-6199

Dear Chairman Encelewski:

This letter responds to the Southcentral Alaska Subsistence Regional Advisory Council's (Council) fiscal year 2018 Annual Report. The Secretaries of the Interior and Agriculture have delegated to the Federal Subsistence Board (Board) the responsibility to respond to these reports. The Board appreciates your effort in developing the Annual Report. Annual Reports allow the Board to become aware of the issues outside of the regulatory process that affect subsistence users in your region. We value this opportunity to review the issues concerning your region.

## 1. Delegation of Authority

*The Federal Subsistence Board has the authority to delegate to agency field officials the authority to set harvest and possession limits, define harvest areas, specify methods and means of harvest, and permit requirements, and open or close specific fish or wildlife harvest seasons within the frameworks established by the Board. The Board sets these scope of delegations within the limits set by established regulations. In Federal conservation units, fishery in-season managers, field mangers for the U.S. Fish and Wildlife Service (USFWS), Bureau of Land Management (BLM), and National Park Service (NPS) are issued delegations of authority.*

*The Council notes that managers are not always present in the field to implement actions necessary to make in season management decisions in the event of a conservation concern. The Council recommends that in season managers with delegations of authority be allowed to designate an acting in season manager if they are not available to enact special actions to meet the requirements of Title VIII of ANILCA. In addition, the Council wonders why consultation*

*with a Regional Advisory Council Chair is not mandated by the delegation of authority letters. The delegation letter addresses consultation with tribes, and in season managers notify, but not consult, the Council Chair of special actions being considered. The Council urges the Board to consider requiring consultation with Regional Advisory Council Chairs on any special actions being considered by in-season managers or their designees.*

**Response:**

The Board agrees that Federal managers should have a designated acting in place in order to take quick action on delegated authority duties in their absence. Timely decisions are sometimes required and quick action is needed. When a Federal manager is absent, their Acting assumes the responsibilities of that position, including carrying out delegated authority duties. Since letters are addressed to the position instead of an individual, the responsibility for enacting special actions under delegated authority would fall to the person in the acting position.

The delegation of authority letters issued to Federal managers by the Federal Subsistence Board make it clear that managers are expected to work with the affected Regional Advisory Councils to minimize disruption to subsistence resource users when issuing special actions. Additionally, these letters also require managers to seek Council recommendations on any proposed temporary special action if the timing of a regularly scheduled Council meeting allows. In 2018, OSM revised all delegation of authority letters to maintain consistency. For the specific language outlining the authority and guidelines for delegation, see enclosed delegation of authority letter example. For emergency special actions, action by the Federal manager is often time-sensitive and may not allow for Council recommendations or consultations with Council Chairs or Tribes.

**2. <u>Copper River Weir</u>**

*The Council discussed the importance of continued funding for weirs and counting towers in the Copper River drainage, recognizing that these projects have been losing operation funding. Rural residents in the Copper River Basin are dependent upon Sockeye Salmon as a subsistence resource. Monitoring salmon runs and data collection is necessary to ensure escapement goals are met and to ensure all user groups are afforded opportunities to harvest salmon. The Fisheries Resource Monitoring Program (FRMP) has limited funding available for projects to continue to monitor and collect biological data. Additional funding sources need to be identified.*

*The Council encourages the Federal Subsistence Board to seek other partners, or to request other State and Federal agencies, to assist in securing funding for weirs/counting towers. Options such as cost sharing or grants from other sources should be explored to continue these important monitoring projects, such as the Long Lake weir project. Weirs and observation towers provide valuable long term data points important to manage fisheries and achieve salmon escapement goals for the Copper River drainage.*

**Response:**

The Board shares the Council's concern regarding salmon monitoring in the Copper River drainage, particularly in light of the low 2018 Sockeye Salmon returns. We were pleased to see that the Council highlighted this concern through three separate Fisheries Resource Monitoring Program (FRMP) priority information needs for the 2020 Notice of Funding Opportunity.

- Obtain reliable estimates of Chinook, Coho, and Sockeye salmon escapement into the Copper River drainage and Copper River delta systems (for example, projects utilizing weir, sonar, and/or mark-recapture methods)
- Develop, test, and implement methodologies for monitoring salmon spawning escapement in the Copper River drainage
- Implement the collection of real-time harvest data of salmon in the Copper River drainage

The Council's concern over limited funding available through the FRMP program is understandable. It has been heartening to see applicants for FRMP funds working in concert with other partners and with different funding sources to complete projects. An excellent example of this is the work done by the Native Village of Eyak, who coordinated with multiple partners to secure enough funds to continue running the Copper River fish wheels to monitor the Chinook Salmon run. We encourage researchers to use FRMP funds in coordination with other funding sources for research and monitoring of subsistence fisheries in Alaska.

**3. <u>Chitina Dip Net Fishery</u>**

*At its December 2017 meeting in Valdez, the Alaska Board of Fisheries (BOF) failed to adopt Proposal 13, which would have prohibited the use of dip nets from boats in the Chitina fishery. Likewise, the Council objects to any dip net fishery from a boat on the Copper River. The Ahtna people have not used dip nets for Sockeye Salmon on the Copper River from a boat. In the past, fishing by the Ahtna people was from fishing platforms during the salmon run.*

*The Council requests that the Board send a letter to the BOF on behalf of the Council regarding the Council's concerns. The Council is considering submitting a proposal to the BOF to restrict dip netting from a boat on the Copper River. Allowing an additional dip net fishery from boats will affect permit holders operating a fish wheel on the river, most likely creating competition among user groups.*

**Response:**

The Board appreciates the Council's concerns over the use of dip nets from boats in the Chitina fishery, and the potential impacts this practice may have on harvest efficiency and competition for resources with Federally qualified subsistence users. The Council is encouraged to submit a letter directly to the BOF expressing your concerns. The Council may also re-submit a proposal directly to the BOF asking to restrict this practice.

## 4. Nonrural Determination

*At its fall meeting, the Council discussed the proposal submitted by the community of Moose Pass to change that community's status from nonrural to rural. As a part of that discussion, the Council found the Board's Policy on Nonrural Determination criteria to be vague and lacking meaningful guidance. The Council believes that it will be challenging for the Council and the Board to make supportable decisions as outlined by this Policy. The Council seeks guidance on how to apply the policy and continue supporting the nonrural determination proposal submitted by Moose Pass.*

*The Council requests that the Office of Subsistence Management (OSM) continue its dialogue with the proponent and that the proponent be provided the opportunity to participate in the discussions on the nonrural determination process. Specific guidance from the Board to apply the criteria to Moose Pass will provide the staff and proponent clear direction and identify unique characteristics to move forward on rescinding the nonrural determination for Moose Pass.*

**Response**:

On April 17, 2019, the Board determined Nonrural Proposal RP19-01 met all threshold requirements outlined in the Nonrural Policy and directed OSM to proceed with a full analysis of the proposal. We encourage the Council to work closely with the OSM Anthropology Division to identify and consider the factors and characteristics most relevant for the Southcentral region such as population size and density, economic indicators, military presence, industrial facilities, use of fish and wildlife, degree of remoteness and isolation, and any other relevant material including information provided by the public.

As this is the first time applying the new Policy on Nonrural Determinations, we welcome insights and suggestions for improving the Policy to ensure it is effective and responsive to the needs of the Board, Councils, and other stakeholders. In light of this goal, we anticipate future revisions to the Policy.

## 5.. More Comprehensive Salmon Research for In-Season Management

Due to the scope of the FRMP, most information needs are focused on salmon in freshwater streams. Real time in-season fishery information is needed to manage salmon stocks, regardless of environment. More research needs to be done in the marine environment.

*With the recent poor returns of salmon in the Copper River and Alaska Peninsula, it is important that real time biological data be available to in-season managers. Real time information can be used to manage for genetic diversity of the fishery stock. When a run is slow, or below the average population returns, the information can be applied for conservation concern purposes. Genetic diversity needs to be maintained in returning populations. Managers should not increase harvest during high yield times as there is a risk of skewing populations.*

*The Council encourages the Board and the State to work together and discuss research ideas with National Oceanic and Atmospheric Administration (NOAA), university systems, and other research firms, to investigate marine conditions in order to predict run timing and size and develop more accurate models for in-season management. Disaster relief from State and Federal agencies for some of the more hard-hit areas may potentially provide funding for research projects designed to broaden knowledge of salmon in all environments. The Board could also consider diverting funds to provide real time information to managers to help the returning stock and to ensure subsistence practices continue.*

**Response:**

The Board appreciates your concern and suggests that the Council sends their comments on these topics directly to ADF&G and NOAA. The Board encourages Council members to participate in panels for marine fisheries research such as the North Pacific Fisheries Management Council and/or disaster relief associated with fisheries declines as one means to extend beyond the reach of the FRMP for the benefit of subsistence users in Alaska. The Board would also encourage the Council to communicate with and invite subject matter experts to the meetings.

**6. <u>Biological Data</u>**

*Natural resource managers have had challenges accessing historical biological data collected by the State of Alaska in order to review trends for subsistence and personal use harvests, particularly in the Copper River tributaries.*

*The Council would like the Board to initiate a plan for improved data sharing between the Alaska Department Fish and Game and Federal resource managers. In the Copper River area, stream data has been requested and the response has been slow. Historical monitoring and harvest data should be available online, in a searchable format, and available to the public, staff and managers in order to understand harvest trends and other data to develop management strategies.*

**Response:**

The Board appreciates the Council's concern regarding information sharing and agrees that access to biological and user group harvest data is important for resource management. Staff at Wrangell-St. Elias National Park and Preserve report that the Alaska Department of Fish and Game (ADF&G) is generally responsive to their requests for data, and park staff work with the Office of Subsistence Management (OSM) to provide harvest data on the Copper River Federal subsistence fishery in a format that is most useful to state managers. Due to privacy laws, it is not possible to post the raw harvest data on-line for public access; however, the Board has asked OSM to explore the possibility of making summary information from the Federal subsistence permit harvest reports available on-line.

Additionally, the OSM State Subsistence Liaison position has been assigned the task of co-developing a best practices communications guide for OSM and ADF&G. The co-developer will be a member of the State's subsistence leadership team. The goal of this effort is to develop a succinct guide to direct OSM and ADF&G staff on communications about Federal subsistence management and fisheries and wildlife issues on Federal public lands and waters between agencies. Communications include data requests, data sharing, data and response formatting, email communication styles, data availability (online or otherwise) among other issue necessary for successful communications.

OSM does not have authority to establish timetables for response times, content, what types and quantities of data are available, nor the format ADF&G uses for data distribution in print or on line. The concerns of the Council will be included in discussions with ADF&G during the development of the new best practices for communications effort.

**7. Climate Change**

*Concerns of the effects of climate change on the environment and subsistence resources continue to be of concern for the Council. These concerns include invasive species (in the various ecosystems) disruption in patterns of resource harvest and uses, changes in water temperature and acidification, and erosion.*

*The Council requests additional informational presentations for itself and its constituents on how to adapt to climate change. Such presentations should provide tools for communities to be better prepared in adapting to these changes. The Council recommends reaching out to the Landscape Conservation Cooperatives to provide updates on recent projects and guidance to communities dealing with climate change.*

**Response:**

The Board shares the Council's concern over the impact of climate change on subsistence resources, and seeks to facilitate the Council's request for more presentations on ways that communities in Southcentral Alaska can adapt to climate change and its effects. Community adaptation to climate change in the Arctic and Subarctic is a relatively new but expanding field of applied research. This Council can work with its Council Coordinator to invite representatives from academic, governmental, and non-governmental organizations to present on climate change adaptation models and examples.

The Council mentions Land Conservation Cooperatives (LCCs) as a source of guidance for communities dealing with climate change. Along with other organizations and agencies, LCCs have in the past presented information to Regional Advisory Councils. It is important to note that the LCCs are undergoing a transition from Federal to non-profit funding, and currently have limited U.S. Fish and Wildlife Service personnel. This transition is affecting each LCC differently. The Board recommends that the Council work with its Council Coordinator to invite the LCCs for the Northwest Boreal and North Pacific regions to present at their next meeting.

In addition to LCCs, the Board encourages the Council to consider inviting presentations from the following (non-exhaustive list) of organizations:

- Alaska Center for Climate Assessment and Policy
- Alaska Climate Science Center
- Alaska Department of Environmental Conservation: Climate Change in Alaska
- Experts identified through the U.S. Climate Resilience Toolkit
- Scenarios Network for Alaska + Arctic Planning
- The Alaska Native Tribal Health Consortium

**8. <u>All Council Meeting</u>**

*The Council continues to support and endorse another All Council meeting. The Council suggests that OSM solicit input from Councils on the draft agenda to identify training needs and informational materials to be used in future meetings.*

**Response:**

The Board appreciates the Council's continuing interest and encouragement to hold another All-Council Meeting, similar to the one that was held in Anchorage during the winter 2016 meeting cycle. The Board wants to acknowledge that other Councils, including the Bristol Bay Subsistence Regional Advisory Council and the Kodiak/Aleutians Subsistence Regional Advisory Council, have been vocal supporters of a joint All-Council Meeting. The Board recognizes the value of bringing all of the Council members to a combined meeting, which allows wide sharing of regional issues and ideas, collaboration across the borders, and in-depth educational and training opportunities.

As the Board wrote in its FY17 annual report reply to the Council, "it is desired that such a meeting would occur perhaps every five years or so," so there is a potential that the next All-Council Meeting will occur in the winter 2021 cycle. Prior to making a final decision on holding the meeting, the Board will direct the Office of Subsistence Management to compile a project budget and assess available funding, since the cost of the last All-Council Meeting was about 30 percent higher than the cost of all individual Council meetings in one cycle combined.

If a decision is made to hold the All-Council Meeting in the winter 2021, the Office of Subsistence Management will work with all Council chairs prior to the fall 2020 meeting cycle on agenda development, which in turn will be presented to the rest of the Councils during the fall meetings. In the meantime, the Board encourages and welcomes any suggestions from the Councils in identifying necessary training and information materials that the Federal Subsistence Management Program may be able to provide to Councils in the future.

**9. <u>Salmon Predation</u>**

*The Council heard public testimony regarding marine mammals preying on salmon migrating up the Copper River. Marine mammals, such as harbor seals, sea lions, Orcas, and other whales,*

*are staging at the mouth of the Copper River to feed on migrating salmon. At Miles Lake and Abercrombie Rapids at least 600 seals have been observed in the area preying on salmon. The extent of salmon predation by marine mammals is unknown.*

*The local tribe in Cordova voiced its concern about sea lion and seal populations and the tremendous amount of salmon these species are consuming. This needs to be investigated and addressed. The Board, in consultation with NOAA, should examine the extent of the impact predation has on the fisheries.*

**Response:**

The Board appreciates the Council bringing the public's concern regarding marine mammals preying on salmon migrating in the Copper River to its attention and relayed this information to the Alaska Regional Office of National Oceanic and Atmospheric Administration (NOAA).

NOAA has heard other reports of growing harbor seal numbers in certain areas but has not done any work to quantify the effects of seal predation on local salmon runs. Even if NOAA would document such effects, it would have little ability to address the issue. Harbor seals are covered by the Marine Mammal Protection Act (MMPA), and there are no provisions under the law to allow for culling the population to try to reduce predation of salmon runs (except for threatened and endangered salmon runs in the Pacific Northwest). An exception to the MMPA allows coastal Alaska Natives to hunt harbor seals for subsistence or for creation of authentic handicrafts and clothing, as long as the taking is not accomplished in a wasteful manner.

In closing, I want to thank you and your Council for your continued involvement and diligence in matters regarding the Federal Subsistence Management Program. I speak for the entire Board in expressing our appreciation for your efforts and am confident that the subsistence users of the Southcentral Region are well represented through your work.

Sincerely,

Anthony Christianson
Chair

Enclosure

cc: Federal Subsistence Board
Thomas Doolittle, Acting Assistant Regional Director, Office of Subsistence Management
Thomas Whitford, Acting Deputy Assistant Regional Director
Office of Subsistence Management
Jennifer Hardin, PhD, Subsistence Policy Coordinator, Office of Subsistence Management

Steven Fadden, Acting Council Coordination Division Supervisor,
Office of Subsistence Management
Chris McKee, Wildlife Division Supervisor, Office of Subsistence Management
Greg Risdahl, Fisheries Division Supervisor, Office of Subsistence Management
George Pappas, State Subsistence Liaison, Office of Subsistence Management
DeAnna Perry, Council Coordinator, U.S. Forest Service
Southcentral Alaska Subsistence Regional Advisory Council
Benjamin Mulligan, Deputy Commissioner, Alaska Department of Fish and Game
Mark Burch, Special Project Coordinator, Alaska Department of Fish and Game
Interagency Staff Committee
Administrative Record

## EXAMPLE OF THE DELEGATION OF AUTHORITY LETTER

Yukon Delta National Wildlife Refuge Manager
U.S. Fish and Wildlife Service
807 Chief Eddie Hoffman Road 346
Bethel, AK 99559

Dear Refuge Manager:

This letter delegates specific regulatory authority from the Federal Subsistence Board (Board) to the manager of the Yukon Delta National Wildlife Refuge (Refuge) to issue emergency or temporary special actions if necessary to ensure the conservation of a healthy wildlife population, to continue subsistence uses of wildlife, for reasons of public safety, or to assure the continued viability of a wildlife population. This delegation only applies to the Federal public lands subject to Alaska National Interest Lands Conservation Act (ANILCA) Title VIII jurisdiction within Unit 19A remainder for the management of moose on these lands.

It is the intent of the Board that actions related to management of moose by Federal officials be coordinated, prior to implementation, with the Alaska Department of Fish and Game (ADF&G), representatives of the Office of Subsistence Management (OSM), the Bureau of Land Management (BLM), and the Chair of the affected Council(s) to the extent possible. The Office of Subsistence Management will be used by managers to facilitate communication of actions and to ensure proposed actions are technically and administratively aligned with legal mandates and policies. Federal managers are expected to work with managers from the State and other Federal agencies, the Council Chair or alternate, local tribes, and Alaska Native Corporations to minimize disruption to subsistence resource users and existing agency programs, consistent with the need for special action.

### DELEGATION OF AUTHORITY

**1. Delegation:** The Yukon Delta NWR manager is hereby delegated authority to issue emergency or temporary special actions affecting moose on Federal lands as outlined under the **Scope of Delegation**. Any action greater than 60 days in length (temporary special action) requires a public hearing before implementation. Special actions are governed by Federal regulation at 36 CFR 242.19 and 50 CFR 100.19.

**2. Authority:** This delegation of authority is established pursuant to 36 CFR 242.10(d)(6) and 50 CFR 100.10(d)(6), which state: "The Board may delegate to agency field officials the authority to set harvest and possession limits, define harvest areas, specify methods or means of harvest, specify permit requirements, and open or close specific fish or wildlife harvest seasons within frameworks established by the Board."

**3. Scope of Delegation:** The regulatory authority hereby delegated is limited to the following authorities within the limits set by regulation at 36 CFR 242.26 and 50 CFR 100.26:

- To establish annual harvest quotas and number of permits to be issued in coordination with the State Tier I hunt.
- To close the Federal hunt early if the harvest quota is reached before the regular season closing date.

This delegation also permits you to close and reopen Federal public lands to nonsubsistence hunting, but does not permit you to specify permit requirements or harvest and possession limits for State-managed hunts.

This delegation may be exercised only when it is necessary to conserve moose populations, to continue subsistence uses, for reasons of public safety, or to assure the continued viability of the populations. All other proposed changes to codified regulations, such as customary and traditional use determinations, shall be directed to the Board.

The Federal public lands subject to this delegated authority are those within Unit 19A remainder.

**4. Effective Period:** This delegation of authority is effective from the date of this letter and continues until superseded or rescinded.

**5. Guidelines for Delegation:** You will become familiar with the management history of the wildlife species relevant to this delegation in the region, with current State and Federal regulations and management plans, and be up-to-date on population and harvest status information. You will provide subsistence users in the region a local point of contact about Federal subsistence issues and regulations and facilitate a local liaison with State managers and other user groups.

You will review special action requests or situations that may require a special action and all supporting information to determine (1) consistency with 50 CFR 100.19 and 36 CFR 242.19, (2) if the request/situation falls within the scope of authority, (3) if significant conservation problems or subsistence harvest concerns are indicated, and (4) what the consequences of taking an action or no action may be on potentially affected Federally qualified subsistence users and non-Federally qualified users. Requests not within your delegated authority will be forwarded to the Board for consideration. You will maintain a record of all special action requests and rationale for your decision. A copy of this record will be provided to the Administrative Records Specialist in OSM no later than sixty days after development of the document.

For management decisions on special actions, consultation is not always possible, but to the extent practicable, two-way communication will take place before decisions are implemented. You will also establish meaningful and timely opportunities for government-to-government consultation related to pre-season and post-season management actions as established in the Board's Government-to-Government Tribal Consultation Policy (Federal Subsistence Board Government-to-Government Tribal Consultation Policy 2012 and Federal Subsistence Board Policy on Consultation with Alaska Native Claim Settlement Act Corporations 2015).

You will immediately notify the Board through the Assistant Regional Director for OSM, and coordinate with the Chair(s) or alternate of the affected Council(s), local ADF&G managers, and

other affected Federal conservation unit managers concerning emergency and temporary special actions being considered. You will ensure that you have communicated with OSM to ensure the special action is aligned with ANILCA Title VIII, Federal Subsistence regulations and policy, and that the perspectives of the Chair(s) or alternate of the affected Council(s), OSM, and affected State and Federal managers have been fully considered in the review of the proposed special action.

If the timing of a regularly scheduled meeting of the affected Council(s) permits without incurring undue delay, you will seek Council recommendations on the proposed temporary special action(s). If the affected Council(s) provided a recommendation, and your action differs from that recommendation, you will provide an explanation in writing in accordance with 50 CFR 100.10(e)(1) and 36 CFR 242.10(e)(1).

You will issue decisions in a timely manner. Before the effective date of any decision, reasonable efforts will be made to notify the public, OSM, affected State and Federal managers, law enforcement personnel, and Council members. If an action is to supersede a State action not yet in effect, the decision will be communicated to the public, OSM, affected State and Federal managers, and the local Council members at least 24 hours before the State action would be effective. If a decision to take no action is made, you will notify the proponent of the request immediately. A summary of special action requests and your resultant actions must be provided to the coordinator of the appropriate Council(s) at the end of each calendar year for presentation to the Council(s).

You may defer a special action request, otherwise covered by this delegation of authority, to the Board in instances when the proposed management action will have a significant impact on a large number of Federal subsistence users or is particularly controversial. This option should be exercised judiciously and may be initiated only when sufficient time allows for it. Such deferrals should not be considered when immediate management actions are necessary for conservation purposes. The Board may determine that a special action request may best be handled by the Board, subsequently rescinding the delegated regulatory authority for the specific action only.

**6. <u>Support Services:</u>** Administrative support for regulatory actions will be provided by the Office of Subsistence Management.

Sincerely,

Anthony Christianson
Chair

Enclosures

cc: Federal Subsistence Board
Assistant Regional Director, Office of Subsistence Management
Deputy Assistant Regional Director, Office of Subsistence Management

Subsistence Policy Coordinator, Office of Subsistence Management
Wildlife Division Supervisor, Office of Subsistence Management
Subsistence Council Coordinator, Office of Subsistence Management
Chair, Western Interior Alaska Subsistence Regional Advisory Council
Chair, Yukon-Kuskokwim Delta Subsistence Regional Advisory Council
Commissioner, Alaska Department of Fish and Game
Special Assistant to the Commissioner, Alaska Department of Fish and Game
Interagency Staff Committee
Administrative Record

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# Federal Subsistence Board

**1011 East Tudor Road, MS 121**
**Anchorage, Alaska 99503 - 6199**

**FISH and WILDLIFE SERVICE**
**BUREAU of LAND MANAGEMENT**
**NATIONAL PARK SERVICE**
**BUREAU of INDIAN AFFAIRS**

**FOREST SERVICE**

OSM 19056.KW

Della Trumble, Chair
Kodiak/Aleutians Subsistence
Regional Advisory Council
c/o Office of Subsistence Management
1011 East Tudor Road, MS 121
Anchorage, Alaska 99503-6199

Dear Chairwoman Trumble:

This letter responds to the Kodiak/Aleutians Subsistence Regional Advisory Council's (Council) fiscal year 2018 Annual Report. The Secretaries of the Interior and Agriculture have delegated to the Federal Subsistence Board (Board) the responsibility to respond to these reports. The Board appreciates your effort in developing the Annual Report. Annual Reports allow the Board to become aware of the issues outside of the regulatory process that affect subsistence users in your region. We value this opportunity to review the issues concerning your region.

**1. <u>Request for increased educational opportunities for Council Members</u>**

*Under the current system, the only time training provided to the Council is for 2 hours prior to the winter meeting for newly-appointed Council members. The rare opportunity to attend extensive training at the 2016 All-Council meeting was very welcome. There is a need for continuing education for Council Members including, but not limited to: 1) a one-page summary description of the role of the Regional Advisory Councils in making recommendations to the Board; 2) circulating an updated Regional Advisory Council Operations Manual for Council Members; 3) convening a more in-depth orientation for new members than what is currently provided (the two-day training session provided in Anchorage in 2017 is a great example); and 4) having the Coordinator hold training classes for the Council. Training materials should be appropriate for a variety of learning styles and include the use of web-based (online) and video-based instruction materials.*

**Response:**

The Board appreciates and commends the Council's desire to educate themselves regarding all of the aspects of the Federal Subsistence Management Program. To the Board, this is a manifestation of the Council's desire to serve the communities they represent to the best extent possible, to fully understand all the aspects of the regulatory program, and the effects of the recommendations and decisions they make.

The last two years, funding shortages, restrictions on spending for travel, and the lapse in Federal appropriations prevented the Office of Subsistence Management (OSM) from organizing a full new Council member training in Anchorage. OSM tentatively plans to organize a new Council member training in Anchorage in January 2020, funds permitting. There is also a possibility of holding another All-Council Meeting during the winter cycle of 2021, again subject to funding availability.

At the same time, the Board recognizes the need for continuing education and will direct OSM to create a one-page summary of the role of Subsistence Regional Advisory Councils in making recommendations to the Board, by the 2020 winter meeting cycle. OSM reviews and revises the Regional Advisory Council Operations Manual on an annual basis. Council members should have received the updated 2019 Operations Manual during their winter 2019 meeting.

OSM should be able to provide on-line access to any new Council member training materials that have already been developed. Due to staff shortages, creating new video-based instruction materials is not possible at this time.

**2. Request for evaluation of the Fisheries Resource Monitoring Program (FRMP) project selection process**

*There needs to be a meaningful way for the Council to have its comments and input taken into consideration during the FRMP project selection process. This Council's prior communications with the Board on the topic of McLees Lake do not appear to have been considered. The Council believes that it is its unique role to establish priorities for its region, not a State or Federal agency representative. The Council understands the present FRMP process is designed to protect the integrity of project selection; however, it ignores the region's needs. The present Technical Review Committee project selection process should not override the Regional Advisory Council's defined research needs for subsistence users in the region. The Council requests that the Board examines this policy or provides some other means to achieve this goal. The Council requests an evaluation of the FRMP process and presentation of findings to the Council and Board.*

**Response:**

The Board would like to clarify the Council's principal role in the Fisheries Resource Monitoring Program (FRMP) process is to identify the Priority Information Needs (PINs) for research and monitoring in their respective regions. The PINs formulated by a Council inform and direct

partners and researchers as to what type of project proposals are highest priority for a Council. The Council's formulation of PINs is therefore a pivotal first step in the process. The TRC's role is to rank proposals submitted for FRMP funding, based on a set of criteria that ensure proposals meet technical scientific standards and align with Council PINs. The TRC involvement in the FRMP process reinforces that proposals that directly align with Council PINs are credited as part of the ranking process. Council's will review the TRC ranked project list to see if their PINs have been addressed by proposals. If proposals are scored equally by the TRC, and thus tied in their ranking status, the Council can provide comments to identify which of the tied projects they would like to see funded if funding is limited. The annual funding for FRMP varies somewhat each year and there is never enough funding for all projects. Limited FRMP funds are further allocated by region and subsequently each Council may only see one or two projects funded a year.

Ultimately, the Board and Assistant Regional Director for the Office of Subsistence Management consider both the TRC rankings and Council comments before finalizing funding decisions. McLees Lake Sockeye Salmon are an important resource in the Kodiak-Aleutians Region; however, during the 2018 FRMP cycle three other proposals in the region ranked higher in the proposal evaluation process. Each of these also addressed priority information needs defined by the Council. A new proposal for McLees Lake Sockeye was submitted during the 2020 FRMP cycle and is in the review process. The Council will have an opportunity to comment on that proposal during its fall 2019 meeting.

At the Board's request, the Technical Review Committee (TRC) conducted an after-action review of the 2018 Monitoring Program funding cycle (enclosed). The Board discussed during their February 2018 work session the role of Councils in the project selection process. The Board reaffirmed the central role of the Council is to develop the PINs and to provide comments for the Interagency Staff Committee, Board and ARD of OSM to consider in the event that projects are given the same ranking.

**3. <u>Request for annual surveys of Adak Island caribou</u>**

*The Council requests that the Board supports annual surveys of Adak Island caribou and salmon. The last caribou survey for Adak Island was conducted in approximately 2010. Adak Island caribou are an important subsistence resource to Federally qualified subsistence users in the Kodiak/Aleutians Region. Hunting pressure for caribou on Adak Island is high, and updated annual surveys are needed to determine how many caribou remain. The Council also recommends the Board explore the use of drones for conducting these surveys as a possible means to reduce survey costs.*

**Response:**

The U.S. Fish and Wildlife Service (USFWS) provided the following information to the Board. In the past, the USFWS completed caribou surveys opportunistically when a helicopter was available on Adak Island during good weather. The latest 2012 count estimated 2,512 to 2,880 animals. Nevertheless, this was a rare occurrence. Future surveys would probably be best

conducted by the Alaska Department of Fish and Game (ADF&G) or perhaps cooperatively arranged by both USFWS and ADF&G.

Roughly, two-thirds of Adak Island is Alaska Maritime National Wildlife Refuge (AMNWR) and one-third is Aleut Corporation land. A caribou management plan is needed for Adak that incorporates the needs of various interest groups. Development of a plan would involve at a minimum ADF&G, the Aleut Corporation, the City of Adak, and the USFWS. Other interest groups also may want to be involved.

Adak Island is too large for the use of drones for an aerial survey. The island is 275 square miles—roughly 175,000 acres. Consulting with USFWS drone experts, the maximum area a USFWS drone can cover is 500 acres. Fixed wing aircraft are most effective tool for monitoring caribou on Adak Island.

Currently AMNWR does not have the capacity to participate in such a survey as staffing has decreased over the past several years and remaining staff are already scheduled for other projects. If future budget and staff levels increase and a multi partner caribou management plan were developed, AMNWR would welcome the opportunity to participate in future surveys. If any population surveys are conducted during summer 2019, the Council will be informed during the fall meeting.

**4. Agencies need to provide timely reports for inclusion in the Council's meeting book**

*The Council appreciates the written reports that agencies produce for its meetings. However, it is more convenient for the Council to absorb these reports if they are included in the Council meeting book. Council Coordinators begin their outreach to agencies for reports months in advance of the Council meeting. For the fall 2018 Council meeting, extensive outreach began in July 2018. The majority of agencies responded within 24-48 hours. Several agencies did not provide presentation materials until 24, 48, or 72-hours before the meeting. The Council understands that land management agency staff is conducting fieldwork during the summer season. But a lack of advance production of reports does not provide Council members adequate time to review materials prior to the meeting.*

*The Council thanks the Alaska Department of Fish and Game (ADF&G), and Mark Burch in particular, for arranging the 23 ADF&G personnel who participated in the fall 2018 Kodiak/Aleutians Subsistence Regional Advisory Council Meeting.*

**Response:**

The Board recognizes that it is important for the Councils to receive land management agencies' reports well in advance of Council meetings to allow ample time to be able to read them. As the Council pointed out, it has been standard practice for OSM to send a call for reports to land management agencies and tribes three months before each Council meeting. It is also true that land management agency staff sometimes are not ready to provide reports that early because the Councils' meetings often take place soon after the field season and time is needed to process the

results of fieldwork. However, the Board will continue to emphasize to agencies, through OSM, the importance of producing reports at the earliest time possible. Prior to the fall 2019 meeting cycle, OSM can prepare a letter to Federal and State managers explaining the Council's request and the importance of receiving reports in a timely manner.

**5. Request for notification and tribal consultation regarding special actions affecting Federally qualified subsistence users in the region**

*There has not been adequate notification and Tribal consultation regarding special actions issued by Federal managers that affect Federally qualified subsistence users in the Kodiak/Aleutians Region. The Council has five members who live in Kodiak. The Council was not involved in the 2018 summer closures affecting Federally qualified subsistence users in the Saltery, Pasagshak, and Kodiak areas. The Council understands that the in-season manager has the authority to enact closures, but they are supposed to conduct this process in consultation with the State of Alaska, the Council Chair, and Tribes. The Council is aware that the Federal Subsistence Board recently updated the delegation of authority letters and would appreciate the in-season manager taking appropriate steps to provide notifications and fulfill consultation obligations prior to enacting future special actions.*

**Response:**

The Board regrets that the manager at Kodiak National Wildlife Refuge (NWR) failed to notify the Council regarding special actions initiated for Womens Bay in 2018. The Saltery and Pasagshak systems are not under Federal subsistence fisheries jurisdiction and management actions for those systems was implemented by the State of Alaska.

The 2018 season required closures to the Federal subsistence fishing for Sockeye Salmon in Womens Bay due to poor returns. The Kodiak NWR manager, who has the delegated authority for the management of the Federal subsistence fisheries from the Board, enacted the closure through issuing Emergency Special Action 9-RS-01-18 on June 13, 2018. The Council's concern regarding communications with their Chair is understood. The manager's letter of delegation states:

> *For in-season management decisions and special actions, consultation is not always possible, but to the extent practicable, two-way communication will take place before decisions are implemented.*
>
> *You will immediately notify the Board through the Assistant Regional Director for the OSM, and coordinate with the Chair or alternate of the affected Council(s), local ADF&G managers, and other affected Federal conservation unit managers concerning emergency special actions being considered.*
>
> *You will issue decision in a timely manner. Before the effective date of any decision, reasonable efforts will be made to notify Council representatives, the public, OSM, affected State and Federal managers, and law enforcement personnel. If an action is to*

*supersede a State action not yet in effect, the decision will communicated to Council representative, the public, OSM, and State and Federal managers at least 24 hours before the State action would be effective.*

The Board will direct OSM to review the guidelines for delegation with the in-season manager since it appears that there was some miscommunication on outreach efforts on the Buskin River (within Womens Bay) closure. The manager of Kodiak NWR is hiring a Refuge Information Technician to improve communications and outreach in the future.

**6. Request to maintain full funding for the Fisheries Resource Monitoring Program**

*The Council requests the continuation of full funding for the Fisheries Monitoring Program (Monitoring Program). The Council emphasizes the importance of the Monitoring Program to providing timely information to Federal land managers regarding the population status of subsistence fisheries resources. This data is essential to the management of fisheries and to meet the nutritional needs of Federally qualified subsistence users on Federal public lands.*

**Response:**

While the Board agrees with the Council that maintaining full funding levels for the Fisheries Resource Monitoring Program (FRMP) would facilitate additional research and provide managers with much needed information, the Board does not have direct influence over the funds for this program. FRMP funds come from the budget that the Office of Subsistence Management receives on an annual basis from Congress through the Department of the Interior and the U.S. Fish and Wildlife Service (FWS). The Council may choose to inquire further with the Regional Director or representative of the U.S. Fish and Wildlife Service about budget allocations for a more in-depth discussion of the process.

In closing, I want to thank you and your Council for your continued involvement and diligence in matters regarding the Federal Subsistence Management Program. I speak for the entire Board in expressing our appreciation for your efforts and am confident that the subsistence users of the Kodiak/Aleutians Region are well represented through your work.

Sincerely,

Anthony Christianson
Chair

Enclosures

cc: Federal Subsistence Board
Thomas Doolittle, Acting Assistant Regional Director, Office of Subsistence Management
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George Pappas, State Subsistence Liaison, Office of Subsistence Management
Zachary Stevenson, Council Coordinator, Office of Subsistence Management
Donald Mike, Council Coordinator, Office of Subsistence Management
Kodiak/Aleutians Subsistence Regional Advisory Council
Benjamin Mulligan, Deputy Commissioner, Alaska Department of Fish and Game
Mark Burch, Special Project Coordinator, Alaska Department of Fish and Game
Interagency Staff Committee
Administrative Record

# Enclosure 1

**REVIEW OF THE**

**2018 FISHERIES RESOURCE MONITORING PROGRAM**

## INTRODUCTION

Section 812 of the Alaska National Interest Lands Conservation Act (ANILCA) directs the Departments of the Interior and Agriculture, cooperating with other Federal agencies, the State of Alaska, and Alaska Native and other rural organizations, to research fish and wildlife subsistence uses on Federal public lands; and to seek data from, consult with, and make use of the knowledge of local residents engaged in subsistence. When the Federal government assumed responsibility for management of subsistence fisheries on Federal public lands and waters in Alaska in 1999, the Secretaries of the Interior and Agriculture made a commitment to increase the quantity and quality of information available to manage subsistence fisheries, to increase quality and quantity of meaningful involvement by Alaska Native and other rural organizations, and to increase collaboration among Federal, State, Alaska Native, and rural organizations (Fox et al. 1999:14 and 16, Kruger et al. 1999:6 and 39, FWS 2000, Norris 2002:259). The Fisheries Resource Monitoring Program (Monitoring Program) is a collaborative, interagency, interdisciplinary approach to enhance fisheries research and data in Alaska and effectively communicate information needed for subsistence fisheries management on Federal public lands and waters.

The mission of the Monitoring Program is to identify and provide information needed to sustain subsistence fisheries on Federal public lands, for rural Alaskans, through a multidisciplinary, collaborative program (Southcentral Region Planning Workgroup 2005).

At its work session on February 22, 2018, the Federal Subsistence Board (Board) requested the Office of Subsistence Management (OSM) conduct an after action review of the 2018 Monitoring Program funding cycle (FSB 2018). Board members' questions about the 2018 Monitoring Program funding cycle have been organized under the following four topics (per meeting transcripts):

1. Should geographic distribution of funding guidelines be modified or eliminated?
2. Should one or more evaluation criteria be weighted more than others?
3. Who can evaluate funding proposals and access proposal scores?
4. What is the role of Regional Advisory Councils in the award selection process?

On July 20, 2018, the Monitoring Program's Technical Review Committee (TRC) met for its biennial review of the funding program. During the review, the TRC discussed the Board's concerns and developed recommendations for the 2020 funding cycle, which will be initiated in November 2018.

This report contains the results of the TRC's biennial review, with a specific focus on addressing the Board's concerns.

This report provides a short background to the Monitoring Program, describes revisions to the proposal evaluation process that were implemented in 2016 and 2018, addresses each of the four topical questions posed by the Board and the TRCs recommendations, and other topics.

**BACKGROUND**

The Monitoring Program is administered by OSM. Biennially, OSM announces a funding opportunity for project proposals addressing subsistence fisheries on Federal public lands. The Notice of Funding Opportunity (NOFO) provides directions to applicants on how to submit proposals, proposal topics that are sought, and descriptions of the five criteria upon which proposal evaluations are based. The 2018 NOFO is included in **Appendix A**.

Proposal's that are submitted for funding consideration are evaluated by the TRC. The TRC is a key component in the Monitoring Program's organizational structure. In addition, the TRC, was founded to provide technical oversight and strategic direction to the Monitoring Program (Fox et al. 1999:12, Kruger et al. 1999:31). It is a standing interagency and interdisciplinary committee of senior technical experts that is foundational to the credibility and scientific integrity of the evaluation process for projects funded through the Monitoring Program. The TRC is empowered to review and evaluate project proposals and make recommendations for project selection consistent with the mission of the Monitoring Program. A list of TRC members, their titles, and their professional affiliations is included in **Appendix B**.

The TRC is composed of representatives from Federal and State agencies. Members are selected on the basis of their education, training, and experience with field investigations in fisheries stock status and trends assessment, subsistence harvest monitoring, sociocultural research, traditional ecological knowledge, and other subsistence-related topics, as well as their understanding of fisheries management issues. Agencies nominate candidates to serve on the TRC. The TRC consists of representatives from the following agencies/programs:

- Bureau of Indian Affairs
- Bureau of Land Management
- National Park Service
- U.S. Fish and Wildlife Service
- U.S. Forest Service
- ADF&G Commercial Fisheries Division
- ADF&G Sport Fisheries Division
- ADF&G Subsistence Division
- OSM Fisheries Division
- OSM Anthropology Division

The Monitoring Program's project selection process is guided by policy and funding guidelines. These are listed in the Monitoring Plan and the NOFO for each funding cycle, and consist of the following elements:

- Projects of up to four years duration may be considered.
- Projects will be funded for a maximum $215,000 per year.
- Projects must not duplicate existing projects.
- A majority of Monitoring Program funding will be dedicated to non-Federal agencies.
- Long-term projects will be considered on a case by case basis.

- All projects must have a direct linkage to a subsistence fishery within a Federal conservation unit.
- Activities that are not eligible for funding include:
    - habitat protection, mitigation, restoration, and enhancement;
    - hatchery propagation, restoration, enhancement, and supplementation;
    - contaminant assessment, evaluation, and monitoring; and
    - projects where the primary or only objective is outreach and education (for example, science camps, technician training, and intern programs), rather than information collection.

The Monitoring Program is administered through regions, which were developed to match subsistence management regulations as well as stock, harvest, and community issues common to a geographic area (Kruger et al. 1999:26). There are six Monitoring Program regions (**Figure 1)**.

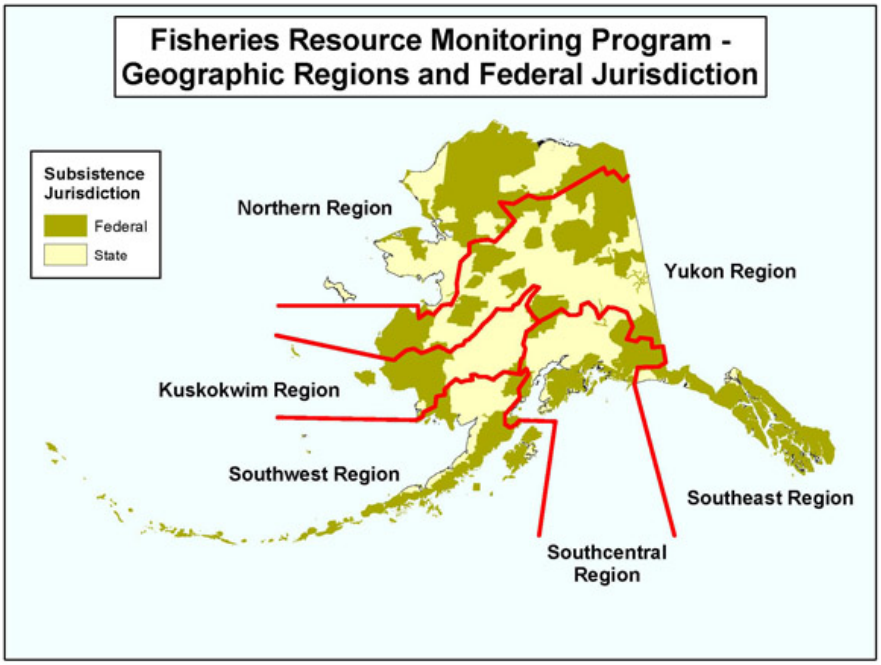


**Figure 1**. Monitoring Program geographic regions.

The project selection process is guided by geographic funding guidelines (**Table 1**), which were designed to ensure that funding is distributed to address fisheries issues statewide.

Three broad categories of information are solicited by the Monitoring Program (Kruger et al. 1999:14–18). These are (1) harvest monitoring, (2) traditional ecological knowledge, and (3) stock status and trends.

The TRC evaluates project proposals using five, equally weighted criteria: (1) strategic priority, (2) technical and scientific merit, (3) investigator ability and resources, (4) partnership-capacity building, and (5) cost/benefit.

**Table 1**. Monitoring Program geographic funding guidelines (Southcentral Regional Planning Workgroup 2005).

| Region | Department of the Interior guidelines | Department of Agriculture guidelines |
|---|---|---|
| Northern | 17% | |
| Yukon River | 29% | |
| Kuskokwim River | 29% | |
| Southwest | 15% | |
| Southcentral | 5% | 32.5% |
| Southeast | | 62.5% |
| Multi-regional | 5% | 5% |

**PROCESS MODIFICATIONS IN 2016 AND 2018**

In 2015, the Office of Subsistence Management began a review of the Monitoring Program funding process to ensure that, after 15 years, it remained of high quality. In addition, the Monitoring Program has experienced budget declines, which has led to increased competition for funding. Therefore, OSM staff recommended and implemented (with concurrence from the Board) revisions to the proposal evaluation process (FSB 2016:3–44). The overall aim of these revisions was to focus funding on projects with the best chance for success. Proposal evaluation process changes were implemented beginning with the 2016 funding cycle and were intended to ensure the following:

- Proposal review process is objective and transparent as possible. Applicants should know exactly how their projects are going to be evaluated and have trust in the process.
- Programmatic decisions are applied consistently. This increases credibility and trust.
- Best projects are funded. The best projects are those that meet the highest benchmarks of the criteria outlined in the notice of funding opportunity.
- Guidance is provided to potential research and monitoring partners through increased outreach activities, such as communications, advanced notifications, and trainings.

The most significant modification in 2016 concerns how projects are scored and ranked by the TRC. Prior to 2016, TRC members ranked proposals as high, medium, or low in each criterion and then made an assessment whether or not a project should be funded or not funded. As competition increased with declining budgets, it became evident that this approach could be open to individual subjectivity. To increase consistency and objectivity in the proposal evaluation process, each of the five equally weighted criteria (strategic priority, technical and scientific merit, investigator ability and resources, partnership-capacity building, and cost/benefit) are now assessed by applying a numeric scoring system. Another significant modification was that each agency represented on the TRC provides only a single score for each project proposal. In addition, agencies cannot score proposals in which their agency staff are involved, although they are free to answer questions raised about the project proposals. A proposal's final score determines its overall ranking. The TRC is the only entity that scores proposals, as only the TRC is authorized to review complete proposal packages due to confidentiality requirements in the competitive

proposal process (DOI 2008:10, 2014b). The TRC receives instructions on the evaluation process prior to the start of each round of evaluations.

For the 2018 funding cycle, the approach to scoring the cost/benefit criterion was modified from being based solely on each proposal's average annual funding request to also consider how well costs are justified in relation to anticipated outputs.

**2018 MONITORING PROGRAM REVIEW**

On July 20, 2018, the TRC met for its biennial review of the Monitoring Program and to address concerns raised by the Board. Each Board concern is described below, followed by the TRC's recommended modifications to the proposal evaluation process in preparation for the 2020 funding cycle.

**Question 1: Should geographic distribution of funding guidelines be modified or eliminated?**

Board Member Owen asked if geographic funding guidelines should be eliminated and funding applied to statewide priorities instead (FSB 2018:2–29). Chairman Christianson asked whether, as a consequence of eliminating geographic funding guidelines, most funding would go to one area of the state (2018:30). Board Member Brower observed that salmon seem to be a major priority in the funding process. He was concerned that although Broad Whitefish, Grayling, Cisco, and Dolly Varden are more important than salmon to subsistence users in some areas of the state, project proposals for nonsalmon fish species may not be selected for funding if guidelines are not in place (2018:31). Board Member Frost suggested that geographic funding guidelines be reviewed for possible modification (2018:32). (Transcripts of the Board meeting are included in **Appendix C**.)

Relevant Background

The Monitoring Program's approach to geographic regions and funding is fully described in one of the founding documents, "Federal Subsistence Fisheries Management: Operational Strategy for Information Management" (Kruger et al. 1999). The document was authored by a Board subcommittee, and recommended six geographic regions organized to encompass Federal fisheries management areas that generally correspond to stock, harvest, and community issues held in common. The subcommittee developed six criteria to help establish information priorities both geographically among regions as well as for specific projects within a regions, and to guide statewide allocation of funds (Kruger et al. 1999:7–8):

1. level of risk to species,
2. level of threat to conservation units,
3. amount of unmet subsistence needs,
4. amount of information available to support subsistence management,
5. importance of a species to subsistence harvest, and
6. level of user concerns with subsistence harvest.

There was agreement amongst subcommittee members on regional funding guidelines. According to the subcommittee, proposed regional allocation guidelines represented various tradeoffs or interactions

among these criteria. The high percentage of funding dedicated to projects in the Yukon and Kuskokwim regions was due to widespread declines of salmon stocks in these regions, the failure to meet subsistence needs, the number of villages affected, and high levels of user concern. However, the subcommittee envisioned a "balanced program that addresses statewide needs not just those of the Yukon and Kuskokwim regions" (1999:35). This has remained a foundational aspect of the Monitoring Program in recognition of the varied subsistence resources and critical subsistence needs of rural residents throughout the state.

TRC Review of the 2018 Monitoring Program Funding Cycle

Following TRC scoring of proposals, each proposal was listed in ranked order within individual regions (plus a multi-regional category). First, proposals from the same region were listed in ranked order. Selection for funding was based on first year costs per project up to the funding guideline target. This exercise was conducted for all seven regions. Remaining funds were distributed to the next highest ranking proposals statewide.

TRC Recommendations for 2020 cycle

The TRC affirms that the current regional funding guidelines are appropriate and does not recommend any additional modifications for the 2020 funding cycle.

**Question 2: Should one or more evaluation criteria be weighted more than others?**

Board members noted that several proposals had tied scores. Board Member Siekaniec suggested achieving additional separation between proposals by reconsidering how evaluation criteria are weighted (FSB 2018:15). For example, Board Member Frost suggested that the Strategic Priority criterion having a higher weight than the Partnership-Capacity Building criterion may be appropriate (2018:20). Board Member Pitka said that the partnership component of the Monitoring Program needs emphasis (2018:32).

Relevant Background

Since the inception of the Monitoring Program in 2000, criteria used to evaluate funding proposals have been weighted equally. However, all projects must have a direct linkage to a subsistence fishery within a Federal conservation unit under the Strategic Priority criterion to be eligible for funding. These organizational approaches are fully described in the founding documents mentioned above (Kruger et al. 1999). The subcommittee developed the following 11 key attributes that the Monitoring Program should reflect (Kruger el al. 1999:22):

1. be complimentary to existing information gathering activities and not duplicative,
2. be cost effective,
3. be scientifically sound and statistically correct in providing information,
4. provide an information base that is easily and freely accessible to all in a timely manner for analysis and interpretation while maintaining quality,
5. provide for technical analysis of data that is independent of, and prior to, policy interpretation,
6. be balanced in consideration of biological and sociocultural informational types,

7. be interactive with the Alaska Department of Fish and Game,
8. seek opportunities for rural resident involvement in information gathering through local hires and cooperative agreements,
9. have the flexibility to use a variety of sources to gain information and to expand and contract based on program needs,
10. use a blend of field and centralized functions as required to accomplish above principles, and
11. provide for each agency's information needs and be accountable to those Federal agencies responsible for subsistence fisheries management.

To encompass and balance these key attributes, OSM developed four proposal evaluation criteria: (1) strategic priorities, (2) technical-scientific merit, (3) investigator ability and resources, and (4) partnership-capacity building. A fifth criterion, cost/benefit, was added in 2016 to make applicants aware that the TRC performs a "best value analysis" as part of its scoring process. Attribute No. 6 "balancing biological and sociocultural information types and attributes" and attribute No. 8 "seeking opportunities for rural resident involvement in information gathering through local hires and cooperative agreements" are goals of the Monitoring Program and are captured in Criterion 4: partnership-capacity building. Partnerships with other groups are a foundational feature of the Monitoring Program. However, the TRC understands that these partnerships should not occur at the expense of a scientifically sound program focused on important information needs. All of these features are believed to be integral to the success of the program and therefore have been equally weighted.

TRC Review of the 2018 Monitoring Program Funding Cycle

The TRC recognized that tied scores can complicate the funding process. For the 2018 funding cycle, proposals in the same region that were tied with one another were ranked based on average annual cost, with lower cost proposals ranked ahead of other proposals in the tie. However, in the final funding selection process, strong consideration also was given to Regional Advisory Council (Council) comments that addressed the comparative value of tied proposals to their respective Monitoring Program region.

TRC Recommendations for 2020 Cycle

To address Board concerns about the number of proposals in 2018 that resulted in tied scores, the TRC recommended changing from scoring in five point increments (i.e., 0, 5, 10, 15, or 20) to single point increments beginning in the 2020 funding cycle. The TRC believes that this change will reduce or eliminate occurrences of tied scores. It does not recommend any further changes for the upcoming funding cycle.

**Question 3: Who can evaluate funding proposals and access proposal scores?**

Board members discussed the appropriate level of "transparency" in the funding process relating to who can evaluate funding proposals and who can access proposal scores. Board Member Siekaniec suggested that expanding the Interagency Staff Committee's (ISC's) role to reviewing scores given to project proposals by the TRC may add objectivity to the funding process (FSB 2018:27). He also suggested adding Federal in-season fishery managers and their perspectives to the TRC may improve the funding process.

Relevant Background

Federal agencies nominate candidates to serve on the TRC who they determine to be the best fit for their agencies' needs. Project proposals remain confidential and are only available to the TRC and OSM staff (Fisheries and Anthropology division employees) with signed Confidentiality and Non-Disclosure Certifications on file (DOI 2014a). Financial Assistance rules and regulations allow only the TRC to score proposals in accordance with the evaluation criteria identified in the funding announcement (DOI 2008:10, 2014b). Councils, the ISC, and the Board cannot participate in technical review and evaluation of proposals. They may only provide comments. A Monitoring Plan is published each cycle that includes only information about proposals that is not confidential or propriety for review and comment by Councils, the ISC, and the Board. A proposal's overall score can be shared with advisory groups, but the Office of Contracting and General Services advises not to do this to avoid any possible conflict or undue influence on the scoring or ranking process (Primmer 2018, pers. comm.). Also, only TRC members and OSM staff with signed Confidentiality and Non-Disclosure Certifications on file may have access to the numerical scores of individual criteria resulting from the TRC evaluation (Primmer 2018, pers. comm.).

TRC Review of the 2018 Monitoring Program Funding Cycle

For the 2018 funding cycle, the Monitoring Program followed Office of Contracting and General Services regulations and guidance as described above.

TRC Recommendations for 2020 Cycle

The TRC concluded the current proposal evaluation process is appropriate and made no recommendations for modifications for the 2020 funding cycle.

**Question 4: What is the role of Regional Advisory Councils in the award selection process?**

Regional Advisory Councils' role in the funding process is not clear to Board members. For example, Board Member Siekaniec asked why the 2018 Monitoring Plan didn't reflect Councils' recommendations for ranking project proposals, and shouldn't deference be provided Councils in the funding process (FSB 2018:14). Board Member Mouritsen also asked how Council comments are addressed in the funding process (2018:25).

Relevant Background

The Board gives deference to Councils' recommendations only on issues concerning the take of fish and wildlife.[1] Councils are not provided deference on funding issues and are discouraged from prioritizing or ranking proposals because that is the role of the TRC. All individuals who participate in the scoring process sign Confidentiality and Non-Disclosure Certifications. This is a requirement of cooperative agreement and contracting rules (DOI 2014a). Council members review information in proposal packages that is not considered confidential or propriety, and which is provided in a Monitoring Plan each funding cycle.

[1] The Solicitor affirmed this at the February 22, 2018, Federal Subsistence Board work session (FSB 2018:14).

In the past, Councils were asked to prioritize project proposals approved for funding by the TRC. Beginning with the 2016 funding cycle, the TRC scores project proposals based solely on evaluation of the five criteria. Councils are not asked to prioritize or rank proposals, because they do not have access to complete proposal packages (see above). However, Councils (and the ISC) are asked to provide comments about proposals and how they align with priority information needs for the region based on information from project summaries and TRC justifications.

Comments provided by Councils and the ISC are considered in the award selection process. When there is a tie between proposals, the Assistant Regional Director for OSM considers comments when making final funding decisions.

TRC Review of the 2018 Monitoring Program Funding Cycle

Beginning with the 2016 funding cycle, Councils have the primary role in developing Priority Information Needs for their regions. These Priority Information Needs set the parameters for the topics of proposals sought for the current funding cycle. Beginning in 2018, five of the ten Councils participated in working groups with representation from one or more Councils to gather information about priority information needs in their regions fishery. The results from these working groups were presented to full Councils for their deliberation and final action at public meetings. For the 2020 funding cycle, all but one Council had formed a working group to gather information on priority information needs.

TRC Recommendations for 2020 Cycle

The TRC concluded that the current process is appropriate and conforms to legal standards for competitive proposal processes in the Federal government. The TRC did not offer any recommendations for modifications to this portion of the proposal evaluation process for the 2020 funding cycle.

**TECHNICAL REVIEW COMMITTEE RECOMMENDATONS**

The majority of the TRC's recommendations focus on modifications to the 2020 Notice of Funding Opportunity. Their recommendations include the following:

1. The focus on collaboration and the interdisciplinary nature of traditional ecological knowledge should be strengthened. Interdisciplinary research is part of the mission of the Monitoring Program.

2. Request a description of how investigators arrive at sample sizes, including references to literature and other studies using similar methods.

3. Request that applicants discuss how results will be disseminated such as through public presentations and local newspaper articles.

4. Inform applicants each criterion is worth up to 20 points.

5. Criteria will be modified to include "and/or" statements to clarify if the criteria requirements mean all or nothing.

6. Clarify what should be submitted through separate documents and what should be included in the investigation plan document. Clarify budget justification and curricula vitae requirements.

6. Provide examples of past "meaningful involvement" in a project proposal.

8. Clarify the requirements for resume submission.

9. Request that applicants include a study design and references.

10. Add examples of project elements that may contribute to higher score.

**CONCLUSION**

In accordance with Section 812 of ANILCA, the Monitoring Program focuses on collaboration with the State of Alaska, Alaska Native and other rural organizations and other Federal agencies to carry out research and monitoring about fish subsistence uses on Federal public lands; and to seek data from, consult with and make use of the knowledge of local residents engaged in subsistence. The Monitoring Program is a collaborative interagency, interdisciplinary approach to enhancing fisheries research and data in Alaska and effectively communicate information needed for subsistence fisheries management on Federal public lands and waters. The Board requested a review of the 2018 Monitoring Program funding cycle. The Monitoring Program proposal evaluation process was significantly modified in preparation for the 2016 and 2018 funding cycles. These changes were directed specifically at making the funding process more transparent and objective.

This review is an opportunity to communicate the significance of modifications made to the Monitoring Program proposal evaluation process in 2016 and 2018. Most significantly, the revisions to the proposal evaluation process are consistent with Department of the Interior Office of Contracting and General Services regulations and guidance and are supported by the TRC. Councils continue to play a central role in the process by having the primary responsibility for developing Priority Information Needs that define the topics of proposals that are sought as part the Monitoring Program.

The TRC conducted its biennial review of the proposal evaluation process in July 2018 and also addressed questions posed by the Board. Members engaged in robust discussions about these questions and other issues such as the concept of transparency in a competitive proposal process. The TRC agreed on recommendations for some modifications to the 2020 funding cycle that it felt would best address concerns and improve the process. While the TRC discussed geographic funding guidelines and weighting of criteria, the group concluded that these areas are functioning as intended and are consistent with the mission of the Monitoring Program.

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*Technical Review Committee* *October 19, 2018*

**APPENDIX B**

**2018 NOTICE OF FUNDING OPPORTUNITY**

**FISHERIES RESOURCE MONITORING PROGRAM**

*Technical Review Committee* *October 19, 2018*

**U.S. Fish and Wildlife Service**
**Office of Subsistence Management**

2018 Fisheries Resource Monitoring Program
Catalog of Federal Domestic Assistance (CFDA): 15.636
Alaska Subsistence Management

Funding Opportunity Announcement Number: F17AS00028

SUBMISSION DEADLINE: **February 20, 2017; 5:00PM Alaska Standard Time**

**Notice of Funding Opportunity**

**I. Description of Funding Opportunity**

The Department of the Interior, U.S. Fish and Wildlife Service, Office of Subsistence Management (OSM) administers the Fisheries Resource Monitoring Program (Monitoring Program). OSM is seeking technically sound projects for the Monitoring Program that gather information to manage and conserve subsistence fishery resources in Alaska. The Monitoring Program is also directed at supporting meaningful involvement in fisheries management by Alaska Native and rural organizations and promoting collaboration among Federal, State, Alaska Native and local organizations. The Fisheries Resource Monitoring Program funding awards are made through Federal financial assistance under the authority of the Fish and Wildlife Coordination Act, 16 USC 661 to 667 (d), and the Alaska National Interest Lands Conservation Act (ANILCA), 16 USC 3101-3233. This Funding Opportunity, number F17AS00028, is the single designated biennial competition through which multiple awards will be made.

Only studies that gather, analyze, and report on information needed for subsistence fisheries management on Federal public lands in Alaska (National Wildlife Refuges, National Forests, National Parks and Preserves, National Conservation Areas, National Wild and Scenic River Systems, National Petroleum Reserves, and National Recreation Areas) will be considered.

All proposals and required information listed in the Checklist in the Application Instructions are to be submitted to the U.S. Fish and Wildlife Service by February 20, 2017, 5:00PM Alaska Standard Time to: fw7_fa_cgs@fws.gov **(see Section V, Submission Instructions for further details)**. Applicants are encouraged to submit complete proposal packages early. In order to be considered for funding, all documents must be received by the deadline. If you have any issues submitting your proposal through electronic format, please contact the OSM Grants Management Specialist at 907-786-3691.

**II. Federal Award Information**

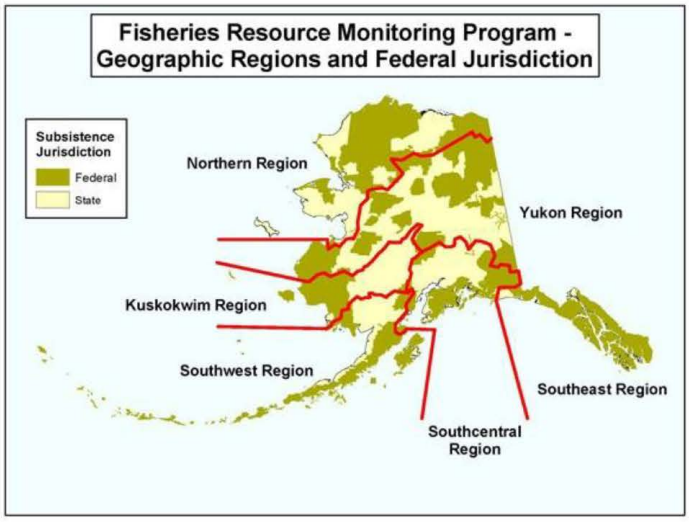
The Federal Subsistence Board (Board) has established guidelines for writing Investigation Plans/Project Narratives **(see Section IV, C, for further details)**. Activities that fall outside the scope of the Monitoring Program and will not be considered include: habitat protection, mitigation, restoration and enhancement, hatchery propagation and contaminant assessment. These activities are most appropriately addressed by the responsible land management or regulatory agency, not the Monitoring Program. In addition, projects for which the primary objective is education/outreach (e.g., science camps, technician training, intern programs), are not eligible for funding under the Monitoring Program.

The Monitoring Program biannually funds research and monitoring of Federal subsistence fisheries in Alaska. The funding commitments to multiple year projects influence the amount of funding available for new projects. For 2018, we anticipate availability of funds for new projects that provide information needed to manage subsistence fisheries for rural Alaskans on Federal lands, but funding will not be as significant as in previous years. The U.S. Fish and Wildlife Service and U.S. Forest Service may award multiple cooperative agreements for selected fisheries projects. Continuation of funding for years two,

three or four of multiple-year projects is contingent upon attainment of the study objectives and availability of future government funding. Based on projections of the funding available for the 2018 research cycle and the needs of ongoing Monitoring Program projects, an annual funding cap is being instituted for the program. For the 2018 Notice of Funding Opportunity, the funding cap is $215,000.00 per year. Proposals requesting Monitoring Program funding that exceeds $215,000.00 per year will not be considered.

Although all Investigation Plans addressing Federal subsistence fisheries will be considered, the Office of Subsistence Management is targeting this Funding Opportunity towards projects that address specific priority information needs identified either by strategic planning efforts or by expert opinion from Regional Advisory Councils, fisheries managers, the Technical Review Committee, and Office of Subsistence Management staff. The 2018 list of priority information needs and other supplemental materials may be accessed at https://www.doi.gov/subsistence/frmp/funding. Investigators wishing to address information needs other than those identified in the attached list must include a compelling rationale regarding strategic importance and application to Federal subsistence management.

*Geographic Regions:* Investigation Plans should address one of six geographic regions. If the issue of concern covers more than one region, the proposal should be classified as multi-regional.




*Data Types:* Three broad categories of information will be considered: 1) harvest monitoring (HM), 2) traditional ecological knowledge (TEK), and 3) stock status and trends (SST).

Harvest monitoring studies provide information on numbers and species of fish harvested, locations of harvests, and gear types used. Methods used to gather information on subsistence harvest patterns may include harvest calendars, mail-in questionnaires, household interviews, subsistence permit reports and telephone interviews.

Traditional ecological knowledge studies are studies of local knowledge directed at collecting and analyzing information on a variety of topics, including: the sociocultural aspects of subsistence, fish

ecology, species identification, local names, life history, taxonomy, seasonal movements, harvests, spawning and rearing areas, population trends, environmental observations, and traditional management systems. Some methods used to document traditional ecological knowledge include ethnographic fieldwork, key informant interviews with local experts, place name mapping, and open-ended surveys.

Stock status and trends studies provide information on abundance and run timing; age, size and sex composition; migration, and geographic distribution; survival of juveniles or adults; stock production; genetic stock identification and mixed stock analyses. Methods used to gather information on stock status and trends include aerial and ground surveys, test fishing, towers, weirs, sonar, video, genetics, mark-recapture, and telemetry

*OSM Involvement:* Proposals are awarded through cooperative agreements which require substantial involvement on the part of the OSM. The OSM anticipates being involved and responsible for the following, however specific aspects of participation will be determined collaboratively by OSM and awardees and outlined in the Notice of Award Letter:

1. Participate and collaborate jointly with the recipient principal investigator in carrying out the scope of work.
2. Assist with data analysis and interpretation as needed.
3. Provide written guidelines for producing Performance and Technical (annual and final) reports.
4. Provide a review of all draft Technical reports to the Recipient's investigators and ensure that needed modifications are made before accepting reports as finished products.
5. Share in responsibility to communicate and distribute project results to federal fishery managers, Federal Regional Advisory Councils, the Federal Subsistence Board, and the general public.
6. Review and approve any proposed modifications to the Investigation Plan by the Recipient prior to their adoption or use and the award of subsequent funds.
7. Direct or redirect the work because of interrelationships with other projects.
8. Halt one or more project activities at any time, if performance specifications are not being met.

**III. Eligibility Information**

**Eligible Applicants:**
Individuals and organizations submitting Investigation Plans should have the necessary technical and administrative abilities and resources to ensure successful completion of studies. Entities submitting Investigation Plans may be of Commercial, Foreign, Individuals, Institutions of Higher Education, Hospitals, Other Non-Profit Organizations, State Government, Local Government, Federally-Recognized Indian Tribal Governments, Cooperative Ecosystem Studies Unit (CESU) Network and/or Federal Entities.

Monitoring Program funding is intended to provide new and improved information for management of subsistence fisheries on Federal public lands. Monitoring Program funding is not intended to duplicate existing programs. Agencies are discouraged from shifting existing projects to the Monitoring Program.

For ongoing projects in the Monitoring Program for which additional years of funding is being proposed, investigators should justify continuation, placing the proposed work in context with the ongoing work being accomplished.

U.S. non-profit, non-governmental organizations **must** provide a copy of their Section 501(c)(3) or (4) status determination letter received from the Internal Revenue Service.

Federal law mandates that all entities applying for Federal financial assistance must have a valid Dun & Bradstreet Data Universal Number System (DUNS) number and have a current registration in the System for Award Management (SAM). See Title 2 of the Code of Federal Regulations (CFR), Part 25 (2 CFR 25) for more information. Exemptions: The SAM registration requirement does not apply to individuals submitting an application on their own behalf and not on behalf of a company or other for-profit entity, state, local or Tribal government, academia or other type of organization.

Federal Award may not be made to an applicant until the applicant has complied with all applicable unique entity identifier and SAM requirements. Additionally, if an applicant has not fully complied with the requirements by the time the Service is ready to make the award, the Service may determine that the applicant is not qualified to receive a Federal award and use that determination as a basis for making a Federal award to another applicant.

**A. DUNS Registration**

Request a DUNS number online at http://fedgov.dnb.com/webform. U.S.-based entities may also request a DUNS number by telephone by calling the Dun & Bradstreet Government Customer Response Center, Monday – Friday, 7 AM to 8 PM CST at the following numbers:

U.S. and U.S Virgin Islands: 1-866-705-5711
Alaska and Puerto Rico: 1-800-234-3867 (Select Option 2, then Option 1)
For Hearing Impaired Customers Only call: 1-877-807-1679 (TTY Line)

Once assigned a DUNS number, entities are responsible for maintaining up-to-date information with Dun & Bradstreet.

**B. Entity Registration in SAM**

All applicants (unless the applicant is an individual or Federal awarding agency that is exempt from those requirements under 2 CFR §25.110(b) or (c) or has an exemption approved by the Federal awarding agency under 2 CFR §25.110(d) is required to:

i. Be registered in SAM before submitting its application;
ii. Provide a valid unique entity identifier in its application; and
iii. Continue to maintain an active SAM registration with current information at all times during which it has an active Federal award or an application or plan under consideration by a Federal awarding agency.

Register in SAM online at http://www.sam.gov/. Once registered in SAM, entities must renew and revalidate their SAM registration at least every 12 months from the date previously registered. Entities are strongly urged to revalidate their registration as often as needed to ensure that their information is up to date and in synch with changes that may have been made to DUNS and IRS information. Foreign entities who wish to be paid directly to a United States bank account must enter and maintain valid and current banking information in SAM.

**C. Excluded Entities**

Applicant entities identified in the SAM.gov Exclusions database as ineligible, prohibited/restricted or excluded from receiving Federal contracts, certain subcontracts, and certain Federal assistance and benefits will not be considered for Federal funding, as applicable to the funding being requested under this Federal program.

**D. Cost Sharing or Matching:**

For new projects with broad overlap of Federal and State management authority, matching funds are encouraged and should be included with all proposals. The OSM encourages a match for all proposals and applicants should document matching contributions.

**E. Independent project submission:**

Submissions should be for a single project and not joint or combined projects. An example would be for weir projects, each weir is a single project and two weirs should not be combined into one project

submission. Each weir should be an independent project submission.

IV. **Application Requirements**
To be considered for funding under this opportunity, a complete application package must contain:

A. **Application for Federal Assistance form**
A completed, signed and dated Application for Federal Assistance form SF-424 is required and can be found at https://www.doi.gov/subsistence/frmp/funding or http://apply07.grants.gov/apply/FormLinks?family=15. Do not include other Federal sources of funding, requested or approved, in the total entered in the "Federal" funding box on the Application for Federal Assistance form. Enter only the amount being requested under this program in the "Federal" funding box. Include any other Federal sources of funding in the total funding entered in the "Other" box.

B. **Project Abstract**
Briefly summarize the project, in one page or less. Include the title of the project, geographic location, and a brief overview of the need for the project. Goal(s), objectives, specific project activities, anticipated outputs and outcomes may also be included in this section. See https://www.doi.gov/subsistence/frmp/funding for investigation plan, project abstract, and project budget guidelines.

C. **Project Narrative (each of the following topics must be addressed)** See https://www.doi.gov/subsistence/frmp/funding for investigation plan, project abstract, and project budget guidelines.

1. **Statement of Need:** Describe why this project is necessary (significance/value) and include supporting information. Summarize previous or on-going efforts (of you/your organization, and other organizations or individuals) that are relevant to the proposed work. Explain the successes or failures of past efforts and how your proposed project builds on them. If you have received funding previously (from the Service or any other donor) for this specific project work or site, provide a summary of the funding, associated activities and products/outcomes.

2. **Relevance to Federal Subsistence Management:** All Fisheries Resource Monitoring Program Proposals must clearly articulate the relevance to Federal subsistence management. Proposals that do not demonstrate a clear link to Federal subsistence management will not be considered.

3. **Project Goals and Objectives:** State the long-term, overarching goal(s) of the project. State the objectives of the project. Objectives are the specific outcomes to be accomplished in order to reach the stated goal(s). The project objectives must be specific, measurable, and realistic (attainable within the project's proposed project period).

4. **Project Activities, Methods and Timetable:** List the proposed project activities and describe how they relate to the stated objectives. Activities are the specific actions to be undertaken to fulfill the project objectives and reach the project goal(s). The proposed project activities narrative must be detailed enough for reviewers to make a clear connection between the activities and the proposed project costs. For projects being conducted within the United States, the narrative must provide enough detail so that reviewers are able to determine project compliance with the National Environmental Policy Act, Section 7 of the Endangered Species Act, and Section 106 of the National Historic Preservation Act. For projects being conducted on the high seas, the narrative should provide enough detail so that reviewers are able to determine project

5. compliance with Section 7 of Endangered Species Act. Provide a detailed description of the method(s) to be used to carry out each activity. Provide a timetable indicating roughly when

6. activities or project milestones are to be accomplished. Include any resulting tables, spreadsheets or flow charts within the body of the project narrative (do not include as separate attachments). The timetable should not propose specific dates but instead group activities by month for each month over the entire proposed project period.

7. **Stakeholder Coordination/Involvement:** Describe how you/your organization has coordinated with and involved other relevant organizations or individuals in planning the project, and detail if/how they will be involved in conducting project activities, disseminating project results and/or incorporating your results/products into their activities. Letters of support from participating communities and/or partners are strongly encouraged to demonstrate that outreach has already occurred.

8. **Project Monitoring and Evaluation:** Detail the monitoring and evaluation plan for the project. Building on the stated project objectives, which must be specific and measurable, identify what you will measure and how you will measure. Reference the stated project timetable and budget information. Identify the products/services to be delivered and how/to whom they will be delivered. Detail the expected direct effect(s) of the project on beneficiaries. Include any available questionnaires, surveys, curricula, exams/tests or other assessment tools to be used for project evaluation. Describe the resources and organizational structure available for gathering, analyzing and reporting monitoring and evaluation data. If applicable, describe how project participants and beneficiaries will participate in monitoring and evaluation activities. Describe how findings will be fed back into decision making and project activities throughout the project period.

9. **Description of Entities Undertaking the Project**: Provide a brief description of the applicant organization and all participating entities and/or individuals. Identify which of the proposed activities each agency, organization, group, or individual is responsible for conducting or managing. Provide complete contact information for the individual within the organization that will oversee/manage the project activities on a day-to-day basis. Provide resumes or abbreviated CVs of no more than 5 pages for Principal Investigators (PI) and key personnel, and a brief (1-2 pages) but descriptive overview of their education, experience and other skills that make them qualified to carry out the proposed project. To prevent unnecessary transmission of Personally Identifiable Information, ***do not include Social Security numbers, the names of family members, or any other personal or sensitive information including marital status, religion or physical characteristics on the description of key personnel qualifications.***

10. **Sustainability:** As applicable, describe which project activities will continue beyond the proposed project period, who will continue the work or act on the results achieved, and how and at what level you expect these future activities will be funded or if **not** applicable to your proposal please mark this as Not Applicable.

11. **Literature Cited:** If **not** applicable to your proposal please mark this as Not Applicable.

12. **Map of Project Area:** Maps should clearly delineate the project area and be large enough to be legible. Preferably, two maps should be included; 1) a State map that highlights the location, and 2) a second map that provides an overview of the study location. Label any sites referenced in the project narrative or if **not** applicable to your proposal please mark this as Not Applicable.

13. **Statement(s) Regarding Single Audit Reporting**: Input the applicable statement from Section F. Single Audit Reporting Statements of this document.

**D. Budget Form**

Complete the **Budget Information for Non-Construction Programs (SF-424A)** or **Budget Information for Construction Programs (SF-424C) form**. Use the SF-424A if your project does not include construction and the SF-424C if the project includes construction or land acquisition. The budget forms are available online at https://www.doi.gov/subsistence/frmp/funding or http://apply07.grants.gov/apply/FormLinks?family=15. When developing your budget, keep in mind that financial assistance awards and sub-awards are subject to the cost principles in the following Federal regulations, as applicable to the recipient organization type.

Links to the full text of the Federal cost principles are available on the Internet at http://www.ecfr.gov/

**Multiple Federal Funding Sources**: If the project budget includes multiple Federal funding sources, you must show the funds being requested from this Federal program *separately* from any other requested/secured Federal sources of funding on the budget form. For example, enter the funds being requested from this Federal program in the first row of the Budget Summary section of the form and then enter funding related to other Federal programs in the subsequent row(s). Be sure to enter each Federal program's CFDA number in the corresponding fields on the form. The CFDA number for this Federal program appears on the first page of this funding opportunity.

**E. Budget Justification**

Submit a detailed budget table(s). A budget table template is provided at: https://www.doi.gov/subsistence/frmp/funding. In a separate narrative titled "**Budget Justification**", explain and justify all requested budget items/costs for each project year. Detail and justify if some or all of the first project year will be dedicated to field preparation and/or equipment acquisition. Detail how the Budget Object Class Category totals on the SF-424A were determined and demonstrate a clear connection between costs and the proposed project activities. For personnel salary costs, include the base-line salary figures and the estimates of time (as percentages) to be directly charged to the project. Describe any item that under the applicable Federal Cost Principles requires the Service's approval and estimate its cost.

If Federally-funded equipment will be used for the project, provide a list of that equipment including the Federal funding source.

**Required Indirect Cost Statement**: All applicants, except individuals applying for funds separate from a business or non-profit organization he/she may operate, **must** include in the budget justification narrative one of the following statements and attach to their application any required documentation identified in the applicable statement:

"We are:

1. A U.S. state or local government entity receiving more than $35 million in direct Federal funding each year with an indirect cost rate of [insert rate]. We submit our indirect cost rate proposals to our cognizant agency. A copy of our most recently approved rate agreement/certification is attached.

2. A U.S. state or local government entity receiving less than $35 million in direct Federal funding with an indirect cost rate of [insert rate]. We are required to prepare and retain for audit an indirect cost rate proposal and related documentation to support those costs.

3. A [insert your organization type; U.S. states and local governments, please use one of the statements above or below] that has previously negotiated or currently has an approved indirect cost rate with our cognizant agency. Our indirect cost rate is [insert rate]. A copy of our most

recently approved rate agreement is attached.

4. A [insert your organization type] that has never submitted an indirect cost rate proposal to our cognizant agency. Our indirect cost rate is [insert rate]. In the event an award is made, we will submit an indirect cost rate proposal to our cognizant agency within 90 calendar days after the award is made.

5. A [insert your organization type] that has never submitted an indirect cost rate proposal to our cognizant agency. Our indirect cost rate is [insert rate]. However, in the event an award is made, we will not be able to meet the requirement to submit an indirect cost rate proposal to our cognizant agency within 90 calendar days after award. We request as a condition of award to charge a flat de minimus indirect cost rate of 10% of modified total direct costs as defined in Title 2 of the Code of Federal Regulations Part 200, section 200.68. We understand that the 10% de minimus rate will apply for the life of the award, including any future extensions for time, and that the rate cannot be changed even if we do establish an approved rate with our cognizant agency at any point during the award period.

6. A [insert your organization type] that is submitting this proposal for consideration under the [insert either "Cooperative Fish and Wildlife Research Unit Program" or "Cooperative Ecosystem Studies Unit Network"], which has a Department of the Interior-approved indirect cost rate cap of [insert program rate]. If we have an approved indirect cost rate with our cognizant agency, we understand that we must apply this reduced rate against the same direct cost base as identified in our approved indirect cost rate agreement. If we do not have an approved indirect cost rate with our cognizant agency, we understand that the basis for direct costs will be the modified total direct cost base defined in 2 CFR 200.68 "Modified Total Direct Cost (MTDC)". We understand that we must request prior approval from the Service to use the MTDC base instead of the base identified in our approved indirect cost rate agreement, and that Service approval of such a request will be based on: 1) a determination that our approved base is only a subset of the MTDC (such as salaries and wages); and 2) that use of the MTDC base will still result in a reduction of the total indirect costs to be charged to the award.

7. A [insert your organization type] that will charge all costs directly.

**All applicants are hereby notified of the following:**

- Recipients without an approved indirect cost rate are prohibited from charging indirect costs to a Federal award. Accepting the 10% *de minimus* rate as a condition of award is an approved rate.
- Failure to establish an approved rate during the award period renders all costs otherwise allocable as indirect costs unallowable under the award.
- Only the indirect costs calculated against the Federal portion of the total direct costs may be charged to the Federal award. Recipients may not charge to their Service award any indirect costs calculated against the portion of total direct costs charged to themselves or charged to any other project partner, Federal and non-Federal alike.
- Recipients must have prior written approval from the Service to transfer unallowable indirect costs to amounts budgeted for direct costs or to satisfy cost-sharing or matching requirements under the award.
- Recipients are prohibited from shifting unallowable indirect costs to another Federal award unless specifically authorized to do so by legislation."

Applicants who are individuals applying for funds separate from a business or non-profit organization he/she may operate are not eligible to charge indirect costs to their award. If you are an individual applying for funding, do not include any indirect costs in your proposed budget.

For more information on indirect cost rates, see the Service's **Indirect Costs and Negotiated Indirect Cost Rate Agreements** guidance document on the Internet at: http://www.fws.gov/grants/ under the "Resources" tab.

**Negotiating an Indirect Cost Rate with the Department of the Interior**:
Entities that do not have a NICRA, must have an open, active Federal award to submit an indirect cost rate proposal to your cognizant agency. The Federal awarding agency that provides the largest amount of direct funding to your organization is your cognizant agency, unless otherwise assigned by the White House Office of Management and Budget (OMB). If the Department of the Interior is your cognizant agency, your indirect cost rate will be negotiated by the Interior Business Center (IBC). For more information, contact the IBC at:

Indirect Cost Services
Acquisition Services Directorate, Interior Business Center
U.S. Department of the Interior
2180 Harvard Street, Suite 430
Sacramento, CA 95815
Phone: 916-566-7111- Fax: 916-566-7110
Email: ics@nbc.gov
Internet address: https://www.doi.gov/ibc/services/finance/indirect-cost-services

F. **Single Audit Reporting Statements:** As required in **Title 2 of the Code of Federal Regulations (CFR) 200, Subpart F, Audit Requirements**, all U.S. states, local governments, federally-recognized Indian tribal governments, and non-profit organizations expending $750,000 USD or more in Federal award funds in a fiscal year must submit a Single Audit report for that year through the Federal Audit Clearinghouse's Internet Data Entry System.

**All U.S. state, local government, Federally-recognized Indian tribal government and non-profit applicants must provide a statement regarding if your organization was or was not required to submit a Single Audit report for the organization's most recently closed fiscal year. If required, state that the report is available on the Federal Audit Clearinghouse Single Audit Database website (https://harvester.census.gov/facweb/) and provide the EIN under which that report was submitted.**

See the following statements **and include all applicable statements at the end of the Project Narrative in number 10, titled: Statement(s) Regarding Single Audit Reporting.**

Single Audit Report **was** required:
My organization was required to submit a Single Audit report last year. The reporting period covered was from (insert date) to (insert date). This report, filed under EIN #(insert EIN), is available on the Federal Audit Clearinghouse Single Audit Database website (https://harvester.census.gov/facweb/) or will be by (insert date).

OR

Single Audit Report **was not** required:
My organization was not required to submit a Single Audit report last year.

G. **Assurances**
Include the appropriate signed and dated Assurances form available online at https://www.doi.gov/subsistence/frmp/funding or http://apply07.grants.gov/apply/FormLinks?family=15. Use the **Assurances for Construction**

**Programs (SF-424D)** for construction and land acquisition projects. Use the **Assurances for Non-Construction Programs (SF-424B)** for all other types of projects. Signing this form does not mean that all items on the form are applicable. The form contains language that states that some of the assurances may not be applicable to your organization and/or your project or program.

H. **Certification and Disclosure of Lobbying Activities:**
Under Title 31 of the United States Code, Section 1352, an applicant or recipient must not use any Federally appropriated funds (both annually appropriated and continuing appropriations) or matching funds under a grant or cooperative agreement award to pay any person for lobbying in connection with the award. Lobbying is defined as influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress connection with the award. Submission of an application also represents the applicant's Certification Regarding Lobbying. If you/your organization have/has made or agrees to make any payment using non-appropriated funds for lobbying in connection with this project AND the project budget exceeds $100,000, complete and submit the **SF LLL, Disclosure of Lobbying Activities** form. See 2 CFR 200.245, Lobbying and 2 FR 200.415, Certifications, for additional information.

**Application Checklist A: Non-Federal Entities**

***(Federal Entities see Checklist B)***

- ☐ **DUNS** Registration (see requirement in Section III Basic Eligibility Requirements, A Duns Registration)
- ☐ **SAM** active registration (see requirement in Section III Basic Eligibility Requirements, B Entity Registration in SAM)
- ☐ **Evidence of non-profit status**: If a non-profit organization, a copy of their Section 501(c)(3) or (4) status determination letter received from the Internal Revenue Service.
- ☐ **SF-424, Application for Federal Assistance**: A complete, signed and dated SF-424, SF-424 Mandatory, or SF-424 Individual form.
- ☐ **SF-424 Budget form**: A complete SF 424A or SF 424C Budget Information form.
- ☐ **SF-424 Assurances form:** Signed and dated SF-424B or SF-424D Assurances form.
- ☐ **Project Abstract**
- ☐ **Project Narrative/Investigation Plan** (including Letters of Support from participating communities or entities, when applicable)
- ☐ **Timetable** (should be included in the Project Narrative)
- ☐ **Description of Entities** undertaking the project
- ☐ **Resumes** for key personnel tailored to address experience and skills relevant to projects (5 pages maximum)
- ☐ **Single Audit Reporting statement**: If a U.S. state, local government, federally-recognized Indian tribal government, or non-profit organization, statements regarding applicability of and compliance with 2 CFR 200, Subpart F, Audit Requirement.
- ☐ **Budget Justification** with a detailed budget table
- ☐ **Federally-funded equipment list**: If Federally-funded equipment will be used for the project, a list of that equipment.
- ☐ **NICRA**: When applicable, a copy of the organization's current Negotiated Indirect Cost Rate Agreement.

- ☐ **Conflict of Interest Disclosures**: When applicable, written notification of any actual or potential conflicts of interest that may arise during the life of this award.
- ☐ **SF-LLL form:** If applicable, completed SF-LLL Disclosure of Lobbying Activities form.

**Application Checklist B: Federal Entities**

- ☐ **Project Abstract**, if applicable
- ☐ **Project Narrative/Investigation Plan** (including Letters of Support from participating communities or entities, when applicable)
- ☐ **Timetable**
- ☐ **Description of Entities** undertaking the project
- ☐ **Resumes** for key personnel tailored to address experience and skills relevant to projects (5 pages maximum)
- ☐ **Budget Justification** and a detailed budget table
- ☐ **Federally-funded equipment list**: If Federally-funded equipment will be used for the project, a list of that equipment
- ☐ **Conflict of Interest Disclosures**: When applicable, written notification of any actual or potential conflicts of interest that may arise during the life of this award.

In order to be considered, all documents must be received by the deadline.

V. Submission Instructions

**SUBMISSION DEADLINE**: All proposals and required information from the Application Checklist, are to be submitted to the Office of Contracting and General Services by February 20, 2017 by 5:00 PM Alaska Standard Time. Applicants are encouraged to submit their packages well before the submission deadline. If you have any questions prior to the submission deadline, contact the OSM Grants Management Specialist at (907) 786-3691.

**Intergovernmental Review:** Before submitting an application, U.S. state and local government applicants should visit the following website (http://www.whitehouse.gov/omb/grants_spoc/) to determine whether their application is subject to the state intergovernmental review process under Executive Order (E.O.) 12372 "Intergovernmental review of Federal Programs." E.O. 12372 was issued to foster the intergovernmental partnership and strengthen federalism by relying on state and local processes for the coordination and review of proposed Federal financial assistance and direct Federal development. The E.O. allows each state to designate an entity to perform this function. The official list of designated entities is posted on the website. Contact your state's designated entity for more information on the process the state requires to be followed when applying for assistance. States that do not have a designated entity listed on the website have chosen not to participate in the review process.

**Funding Cap**: $215,000.00. Cooperative agreements which exceed $215,000.00 per year will not be awarded.

Download the Application Package linked to this Funding Opportunity on Grants.gov to begin the application process. The application package may also be accessed on the web at https://www.doi.gov/subsistence/frmp/funding. Downloading and saving the Application Package to your computer makes the required government-wide standard forms fillable and printable. Completed applications may be submitted by email, electronically through Grants.gov, or as otherwise described in the Grants.gov funding opportunity. Please select **ONE** of the submission options:

***To submit an application by e-mail:*** Format all of your documents to print on Letter size (8 ½" x 11") paper. Format all pages to display and print page numbers. Scanned documents should be scanned in Letter format, as black and white images only. Where possible, save scanned documents in .pdf format. Email your submission package to: fw7_fa_cgs@fws.gov with the subject line "PROPOSAL for NOFO F17AS00028". If you have any issues submitting your proposal through electronic format, please contact the OSM Grants Management Specialist at 907-786-3691.

The required SF-424 Application for Federal Assistance and Assurances forms and any other required standard forms MUST be signed by your organization's authorized official. The Signature and Date fields on the standard forms downloaded from Grants.gov are pre-populated with the text "Completed by Grants.gov upon submission" or "Completed on submission to Grants.gov". **Remove this text (manually or digitally) before signing the forms.**

***To submit an application through Grants.gov:***
Go to the Grants.gov (http://www.grants.gov/web/grants/home.html) and search for the Funding Opportunity number F17AS00028. You/your organization must complete the Grants.gov registration process before submitting an application. Registration can take between three to five business days, or as long as two weeks if all steps are not completed in a timely manner.

**Important note on Grants.gov application attachment file names:** Please do not assign application attachments file names longer than 20 characters, including spaces. Assigning file names longer than 20 characters will create issues in the automatic interface between Grants.gov and the Service's financial assistance management system.

**Federal Agency Applicants** may submit proposals for funding under this NOFO as authorized under the Alaska National Interest Lands Conservation Act (ANILCA) of 1980, Title VIII, Public Law 96-487, 16 U.S.C. 3101-3233, Section 809, and must submit their proposals directly to the granting agency point of contact identified in Section VIII *Agency Contacts*. Submission must be by email as described above *(Federal agencies will be rated using the same merit review process as all other applicants).*

**NOTE:** *In the event a Fish and Wildlife Service Program submits a proposal and is awarded funding, if they intend to issue a subaward or contract, they MUST go through the applicable standard procurement process. They CANNOT use this announcement for the purpose of awarding a separate contract or financial assistance award.*

**VI. APPLICATION REVIEW**
**Criteria:** All projects must have a direct linkage to a subsistence fishery within a Federal conservation unit to be eligible for funding under the Monitoring Program and are evaluated using the following five, equally weighted criteria:

- Strategic Priorities: Studies must be responsive to identified issues and priority information needs. All projects must have a direct linkage to Federal public lands and/or waters to be eligible for funding under the Monitoring Program. To assist in evaluation of submittals for projects previously funded under the Monitoring Program, investigators must summarize project findings in their investigation plans. This summary should clearly and concisely document project performance, key findings, and uses of collected information for Federal subsistence management. Projects should address the following topics to demonstrate links to strategic priorities:

  - Federal jurisdiction,
  - Conservation mandate,
  - Potential impacts on the subsistence priority,
  - Role of the resource, and

- Local concern.

- Technical-Scientific Merit- Technical quality of the study design must meet accepted standards for information collection, compilation, analysis, and reporting. Studies must have clear objectives, appropriate sampling design, correct analytical procedures, and specified progress, annual, and final reports.

- Investigator Ability and Resources- Investigators must show they are capable of successfully completing the proposed study by providing information on the ability (training, education, and experience) and resources (technical and administrative) they possess to conduct the work. Applicants that have received funding in the past will be evaluated and ranked on their past performance, including fulfillment of meeting deliverable deadlines as outlined in Section VI. Award Administration Information under "Reporting". A record of failure to submit reports or delinquent submittal of reports will be taken into account when rating investigator ability and resources.

- Partnership-Capacity Building- Collaborative partnerships and capacity building are priorities of the Monitoring Program. ANILCA Title VIII mandates that rural residents be afforded a meaningful role in the management of subsistence fisheries, and the Monitoring Program offers opportunities for partnerships and participation of local residents in monitoring and research. Investigators are requested to include a strategy for integrating local capacity development in their Investigation Plans. Investigators must not only inform communities and regional organizations in the area where work is to be conducted about their project plans, but must also consult and communicate with local communities to ensure that local knowledge is utilized and concerns are addressed. Letters of support from local communities or organizations that will collaborate on the proposed project add to the strength of a proposal. Investigators and their organizations must demonstrate their ability to maintain effective local relationships and commitment to capacity building. This includes a plan to facilitate and develop partnerships so that investigators, communities, and regional organizations can pursue and achieve the most meaningful level of involvement.

  Investigators are encouraged to develop the highest level of community and regional collaboration that is practical. Investigators must demonstrate that capacity building has already reached the communication or partnership development stage during proposal development, and ideally, include a strategy to develop capacity building to higher levels, recognizing, however, that in some situations higher level involvement may not be desired or feasible by local organizations. Successful capacity building requires developing trust and dialogue among investigators, local communities, and regional organizations. Investigators need to be flexible in modifying their work plan in response to local knowledge, issues, and concerns, and must also understand that capacity building is a reciprocal process in which all participants share and gain valuable knowledge. The reciprocal nature of the capacity building component(s) must be clearly demonstrated in proposals.

- Cost Benefit

  Cost/Price Factors
  Applicant's cost/price proposal will be evaluated for reasonableness. For a price to be reasonable, it must represent a price to the government that a prudent person would pay when consideration is given to prices in the market. Normally, price reasonableness is established through adequate price competition, but may also be determined through cost and price analysis techniques.

Selection for Award
Applicant should be aware that the Government shall perform a "best value analysis" and the selection for award shall be made to the Applicant whose proposal is most advantageous to the Government, taking into consideration the technical factors listed above and the total proposed price across all agreement periods.

**Review and Selection Process:**
Investigation Plans will be reviewed and evaluated by Office of Subsistence Management and Forest Service staff, and then by the Technical Review Committee. This committee is comprised of representatives from each of five Federal agencies involved with subsistence management, and relevant experts from the Alaska Department of Fish and Game. Their function is to provide evaluation, technical oversight, and strategic direction to the Monitoring Program. Each proposal will be rated based on the above criteria.

Project Abstracts and associated Technical Review Committee proposal ratings will be assembled into a draft 2018 Fisheries Resources Monitoring Plan. The draft plan will be distributed for public review and comment through Regional Advisory Council meetings, beginning in August 2017. The Federal Subsistence Board will review the draft plan and will accept additional written and oral comments at its January 2018 meeting. At that time, the Federal Subsistence Board will make a recommendation to the ARD OSM on the suite of projects to include within the final 2018 Fisheries Resource Monitoring Plan. Investigators will subsequently be notified in writing of the status of their proposal.

**Risk Assessment:**
As part of the review process, the U.S. Fish and Wildlife Service is required in accordance with the Department of Interior Guidance (DIG 2011-03), to conduct a risk assessment prior to the award of an Financial Assistance Agreements or a revision to increase funding. The requirement states that once a Fiscal Year (FY) each recipient, who will be awarded one or more grant or cooperative agreement award(s), will have a risk assessment conducted. The risk assessment will include, but is not limited to the following areas:

- Potential for Implementation problems
- Financial Management Systems and Funds Management Records
- Performance Track Record
- Staff Level and Key Qualifications
- Project Delivery Experience
- Award Administration and Reporting Compliance
- Single Audit Submissions and Results
- Other Factors that may Impact Risk Level

The results of the assessment will determine the appropriate level of monitoring activities that the Service will require for successful project/award completion. If you are selected for award under this NOFO, all applicable monitoring protocols will be incorporated into your Notice of Award Letter (NOAL).

VII. **Federal Award Administration**
**Federal Award Notices:** Following review, applicants may be requested to revise the project scope and/or budget before an award is made. Successful applicants will receive written notice in the form of a notice of award document. Notices of award are typically sent to recipients by e-mail. If e-mail notification is unsuccessful, the documents will be sent by courier mail (e.g., FedEx, DHL or UPS). Award recipients are not required to sign/return the Notice of Award document. Acceptance of an award is defined as starting work, drawing down funds, or accepting the award via electronic means. Awards are based on the application submitted to, and as approved by, the Service. The notice of award document will include instructions specific to each recipient on how to request payment. If applicable, the

instructions will detail any additional information/forms required and where to submit payment requests. Applicants whose projects are not selected for funding will receive written notice, most often by e-mail, within 30 days of the final review decision.

**Administrative and National Policy Requirements:**

i. **Domestic Recipient Payments:** Prior to award, the Service program office will contact you/your organization to either enroll in the U.S. Treasury's Automated Standard Application for Payments (ASAP) system or, if eligible, obtain approval from the Department of the Interior to be waived from using ASAP.

Domestic applicants subject to the SAM registration requirement (see Section III B.) who receive a waiver from receiving funds through ASAP must maintain current banking information in SAM. Domestic applicants exempt from the SAM registration requirement who receive a waiver from receiving funds through ASAP will be required to submit their banking information directly to the Service program. However, ***do NOT submit any banking information to the Service until it is requested from you by the Service program!***

**Foreign Recipient Payments:** Foreign recipients receiving funds to a bank outside of the United States will be paid electronically through U.S. Treasury's International Treasury Services (ITS) system.

Foreign recipients receiving funds electronically to a bank in the United States will be paid by Electronic Funds Transfer (EFT) through the Automated Clearing House network. Foreign recipients who wish to be paid to a bank account in the United States must enter and maintain current banking information in SAM (see Section III).

The Notice of Award document from the Service will include instructions specific to each recipient on how to request payment. If applicable, the instructions will detail any additional information/forms required and where to submit payment requests.

ii. **Transmittal of Sensitive Data:** Recipients are responsible for ensuring any sensitive data being sent to the Service is protected during its transmission/delivery. The Service strongly recommends that recipients use the most secure transmission/delivery method available. The Service recommends the following digital transmission methods: secure digital faxing; encrypted emails; emailing a password protected zipped/compressed file attachment in one email followed by the password in a second email; or emailing a zipped/compressed file attachment. The Service strongly encourages recipients sending sensitive data in paper copy to use a courier mail service. Recipients may also contact their Service Project Officer and provide any sensitive data over the telephone.

iii. **Award Terms and Conditions:** Acceptance of a financial assistance award (i.e., grant or cooperative agreement) from the Service carries with it the responsibility to be aware of and comply with the terms and conditions applicable to the award. Acceptance is defined as the start of work, drawing down funds, or accepting the award via electronic means. Awards are based on the application submitted to and approved by the Service and are subject to the terms and conditions incorporated into the notice of award either by direct citation or by reference to the following: Federal regulations; program legislation or regulation; and special award terms and conditions. The Federal regulations applicable to Service awards are available on the Internet at http://www.fws.gov/grants/. If you do not have access to the Internet and require a full text copy of the award terms and conditions, contact the Service point of contact identified in the Agency Contacts section below.

iv. By submission of an application, the applicant represents that it does not require employees or contractors seeking to report fraud, waste, or abuse to sign internal confidentiality agreements or

v. statements prohibiting or otherwise restricting such employees or contractors from lawfully reporting such waste, fraud, or abuse to a designated investigative or law enforcement representative of a Federal department or agency authorized to receive such information. Applicants out of compliance with this condition are ineligible to compete for or receive an award.

**Recipient Reporting Requirements**:

i. **Financial and Performance Reports**: Interim financial reports and performance reports may be required. Interim reports will be required no more frequently than quarterly, and no less frequently than annually. A final financial report and a final performance report will be required and are due within 90 calendar days of the end date of the award. Performance reports must contain: 1) a comparison of actual accomplishments with the goals and objectives of the award as detailed in the approved scope of work; 2) a description of reasons why established goals were not met, if appropriate; and 3) any other pertinent information relevant to the project results.

ii. **Significant Development Reports (SDR):**
Events may occur between the scheduled performance reporting dates that have significant impact upon the supported activity. In such cases, recipients are required to notify the Service in writing as soon as the following types of conditions become known:

- Problems, delays, or adverse conditions that will materially impair the ability to meet the objective of the Federal award. This disclosure must include a statement of any corrective action(s) taken or contemplated, and any assistance needed to resolve the situation.
- Favorable developments that enable meeting time schedules and objectives sooner or at less cost than anticipated or producing more or different beneficial results than originally planned.

The Service will specify in the notice of award document the reporting and reporting frequency applicable to the award.

iii. **Conflict of Interest Disclosures (COI):**
The recipient must establish safeguards to prohibit its employees and subrecipients from using their positions for purposes that constitute or present the appearance of a personal or organizational conflict of interest. The recipient is responsible for notifying the Grants Officer in writing of any actual or potential conflicts of interest that may arise during the life of this award. Conflicts of interest include any relationship or matter which might place the recipient or its employees in a position of conflict, real or apparent, between their responsibilities under the agreement and any other outside interests. Conflicts of interest may also include, but are not limited to, direct or indirect financial interests, close personal relationships, positions of trust in outside organizations, consideration of future employment arrangements with a different organization, or decision-making affecting the award that would cause a reasonable person with knowledge of the relevant facts to question the impartiality of the recipient and/or recipient's employees and subrecipients in the matter.

The Grants Officer and the servicing Ethics Counselor will determine if a conflict of interest exists. If a conflict of interest exists, the Grants Officer will determine whether a mitigation plan is feasible. Mitigation plans must be approved by the Grants Officer in writing. Failure to resolve conflicts of interest in a manner that satisfies the government may be cause for termination of the award.

Failure to make required disclosures may result in any of the remedies described in 2 CFR 200.338; including suspension or debarment (see also 2 CFR part 180).

iv. **Other Mandatory Disclosures:**
Recipients and their subrecipients must disclose, in a timely manner, in writing to the Service or

pass-through entity all violations of Federal criminal law involving fraud, bribery, or gratuity violations potentially affecting this award. Non-Federal entities that have received a Federal award including the term and condition outlined in 2 CFR 200, Appendix XII—Award Term and Condition for Recipient Integrity and Performance Matters are required to report certain civil, criminal, or administrative proceedings to SAM. Failure to make required disclosures can result in any of the remedies described in 2 CFR 200.338, Remedies for noncompliance, including suspension or debarment (See 2 CFR 200.113, 2 CFR Part 180, 31 U.S.C. 3321, and 41 U.S.C. 2313).

**VIII. Federal Awarding Agency Contacts**

Rich Primmer, Grant Officer, Office of Contracting and General Services, U.S. Fish and Wildlife Service, 1011 East Tudor Road, MS 171, Anchorage, Alaska 99503, phone: 907-786-3611, fax: 907-786-3923 or Katherine Smiley, Grant Officer, Office of Contracting and General Services, U.S. Fish and Wildlife Service, 1011 East Tudor Road, MS 171, Anchorage, Alaska 99503, phone: 907-786-3412, fax: 907-786-3923.CGS email: fw7_fa_cgs@fws.gov

**APPENDIX B**

**TECHNICAL REVIEW COMMITTEE**

August 2, 2018

| | |
|---|---|
| Ms. Amy Craver | Cultural Resources and Subsistence Program Manager, Denali National Park and Preserve, National Park Service Alaska Regional Office, Anchorage |
| Dr. James Fall | Statewide Subsistence Program Manager, Subsistence Division, Alaska Department of Fish and Game, Anchorage |
| Mr. Frank Harris | Fisheries Division Supervisor (acting), Office of Subsistence Management, U.S. Fish and Wildlife Service Regional Office, Anchorage |
| Mr. James Hasbrouck | Chief Fisheries Scientist, Sport Fish Division, Alaska Department of Fish and Game, Anchorage |
| Ms. Philippa Kenner | Anthropologist, Anthropology Division, Office of Subsistence Management, U.S. Fish and Wildlife Service Alaska Regional Office, Anchorage |
| Dr. Linda Kruger | Research Social Scientist, Pacific Northwest Research Station, Juneau Forestry Sciences Laboratory, U.S Forest Service, Juneau |
| Mr. Aaron Martin | Fish and Aquatic Conservation Program Coordinator, U.S. Fish and Wildlife Alaska Regional Office, Anchorage |
| Dr. Rachel Mason | Senior Cultural Anthropologist, National Park Service Alaska Regional Office, Anchorage |
| Ms. Patricia Petrivelli | Subsistence Anthropologist, Bureau of Indian Affairs Alaska Regional Office, Anchorage |
| Mr. Daniel Sharp | Subsistence Coordinator, Bureau of Land Management Alaska State Office, Anchorage |
| Mr. Terry Suminski | Subsistence Program Manager, Tongass National Forest, Sitka Supervisor's Office, U.S. Forest Service, Sitka |
| Mr. William Templin | Chief Fisheries Scientist, Commercial Fisheries Division, Alaska Department of Fish and Game, Anchorage |

*Technical Review Committee* *October 19, 2018*

**APPENDIX C**

**FEDERAL SUBSISTENCE BOARD WORK SESSION FEBRUARY 22, 2018**

**PAGES 6 TO 35 OF TRANSCRIPTS**

*Technical Review Committee* *October 19, 2018*

be removed and put in cue for further consideration. This is the result of decisions made at the Southeast RAC a couple of weeks ago.

CHAIRMAN CHRISTIANSON: Okay.

MR. OWEN: Thank you, Mr. Chair.

CHAIRMAN CHRISTIANSON: Any other additional information.

(No comments)

CHAIRMAN CHRISTIANSON: All right. We'll move into review and adopt the agenda. If there's any changes, additions, deletions, we'll need a motion to accept the agenda.

MR. BROWER: So moved, Mr. Chair.

CHAIRMAN CHRISTIANSON: There's a motion to accept the agenda as presented.

MR. OWEN: Second.

CHAIRMAN CHRISTIANSON: Second. Any discussion.

(No comments)

CHAIRMAN CHRISTIANSON: Call for the question. All in favor signify by saying aye.

IN UNISON: Aye.

CHAIRMAN CHRISTIANSON: Opposed same sign.

(No opposing votes)

CHAIRMAN CHRISTIANSON: Motion carries unanimously. So we've already done information exchange. If there's no other anything anybody wants to share, we'll go ahead and move on to number 3, which is recommendations on the 2018 Fisheries Resource Monitoring Program. If we can have Jennifer and Karen Hyer come up and present, please.

MS. HYER: Good morning, Mr. Chairman

and Board members. For the record my name is Karen Hyer and I'm a fisheries biologist with the Office of Subsistence Management.

MS. HARDIN: Good morning, Mr. Chair and members of the Board. My name is Jennifer Hardin and I'm the subsistence policy coordinator for the Office of Subsistence Management.

MS. HYER: So today we're going to talk about the Fisheries Resource Monitoring Program and the Fisheries Resource Plan within that program, but before we launch into that discussion I just wanted to point out in your cover you'll see a copy of Oncorhynchus. Another part of the Fisheries Resource Monitoring Program is our Partners for Fisheries Monitoring and these are two of our partners that ran a summer camp out of Bethel this summer. So please, when you have a moment, just have a look at their accomplishments.

When the Federal government assumed responsibility for management on Federal public lands, the Department of the Interior and the Department of Agriculture made a commitment to increase the quantity and quality of information available for management of subsistence fisheries on Federal public lands. The Resource Monitoring Program was created in 2000. This program was to identify and provide information needed to sustain subsistence fisheries on Federal public lands.

The Fisheries Resource Monitoring Program is organized around six regions that correspond to fish stock, harvest and community issues held in common within an area. One of the main functions of the Fisheries Resource Monitoring Program is to develop the biannual Fisheries Resource Monitoring Plan. This plan consists of fisheries research and monitoring projects that provide information to manage subsistence fisheries on Federal public lands.

Since its inception the Fisheries Resource Monitoring Plan has funded $117 million worth of projects. The funds have supported projects administered by the Federal and State government, rural Alaskan organizations, non-profits and universities. These projects have been spread through the six regions of Alaska. When a project spans more than one region,

it is considered multi-regional.

Submitted proposals are reviewed for their technical merit and scored by the Technical Review Committee. The Technical Review Committee members are the only ones that see the whole project proposal. The proposals are then reviewed by the Regional Advisory Council for their application to important regional subsistence issues. Finally, the Interagency Staff Committee provides comment concerning the projects and then the Federal Subsistence Board provides its recommendation about the plan.

The Technical Review Committee was foundational to ensure the credibility and the scientific integrity of the proposed evaluation process. The Technical Review Committee consists of senior technical experts from Federal and State agencies. The Office of Subsistence Management's ARD makes the Technical Review Committee appointments.

The current members consist of the Bureau of Indian Affairs, the Bureau of Land Management, the National Park Service, Fish and Wildlife Service, the Forest Service and the Alaska Department of Fish and Game with the Office of Subsistence Management as the co-chairs.

The Technical Review Committee reviews and scores every submitted proposal. They are committed to an interdisciplinary approach striving for a 50/50 split between biologists and anthropologists.

Some of the program's major policies and funding guidelines are outlined on this slide. Projects may be funded for up to four years. Studies shouldn't be duplicate of existing projects. Whenever possible Monitoring Program funding will be dedicated to non-Federal agencies. Long-term projects are currently considered on a case-by-case basis. In this climate of declining Federal funds, it is imperative that we are making the best decisions with the funding that we have.

There are some activities that are not eligible for funding and they include hatchery propagation, mitigation, restoration and enhancement, habitat protection, contaminant assessment evaluation and monitoring, projects where the primary objective is

outreach or education such as science camps, technician training, intern programs.

Five criteria are used for evaluation of the projects. Strategic priority. Studies must have a Federal nexus and be responsive to identified issues and priority information needs. Technical quality of the study design must meet acceptable standards for information collection, analysis and reporting. Investigators must show they are capable of successfully completing the proposed study.

Collaborative partnerships and capacity building are priorities of the Fisheries Resource Monitoring Program. ANILCA Title VIII mandates that rural residents be afforded a meaningful role in management of subsistence fisheries. The Fisheries Resource Monitoring Program offers that opportunity for partnership and participation of local residents in the monitoring research. The final one is application cost of the proposal will be evaluated for reasonableness.

General budget guidelines are established by geographic region. These are listed on the slide. The budget guidelines provide an initial target for planning; however, they are not final allocations. They are adjusted annually as needed to ensure quality projects are funded.

In 2018, 53 projects were submitted for consideration totaling $5.9 million based on the average annual cost. Of these, the Technical Review Committee recommended for funding 38 projects, totaling $4.68 million. We're going to switch to the slide that has Table A and it will show you the projects that were submitted. So these are the projects that were submitted. They're also in the back of Tab 1. Everything in green is what the TRC recommended for funding.

In 2018, the Department of the Interior is allocating $1.5 million for the Fisheries Resource Monitoring Plan and the U.S. Forest Service is allocating $616,000 for a total of $2.1 million. This slide shows the Department of Interior's allocation by region for 2018. There's a table we'll show you after this. The slide shows you the U.S. Forest Service allocation by region.

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This is the final projects in order that we are recommending for funding. This is also in the back of your book. That ends my presentation.

Any questions.

CHAIRMAN CHRISTIANSON: Thank you, Karen.

MR. PELTOLA: Mr. Chair, if I may. With regard to FRMP, it's not a requirement of the funding process, but also there's a couple other considerations with regard to potential final allocation of funds with regard to FRMP. One, these are all considered new starts in this fiscal year and we're under a continuing resolution. We cannot make final decisions until we get a budget.

Secondly, this is a granting process and grants have to be reviewed and approved for anything over $50,000 per year, which the majority of ours are. So those are two additional steps we have to take into consideration before we finalize the list on what potentially will be funded.

In addition to during the presentation, of the money that comes through the Department of Interior we're comfortable with stipulating up to $1.5 million for new starts. Although that overall figure could vary by the time we make a final decision and get through the process as a whole.

The reason being is that at times we have salary savings. They'll pay for a PCS or another project does not run as much. So there may be a little bit more funding available than I originally committed $1.5 million. Although prior to this point we weren't comfortable making a firm commitment at a higher dollar figure.

CHAIRMAN CHRISTIANSON: Greg.

MR. SIEKANIEC: Thank you, Mr. Chair. Through the Chair, Gene. Something you said about the continuing resolution. We know it won't be before March 23rd. Does that put any projects in jeopardy of being too late to start?

MR. PELTOLA: If I may, Mr. Chair. It

has been a continual and rightfully so appropriate question coming to OSM, are we potentially going to get funded, because a lot of these projects have to start seasonally.

MR. SIEKANIEC: Yeah.

MR. PELTOLA: And within some regions that season is a lot earlier than other regions. So that could potentially be challenge.

MR. BROWER: Mr. Chair.

CHAIRMAN CHRISTIANSON: Charlie.

MR. BROWER: So there are 53 proposals and 29 of them were continuous projects that were funded before or they had a timeframe or their funding was expiring or there's just continuation of more funding?

MS. HYER: We do have projects in the water. I don't know the exact number, but those are funded for four years, so funding goes to those. The 53 projects were what were submitted for consideration and of those, based on the five criteria, TRC recommended 38 of those for funding. Unfortunately, that total funding then is $4.6 million and we don't have $4.6 million to fund all the projects. It's $4.6 million for total funding and we have about $2.1 million. So we can fund about half of them.

MR. BROWER: So what happened to the other 24 that weren't budgeted or funded?

MS. HYER: These are for new starts, projects that are new. The other projects are funded for their duration from -- some projects are only for two years, some are for four. It depends on what the investigator has requested. But the ongoing projects are funded with a different pot of money. It's the same pot of money, but the money is allocated -- the FRMP is allocated to the continuation projects first.

MR. BROWER: So some of the projects that were funded with a timeframe of four years or more and they continue over four years, do you continue to fund them until they're completed?

MS. HYER: Excuse me. Can you repeat that.

MR. BROWER: Out of these funded projects that you have on a four year cycle, when their term elapses and they're still not finished with the proposal, do you continue funding them?

MS. HYER: Mr. Brower. When projects are submitted, we fund up to four years. So if a project is ongoing beyond four years, then they have to resubmit. Of the 29 -- Jennifer just pointed out, the 29 projects -- of all the projects that were submitted there were 29 that had finished their four-year funding cycle and they're applying for continued funding, but every four years they have to submit a new proposal to us.

MR. BROWER: Do they still rank high after some of those other proposals were ranking low where maybe had the option to bring those lower ranking proposals up and not continue with a previous project?

MS. HYER: The proposals -- the mere fact that they're a continuation does not make them rank higher than other proposals. Each proposal is evaluated on the five criteria. So a continuing proposal has the advantage that if an investigator has been successful in the past, it's easy to point to the last four years of success, but some of our investigators have been very successful in other arenas collecting funding that they can point to, their success there or they run other projects in our program.

So they can say, well, this is a new project but I have the ability because I ran this other project for four years or eight years or two years. So they have that opportunity. But each project is judged on its own merits and it's judged on the project proposal that is submitted to us. It is not judged higher because it's a continuing project.

MR. BROWER: Okay. Thank you. I was just curious because some of the other proposals are in need of a study, but due to lack of ranking they're never seen. I believe some of our constituents out there want to get something out of these projects to see what's happening with the changing climate and

changing environment with the water and so on.

I noticed that Southcentral and Southeast get a pretty big portion of the funding. Do they have a project partnership or something in line with those and the others that don't get the ranking don't have that quality of partnership in place?

MS. HYER: Southeast is funded through DOA funding, so that is a different pot of money than the DOI funding. So the other regions are funded from the DOI pot of money. Southcentral has a contribution of both DOA and DOI money, so that's something to keep in mind.

The other thing to keep in mind is that once a proposal is submitted to us and the TRC reviews it, those comments go back to the investigator eventually and we often will say this is a good idea, it's important to our RACs, but this proposal falls short in these areas, so please beef up the proposal and resubmit it.

We have had situations where investigators have taken that and they have changed their proposals and resubmitted to our program successfully. We even have situations where the investigators have taken our comments, upgraded their proposal and submitted to other funding sources successfully. So there is a feedback loop in the process.

MR. BROWER: Thank you, Mr. Chair. Thank you.

CHAIRMAN CHRISTIANSON: Good question. Any other questions for the Staff. I've got two here.

Bert first.

MR. FROST: So you've got $4.6 million requested, $2.1 million available. So these 18 projects here are these the ones that are being forwarded for approval today out of the 39 that passed the Technical Review Committee?

MS. HYER: Yes. Those are the projects based on the $1.5 million and then the $600,000 from the Forest Service. So that is where we'd start

funding.

MR. FROST: So this is basically the cut line out of the 39 projects that were passed.

MS. HYER: That's correct.

MR. FROST: I assume those other ones are in ranked priority too. So if other funds became available or one of these dropped out you just keep working down the list, is that right?

MS. HYER: That is correct. Historically we have added projects as we know our budget is more final or we have money because we haven't spent it in other places, yes.

MR. FROST: Okay.

CHAIRMAN CHRISTIANSON: Greg.

MR. SIEKANIEC: Thank you, Mr. Chair. Karen, Jennifer. For starters, I'd like to say thank you. This took a lot of work. It takes a lot of engagement by a lot of people to sort of develop a process and then move your way through it and get to a final recommendation. So for that I'd say thank you and well done.

I do have some questions that seemed to come up when I was reading through the information that was provided. One of them in particular is along the lines of the Regional Advisory Committee comments. There seemed to be a fair number that were making recommendations that were different than what the Technical Review Committee had perhaps made. I did not see any places that really were obvious where that influenced anything.

Is that not intended to be an engagement that has the opportunity for influencing the outcomes? I'm thinking because of the deference that goes to Regional Advisory Committees and how we might think about that in this process.

MS. HYER: Mr. Chairman. Board members. I do not think -- as far as deference, I don't think the RACs have deference in the FRMP. I thought that was the regulatory arena. I'm looking at

Ken for confirmation.

MR. LORD: That is correct.

MR. SIEKANIEC: Thank you. So the sense I got from that writing was maybe that wasn't real clear. Maybe that's one of those areas then we need to sort of really add some clarity around when we do go back to the Regional Advisory Committees because they were very much making recommendations in there, but there was no formal process for them to make a motion on the record and to move it forward. So I think that's a consideration.

I also noticed that there were quite a number that ended up being tied, same scores. We don't get the scoring to see what the other ones look like. So my question or maybe a thought is have we weighted our criteria appropriately. If you're getting everything jammed up and really, really tight scores, you might need some additional separation by reconsidering how you're weighing the criteria to help you get more definition around the different projects.

I don't know if you have any thoughts on that or not.

MS. HYER: I think the scores being tied is reflective of how important the projects are and that there were a lot of good projects submitted. I think it's worth taking note how many projects the TRC recommended for funding. So those are all good, sound projects. If they're not, they wouldn't be recommended for funding. So that is the case.

When we put the notice of funding award out, we said that we would be -- I can't remember the exact wording, but we would consider in the case of a tie the actual cost of the project and lean towards the cheaper project. So that was stated in our notice of funding.

But in the North Slope for example, the Regional Advisory Council was very interested in the Nuiqsut project and they spoke to that. There were three tied projects there and that is not the cheapest project. We did reorder those projects because of that RAC input. So that is one place that the RAC input comes in very handy.

MR. SIEKANIEC: Thank you. So I also noticed -- I understood this was the table that's being recommended, but I also see in the Interagency Staff comments associated with -- well, it's Project No. 18-252. In the write-up, it says it's recommended that it's not ready for funding, but yet it's in the list. Is that just something that needs to be corrected? Maybe it's just a process question.

MR. PELTOLA: Mr. Chair, if I may.

CHAIRMAN CHRISTIANSON: Yes.

MR. PELTOLA: If you look at what comes out of the TRC, under the old system it used to be like a red light/green light, recommended or not recommended for funding. The product of the TRC is a ranking associated based on the criteria. That establishes the order so to speak that all the projects are placed on. There are individual comments coming from the ISC when they're conducted in their review and those are also taken into consideration. Where those comments may come into a more significant role is that especially if there's a tie between projects.

If you look at the regions that we have with regard to FRMP, each of those regions via the program has been established with a certain percentage of funding targeted to that specific region. Those comments, whether it be from ISC or the RAC, those become significant in the sense that -- if we go to region X and we have $400,000 and say there's three projects which are -- in this case, like the list of 18, we can go down there and there's $50,000 left. That goes off to the side.

Once we get through all the regions, then there's a pool of money so to speak that is not allocated to a specific region. In those instances, we go back to the overall list and take the highest ranked project and if we have the next highest ranked project or three or four of them on the same plane, then the comments from the Regional Advisory Council plays a significant role in addition to the comments from other entities such as the Board and ISC could play a factor there as well.

MR. SIEKANIEC: Thank you, Gene. So I guess I'm still not certain. So 18-252 being

recognized as not ready to be funded, does it need to remain on there or is what you said, does that clear up some money to potentially reallocate for a different project?

MR. PELTOLA: With this specific example, I'm not sure what 18-252 is, but the ISC comment, that it's not ready to go to the public per se, is taken into consideration just like any other comment is. Although the efforts of the TRC with regard to the overall order of the projects within that pool of 18 in this case has a lot more weight.

CHAIRMAN CHRISTIANSON: Jennifer.

MS. HARDIN: Through the Chair, Mr. Siekaniec. I just want to note that the ISC, like the RACs, are not privy to the full proposal package, so they are making comments based on a review of the Technical Review Committee's justification and an abstract. The Technical Review Committee is the only group that is able to evaluate the proposal packets in their entirety.

MR. SIEKANIEC: Thank you, Jennifer. I guess that just raises another question on kind of the transparency of it. Why the Technical Review Committee is the only one on there. You chair the ISC. Do you also chair the TRC or are you on the TRC?

MS. HARDIN: Through the Chair. For this round and the previous round I was co-chair of the TRC because I was at that time the anthropology supervisor and the co-chairs of the TRC are the supervisor of the Anthropology Division and the supervisor of the Fisheries Division of OSM. With the change in staffing, that's why I was doing double duty.

Also regarding your first question, because it's a competitive proposal process, the proposal packets are confidential and they're not shared outside of the TRC and the staff that do the initial review of the packets for completeness. All of the individuals who participate in that process sign non-disclosure agreements and confidentiality agreements. This is a requirement of our cooperative agreement and contracting rules that we have to follow.

MR. SIEKANIEC: Okay. I appreciate

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that. It seems like it just gets complicated when you go to the ISC members, which represent Board members here, for them to have the full understanding of how to have the dialogue if they're not seeing the scoring as well.

And as I already said, the scoring related to what's causing all of those ties and everything being really tightly lumped, which is an indication of maybe very good projects. It may be also an indication that that's why you might need to weight things a little bit differently to give you some of that clearer separation.

Thank you very much, Mr. Chair.

I appreciate the opportunity.

MR. LORD: The Chairman had to step out to take care of some business, so I'm going to take over leading the meeting. So lucky you guys.

(Laughter)

MR. LORD: So any other.....

MS. MOURITSEN: Mr. Chair.

MR. LORD: Yeah, please. You had a question.

MS. MOURITSEN: Mr. Chair. Can I follow up on Greg's question?

MR. LORD: Please do.

MS. MOURITSEN: Okay. Mr. Chair. I had noticed the same project that Mr. Siekaniec brought up, 252, and I had noted in the summary part for that group of projects it said something like this project is not ready to be funded, but it's kind of midway in the ranking and it's on this table. But in the individual little summary writeup it described the project as being really strong and having a good investigator and a method and it seemed like the only thing the little summary said is that they didn't have rural support for it. So I don't know if maybe the -- so maybe you have some -- I noticed that.

MS. PITKA: I have some insight.

MR. LORD: Rhonda, please.

MS. PITKA: I may have some insight on that and I may be able to educate a little bit on this. In those three communities you are not allowed to do any research without the tribal council involvement. Whether or not there was an actual formal letter of support -- you know, one of the communities is Beaver and another is Nulato and I'm familiar with both of those communities pretty well. So in order to do research in those communities, you would need to work with the tribal council and work with them pretty intimately. They may not have given a letter of support.

MS. MOURITSEN: Thank you.

MS. HYER: Mr. Chairman/Solicitor, may I add something?

MR. LORD: Please do, Karen.

MS. HYER: I work in the north and so that's where I'm most familiar. We have a project up there, the Nuiqsut project, and it's a cooperative, but the State is the lead on it. They made initial contact, but until a project is funded it's hard to engage communities because you don't want to give them the impression that you're actually going to have this project in their area.

So sometimes initial contact is made and a discussion takes place with the knowledge that more discussion -- if the project is funded, more discussion is going to have to take place. That may be the case in this project too.

But it's a lot of time and a lot of money going to those communities and engaging those people and a lot of investigators are unwilling to do that until they know they actually have -- that the project actually is going to go because it's everybody's time and they don't -- they're very conscientious of the relationships they have with these people and they don't want to appear to be misleading them.

So sometimes the TRC will come back and say this needs to -- and Nuiqsut is one too where they need a lot more outreach and they know that and they will do that if the project is funded, but if it's not funded they're going to move on and do some other things. I don't know if that clarifies or not, but that is one situation in another region that we have.

MR. LORD: Bert.

MR. FROST: Two comments unrelated to each other, but just to follow up on this. So this begs the question, as I understand it, in the five criteria strategic importance is rated at something and partnerships are weighted equally. Based on what you just said, to me that seems exactly why they should not be weighted the same.

Because if you don't want to go out and put out those expectations, you have to have some conversations I understand, but it goes back to the conversation that the strategic priority may need a higher weight over the partnership piece. The partnership piece is important, but it may not be as important as the strategic piece.

So I would just sort of throw that out there to think about how those criteria are written and how they're weighted potentially in the future. Not so much for these projects. These projects -- I'm not going to take issue with what's already been done, but sort of in the future we should maybe look at the process and see if there's a better way as Greg has sort of indicated to maybe get the clumping undone. So that's just a comment.

MS. HYER: I just want to follow up on the particular project I was talking about because I don't want to confuse community outreach with partnership and capacity building because the investigators help participate in partner and capacity building and they have contacted local people that will be working on the project.

They have also contacted students from the area and they have made efforts to involve them in the planning process, involve them in the execution of the project, have them do some of their school work in execution of the project and then bring them back to

the communities to report to them as they did on other projects that we have up on the North Slope and that's entirely different than engaging the communities in discussions. So they have done a lot of partnership and capacity building too along with initial contacts of the communities.

That's all I had.

Thank you.

MR. FROST: I have a third question.

MR. LORD: Go ahead.

MR. FROST: So going back to my original question about the project. So we have these 18 projects which are funded. I assume these are in rank order from the best to the worst -- I mean the best to the -- I mean there are 39 projects that have all been forwarded to funding, so they're all great projects, all right, but they're in rank order, right, on this sheet for the 18 that are moving forward.

There are other ones that are still available for funding, but we don't know what the next one in line is. Do you have the 39 ranked from one to the bottom so that the Board can see what projects are next in the cue if funding becomes available?

MS. HYER: When it gets beyond the 1.5 I just look at Gene.

(Laughter)

MR. LORD: Good answer.

MR. PELTOLA: Yes, and we do have a list from 1 to 39. If additional funds from Interior that come through OSM are made available to support a project for the two or the four year term as stipulated for the project, then we do go further down that list.

The challenge that as a program that we are faced is that -- I'd like to go back just a little historically here. The last round we had -- in the typical round we'll have closer to that 2 to 2.5 million dollar range for fresh starts. A byproduct of having that list available is that the Board directed

us the last time around when we were under a different FRMP structure to continue to fund down the list.

One of those byproducts is that we're on a two-year FRMP proposal cycle. The projects are typically two or four years or longer. Hence, this round we have roughly $700,000 or $1 million less than we typically would have because the Board chose to go further down that list.

What we do is that with regard to -- and I stipulated earlier we do have that 1 to 39 list available. As the ARD, when we have that list and, say, if we get a phone call that says you actually have an additional 300,000 for this year, then we look at how far we can go down that list and continue to support that project in the future and we make phone calls based on that. Are you at the point where you can still execute the roles and meet the objectives of your proposal if we were to fund you. That does occur on a fairly regular basis but not all the time.

In addition to -- another thing I just want to bring to the Board's attention. At times say we have -- let me think of a generic project. The effects of carp on the Black River. I just made that up so I don't put anybody on the spot. If we get a proposal for that and it's slated to be $80,000 a year, if we have $65,000 a year, we've done this in the past, I call up the principal investigator because it happened to be the next one on the list and say we have an additional $65,000 we're comfortable on putting out, would you be able to execute your project as designed with that amount of money. Typically we get a lot of yeses, so then we go further down the list like that when we can.

MR. FROST: Sorry, but my question is can the Board see the list from 1 to 39 so that -- because we're being asked to approve this list, 1 to 18, but we don't know what's below. If you have to make decisions below, the Board is not weighing in on those 19 to 35. From my perspective, I can't speak for the Board as a whole, but as for me I would like to see the entire list so I can see how they're ranked in order and so what the next projects -- with the caveat that there may be some -- in terms of funding levels and things like that, they may not be exactly right down the list, but I don't know what those are right

now.

MR. PELTOLA: And we can make that list available and apologize for not including you on the booklet.

MR. FROST: All right.

MR. LORD: Jennifer.

MS. HARDIN: Thank you, Mr. Chair. I just wanted to circle back to your comments, Mr. Frost, about the criteria and thank you for those comments. When Stewart Cogswell and I were before you in 2016 introducing this process, we said at that time that this is a new process and we expect it to be improved over time as it comes to life. So thank you for those comments.

I do also just want to mention just as a reminder that in the Fisheries Resource Monitoring Program one of the objectives is to make sure that these funds are distributed statewide, so there is a geographic component to the ranking list. When you're looking at the list of projects, you see them in ranked order, but also there are geographic considerations.

The five criteria are weighted equally and some projects do well and some did well in some criteria and less well in others, so we're not able to answer specific questions about the scoring, but there are a number of considerations when you're looking at the ranked list to keep in mind.

MR. LORD: Karen.

MS. MOURITSEN: Thank you, Mr. Chair. And thank you for that Jennifer and Karen. I can see this is a very complicated process, but very well thought out and I was impressed when I was reading the materials. I do have some questions kind of following up on Bert.

So I like having these ranked lists in case we get more money, in case we get less money, I hope not, but I took the list of the 18 and then I tried to mark them on the longer list. So I was able to see -- I don't know if you can see my markings, but it is geographically because there's projects for each

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of these areas.

I was wondering how do you decide the order? And maybe I shouldn't be focused on the order, but I'm focused on the order in case -- like other places I've worked, I hope this doesn't happen, but in case we have to cut a couple off at the bottom. And also we have Forest Service money versus DOI money.

So I was wondering how you decided what areas to pull them from and then I would be interested in what Bert is saying about -- I guess this is the whole list -- how it would go order-wise while you keep the geographic and other considerations in play.

Anyway, how did you decide how to divide them up by area and which area to go to first? Because I noticed some areas had three or four projects. Some areas the amount would be smaller, but they only have like two projects.

MS. HYER: The guide for the areas is that table I showed you. And that's how we decide percentages for the areas and that is -- that allocation came when the original FRMP was decided. So it is entirely possible to have a project that has a score of -- because the scores were based 1 to 100, so let's say one could have -- in the Yukon it could have 100 percent and in the northern region maybe an 85, but that would be the top ranking in the northern.

So we take that and we take the top ranking in the Yukon and we just start at the top and move down based on the score and then we know how much money we have and we know what percentage goes to each region. For example, just to make things simple, let's say we're putting 100,000 into northern, maybe we have two projects and they total 95,000, then we'll take that extra 5,000 and put it in the kitty because we don't have a $5,000 project.

MS. MOURITSEN: Okay.

MS. HYER: Of course all my numbers are totally artificial.

MS. MOURITSEN: Sure, sure.

MS. HYER: But if something is on the

line and maybe it's $10,000 more and we think we can absorb that in that region, we'll move it in. Last time Southcentral didn't have any good projects and we didn't put any projects in Southcentral because there was nothing that the TRC felt met their criteria, so that does happen too. This go around we had good projects in every region. So we have to adjust as we see what projects we have to work with.

MS. MOURITSEN: Thank you for that. A question I was thinking about earlier when Mr. Brower asked one of his questions. I saw a couple places in here where there were ties and both the RACs and the ISC were saying if there's a tie and push came to shove, they recommended a certain one of them. I think the ones I remember they both agreed on the one.

Then there was another one in here where the top ranking one the RAC was making comments because it was one of these projects that had been, I guess, reapplied for a number of times and they'd been doing it for a number of years. Evidently very successfully. But a RAC comment was maybe we should think about not doing that one for a while.

So I was just wondering how as you go through this list like this and you're looking at the amount of money in every region and the rankings, are you also considering what those comments that either the RAC or the ISC's made.

MS. HYER: The Regional Advisory Councils engage very early on in this process and they help direct the priorities. That's really where their strength of recommendation comes in is with the priorities. But we do consider that and we have had situations where the Regional Advisory Councils have said we feel like we've been over-surveyed here and we don't want this project and we have pulled projects.

It is a little bit difficult because it's not a motion and so it may be one RAC member expressing his own opinion and not all the RAC members. I don't attend every RAC meeting, so I don't exactly know what was said for individual projects, but that does happen. We do try to accommodate our RACs.

Mr. Brower's comment earlier was about a specific project that the RAC has continued to

express concern about. We have worked with an investigator. They have submitted twice. They haven't been successful. And we are looking at other ways to approach that issue because we know that it is very important to the North Slope RAC and every time we go up there we talk about it.

So not every project is meant to be an FRMP project, but we do take very seriously the concerns of our RACs.

MR. PELTOLA: Mr. Chair, if I may. In addition to Charlie's question about a particular project, we have a lot of long-term, long-running projects that compete every four years. At times those proposals evolve over time and they change. Sometimes they come up with a higher rank and also at times they come up with a lower rank even if it's a very similar project and that's based on the five criteria which were first presented to the Board when we initiated the discussion.

Board Member Frost's comments is that the advantage of a two-year cycle is that we have an opportunity to learn from their experience and we can modify the criteria if it still meets the regional intent of the design of the program. So there is an opportunity to do that.

The FRMP process now is different than it was two years ago, which is different than it was two years prior to that. So there is an opportunity for the program to evolve. The challenge that we are faced with by our involvement, that's OSM's involvement in the process is to ensure that evolution of the program still meets the original intent of the funding source, which was stipulated when the program was created.

MR. SIEKANIEC: Mr. Chair. Thanks, Gene. I think Jennifer also kind of reiterated that this is a new process and again I want to compliment everyone. New processes are hard to get figured out so they're operational as well as you want them.

I think there was another statement that was made in the information that was provided that I just want to follow up a little bit on. There was a statement by the ISC committee that because of a

continued reduced Fisheries Resource Monitoring Program project funding, allocative decisions may necessarily result in increasingly conservative management of important subsistence resources.

That's a big deal. I think that needs to be sort of in our consideration of getting the projects in place that really influence the ability to make sure that we are providing the best opportunity for subsistence that we can.

So, in line with that, I think Jennifer's note that this new process needs to be looked at, I think I would recommend at this point -- we talked a little bit yesterday about it. Maybe it's time that we do an after-action review or make sure we really understand what's coming out of this.

So that we approve these rounds today, we get these in play, but we really take a look at does the criteria need to be adjusted. Are we communicating with the RACs in the appropriate way to give them the understanding of how they actually interface with this. Can we add any additional transparency. Because it does still seem a little bit awkward to me that the ISC is not fully privileged to what scoring is because everything gets subjective at some point in time.

So that would just be my recommendation. I don't know if that takes a subcommittee of a mix of individuals. You know, I think the in-season managers might be a great -- or an addition to a review panel that has at least one in-season manager so that you can ask the questions of did this influence your decision-making and did you have to become or restrict on allocative subsistence resources because you didn't have information that was needed?

I think those are all very valid questions and need to be given some consideration.

MR. PELTOLA: Mr. Chair, if I may. I think this is the third FRMP round I've been exposed to since coming to the program. We do go through the agencies and we do go through other entities on how to revamp the program.

As far as in-season managers, the majority of our in-season managers are with the Fish

and Wildlife Service and I think to a lesser degree but still a significant part is the National Park Service.

When this program, as we see it today, was reviewed, Fisheries Ecological Service, who is housed within the Fish and Wildlife Service, that house the majority of our in-season managers in the Fish and Wildlife Service, gave us six recommendations that they wanted to see involved in this which you see before us today. Five of those recommendations were accepted and implemented into the program, so we do extensive engagement when we look at structuring the program.

Honestly, the challenge we are seeing today with regard to the FRMP is that years ago this program used to have a significant higher funding level with regard to FRMP and programmatically. It used to be where the program used to fund a lot of projects which did not even submit a project proposal. It was non-competitive, discretionary at the will of the ARD. We're not in that budgetary environment anymore and, understandably, it's getting a lot more competitive with regard to the dollars that we have available to distribute.

It's not only with the FRMP. The other aspect of our outflow coming from OSM on behalf of the program is we have the Partners for Fisheries Program and with that particular program -- it used to be a $2.5 million program prior to my arrival. We're now at about the $800-900,000 level with regard to that program as well.

That is getting even more so competitive with that particular program, which we're seeing some similar things here with FRMP, that we used to not have enough projects under that program. The last round we were in, I guess for some, not a good position, but for the program we had a lot of interest in going after those dollars just like we do have with FRMP here today.

Thank you, Mr. Chair.

CHAIRMAN CHRISTIANSON: Thank you.

Wayne.

MR. OWEN: Thank you, Mr. Chair. I

wonder, from the previous discussion, if it is now or if we are coming close to the time when we should break barriers between regions and fund rather the top priorities for the entire state instead of one project for Southwest and however many for Yukon. I just have to wonder that when it gets to that point or are we nearing that point.

MR. PELTOLA: Mr. Chair, if I may. One thing that's specific about -- I mean you might hear Staff talk about the blue book now and then. The blue book is basically the direction for what the fund was created for. Within that, with regard to the regions, because we have a diminishing dollar to give out so to speak, yes, we are funding less projects per region. Although as specifically mentioned in the blue book there are certain -- the program is not intended to be a funding source specifically if you're one or two regions. So that is specifically outlined.

My comment earlier about the beauty of this program is that every two years we can evaluate and look at the criteria and how we adjust things but still try to maintain the intent of the creation of the program itself. But that is definitely something we can look at as long as we address the concerns and the original funding source would be a comment I made.

We may be approaching that point where even harder decisions have to be made about what gets funded and what gets not funded with regard to the requirements and needs of the Federal Subsistence Program. I would say that, you know, we're going to have a lot of people that are happy that get the letter or the call saying we are going to fund your program or we're going to have people that are upset.

I mean right now if you look at 39, that means there's 21 projects and principal investigators and regions that may not get a funding dollar coming from this program. So, in a sense, that competitiveness can increase the quality of the projects that we're seeing in the long term.

It's definitely not one particular segment of our applicants that have been beneficial. We go through different cycles. For a period of time we may have one particular department, agency or bureau that is very successful in receiving fundings. Five,

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six, seven years later it may change, but the changes in principal investigators or potential support in the region are not.

CHAIRMAN CHRISTIANSON: Lynn.

MR. POLACCA: I think Greg did bring up a valid point. Now is kind of the time where we really need to go back and actually take a look at our guidance, our protocols as far as how we're actually taking a look at the whole entire process for funding and I think we're at that point now where we need to figure out how to split these hairs now and where we're starting to get these ties coming up and all and I think we do need to sit down and come up with better guidance.

I don't know where that lies, if that's going to be another -- you know, referring back down to the ISC or over to the office of OSM and having them create guidance for us so that we can take a look at and make a decision and say, okay, this is what we're going to do and do that a lot more sooner than later because we're starting to come into another funding cycle now.

I'd rather see us at least get that straightened out right now and that way we know we can get that information out to all the people that are requesting for funds so that they have clear guidance on what they need to submit.

CHAIRMAN CHRISTIANSON: Just food for thought for my idea. What do we do if one region gets all the money? I mean I think that's why we've kind of looked at it and as far as we know all across the region there's needs for information. Subsistence users are all across the state and we're chewing up a process I've watched change since I've been here three times.

I'd just like to take my hat off to the Staff, you know, and that they've done I think the best job with the tools that they have in the box to come up with fundable projects.

Again, everything has room for improvement and maybe we can give that guidance here from this Board on how we'd like to see some of those

improvements and set a little -- I mean like I stated yesterday maybe the Board has a couple priorities we'd like to fund and the office staff has some priorities that they could fund with the relationships they build. But when we come to the Board at this stage of the game, I'm going to have to trust the Staff

MR. BROWER: Mr. Chair. Just a comment. I notice in reading through these proposals I know we have six regions that we have funds for and projects. In one, I want to take your country there, Mr. Chairman, the Heidi Lake Sockeye Salmon Project that's been funded since 2001 and it's been continuous ever since this. And you have these other projects.

You know, salmon is not the only subsistence source of fish throughout each region. There's different species. And there's other folks in each different regions that has a concern with their fisheries that are coming to a change and they need help too to understand what's happening, but they still rank way low because there's no investigators, there's no partnerships or whatever.

It seems to be like the majority, I'll use salmon, when you have to look at all six regions. Not all fisheries are salmon. There's broad fish, grayling, cisco, Dolly Varden and so on. A major concern to my reading is salmon so far.

I just wanted to make that known.

Thank you, Mr. Chair.

CHAIRMAN CHRISTIANSON: Bert.

MR. FROST: Do we need to make a motion to move forward?

CHAIRMAN CHRISTIANSON: Yeah. Rhonda.

MS. PITKA: I do have a comment. I've got several. I feel like some of these projects probably -- because of the importance to the management of this resource could perhaps be funded in a different manner versus being in a competitive manner. It sometimes seems that we have several projects that are so important to in-season management that perhaps there may be a different process for that.

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And I also think that because of the importance we're attaching to the ISC recommendations that me and Charlie Brower need ISC members in that room. We currently have no one in that room except for Orville and as wonderful and knowledgeable as Orville is, that's quite important.

I also think that this discussion we had over the last two days and I've made several of my comments already well known. I really, really believe that the FRMP partnership component of that program is crucial. I have actually been involved with several projects where there was no partnership with local tribes that was meaningful at all and they were able to come in and say they had a partnership because we delivered gasoline in a boat.

So I truly, truly love the spirit of this program and I'm fully in support of the partnership component. Thank you.

CHAIRMAN CHRISTIANSON: Thank you, Rhonda. Greg, you had one more. Bert, I mean.

MR. FROST: Well, I was going to make a motion.

CHAIRMAN CHRISTIANSON: The floor is open.

MR. FROST: I don't know if I can do this right. I'm not very good at this. A motion to -- after the approval of this cycle is done is to do an after-action or a review process. I wrote down three things that we might want to look at. You know, how the priorities are set. I mean review how the criteria are, the five criteria are and how they're weighted in relation to not only priorities but the partnerships, the whole 10 yards. Look at how the five criteria are evaluated.

Greater transparency in terms of both for the RACs and the ISC. And then on Wayne's point, maybe re-looking at the geographic distribution. Are there different models that could take place so that whether you change the percentages or you get rid of the percentage? I think that's up for the review committee to sort of decide. I think there's lots of ideas out there that you could do that with.

CHAIRMAN CHRISTIANSON: That's a motion.

MR. BROWER: Was that a motion or just a recommendation?

MR. FROST: I don't know. I probably made the motion incorrectly.

MR. PELTOLA: Mr. Chair. What I'd recommend, just for ease and clarity in the administrative record, if you would make a motion to address this particular plan. After that is adopted, disapproved, modified, whatever it may be, then make a second motion to direct OSM to work with the affected bureaus to review the criteria.

What we normally do anyway after a FRMP round, to incorporate a look at the criteria and how they're established and all the recommendations made. So I would recommend that you split the motions up into two segments. One, address, potentially approve. Two, post-completion of the round and then direct OSM in cooperation with the bureaus and affected party members to look at those criteria and make recommendations for consideration.

MR. OWEN: Mr. Chair.

CHAIRMAN CHRISTIANSON: Wayne.

MR. OWEN: I move that the Board accept the recommendations of the 2018 Fisheries Resource Monitoring Program as presented by unanimous consent.

CHAIRMAN CHRISTIANSON: We have an open motion here. Is that a second to your original motion?

MR. FROST: Yes.

CHAIRMAN CHRISTIANSON: As stated by Wayne. The original motion is to accept the 2018 FRMP project list as presented by Staff. Any objections to the motion.

MS. MOURITSEN: I have a question about the motion. Do we need to either add to it or have a different motion to ask OSM to show us the list of the projects that are at the bottom going down from this

list?

MR. BROWER: A different motion.

MS. MOURITSEN: Is that a different motion? Okay.

MR. LORD: I don't think that's a motion at all. I think you just ask.

MS. MOURITSEN: Okay. Okay. Okay.

MR. PELTOLA: Mr. Chair, if I may.

Once again I apologize that was not included. We have a printout and it is available and we'll distribute it to the Board members.

CHAIRMAN CHRISTIANSON: So we do have a motion on the floor that's been seconded to accept the FRMP 2018 Monitoring Program. It's been presented with unanimous consent. Any objections to the motion as presented.

(No objections)

CHAIRMAN CHRISTIANSON: Hearing none. The motion carries unanimously.

MR. FROST: Now.

(Laughter)

MR. FROST: Make a second motion. So I move that we instruct OSM to work closely with ISC to do an after-action review of FRMP process, looking specifically at priorities, transparency, geographic distribution or any other things that they may deem necessary to help improve the process.

MR. SIEKANIEC: Second.

CHAIRMAN CHRISTIANSON: The motion has been made and seconded. Discussion.

MS. HARDIN: I'm very sorry to interrupt, Mr. Chair. I just wanted to ask if it would be worthwhile to include the Technical Review Committee in that after-action review since they have direct

knowledge with how the ranking process has gone for the last two cycles.

CHAIRMAN CHRISTIANSON: Noted. Concurrence on that.

MS. PITKA: I just have a quick note. When you second a motion, can you please say I second the motion.

MR. PELTOLA: We need to receive a motion, Mr. Chair, from Greg Siekaniec.

MR. SIEKANIEC: I second the motion. Thanks, Rhonda.

CHAIRMAN CHRISTIANSON: Call for the question.

MR. BROWER: Question.

CHAIRMAN CHRISTIANSON: The question has been called. All in favor signify by saying aye.

IN UNISON: Aye.

CHAIRMAN CHRISTIANSON: Opposed same sign.

(No opposing votes)

CHAIRMAN CHRISTIANSON: Motion carries. We will review the process this coming year. With that we'll break for lunch. 1:30.

Thank you guys for your help.

(Off record)

(On record)

CHAIRMAN CHRISTIANSON: We'll go ahead and reconvene. I truly apologize for being a little bit late this afternoon. I'm dealing with some personal stuff. We're again back on track. Before we do get started today, this morning I kind of overlooked a pretty serious situation and would like to take this time to recognize Mike Bangs and his recent passing as a Regional Chair for Southeast. I think there was

# Federal Subsistence Board

**1011 East Tudor Road, MS 121**
**Anchorage, Alaska 99503 - 6199**

**FISH and WILDLIFE SERVICE**
**BUREAU of LAND MANAGEMENT**
**NATIONAL PARK SERVICE**
**BUREAU of INDIAN AFFAIRS**

**FOREST SERVICE**

OSM 19057.KW

Molly Chythlook, Chair
Bristol Bay Subsistence Regional Advisory Council
c/o Office of Subsistence Management
1101 East Tudor Road, MS 121
Anchorage, Alaska 99503-6199

Dear Chairwoman Chythlook:

This letter responds to the Bristol Bay Subsistence Regional Advisory Council's (Council) fiscal year 2018 Annual Report. The Secretaries of the Interior and Agriculture have delegated to the Federal Subsistence Board (Board) the responsibility to respond to these reports. The Board appreciates your effort in developing the Annual Report. Annual Reports allow the Board to become aware of the issues outside of the regulatory process that affect subsistence users in your region. We value this opportunity to review the issues concerning your region.

## 1. Low Level Aircraft Flights

*Residents in the Lake Iliamna and Lake Clark region have expressed concerns about aircraft flying at low levels and disrupting wildlife and user groups in the area. The Chulitna River drainage in particular is an important habitat for moose and other resources central to the subsistence practices of rural residents. The area is primarily accessed by boat or snowmachine in the winter. Low level flights are disruptive for all users for a successful harvest. Local residents have approached the Lake Clark Subsistence Resource Commission (SRC) and brought these concerns to its attention. Transporters also access to remote lakes to drop hunters at hunting camps, which have been used by local residents for generations. This results in user conflict, trespass on private property, and local concerns about competition for limited resources.*

*Glen Alsworth, Jr., a pilot and tour operator and member of the Lake Clark SRC, initiated an educational outreach effort by writing to area pilots and asked that they avoid the river corridor and keep flights above 1,000 feet in altitude during the moose season (see enclosed). Additional outreach efforts could include notifying other pilots about avoiding the river corridor and flying*

*at low level directly over Long and Nikabuna Lakes within the Chulitna River drainage. These outreach efforts could be coordinated through the SRC and local communities.*

*Additionally, local communities are communicating with the National Park Service to address the issue of increased air traffic and low level flights over sensitive areas. The Council encourages continued efforts by local communities, and also encourages the National Park Service to actively work with communities to begin management planning for air traffic in subsistence use corridors through the use of concessions permits or other management tools.*

**Response:**

With regard to the issue of low-flying aircraft disrupting wildlife and user groups in the area of Lake Clark National Park (NP), in general, the National Park Service (NPS) does not have jurisdiction in the airspace over National Parks in Alaska. The controlling authority for airspace in the United States is the Federal Aviation Administration (FAA). Over remote locations such as those found at Lake Clark NP and other National Parks in Alaska, FAA regulations prohibit operation of an aircraft below an altitude of 500 feet above the ground surface except over open water or sparsely populated areas. In that case, the aircraft may not be operated closer than 500 feet to any person, vessel, vehicle, or structure (14 CFR 91.119).

The NPS recommends that individuals work with the FAA if there is a safety concern related to operation of aircraft below these minimum altitudes. However, with regard to air taxi operators approved to conduct flight services in National Parks, the NPS does have the authority to regulate aircraft operations for commercial services it authorizes under the Commercial Use Authorization (CUA) program and concessions permitting. Local communities and individuals concerned with increased air traffic and low level flights over sensitive areas should continue to work with the park superintendent to address flights over specific areas and during specific times of the year. The Lake Clark Subsistence Resource Commission did send a letter through the Lake Clark NP staff to all commercial operators and pilots in the area asking for them to avoid subsistence corridors during hunting seasons at low levels. The NPS will review concession permits renewals with these complaints in mind and also develop language for their website to communicate this request.

However, the Board and the various agencies involved are not the only way to address the concerns of low-flying aircraft. Everyone who lives in the region can play a role. If you see lowflying aircraft disturbing wildlife on Federal public lands in the region you may file a complaint with law enforcement.

Law enforcement will then use the complaint to investigate an incident and determine if criminal activity occurred. Providing evidence in a complaint helps when doing an investigation.

Effective complaints are precise, provable, and prompt. Take good notes before you file a complaint - preferably as close as possible to the incident. A complaint should include the following information:

1. The date and time when the incident happened.
2. The location description where the incident happened. A useful description includes a map; coordinates; land or water features; place names; distance from camp site; and photos.
3. A description of what happened during the incident. When aircraft is involved, provide a clear photo or video of the aircraft and tail number. You can use a smart phone camera or a digital camera.
4. Report your complaint to law enforcement using the contacts provided below. Information shared on Facebook does not qualify as a complaint.

Lake Clark National Park and Preserve
240 W. 5th Ave., Suite 236
Anchorage, Alaska 99501
(907)644-3626

1 Park Place
Port Alsworth, Alaska 99653
(907)781-2218

Katmai National Park and Preserve
P.O. Box 7
King Salmon, Alaska 99613
(907)246-3305

**2. <u>Historical Migratory Bird Management</u>**

*The Alaska Migratory Bird Co-Management Council co-chair brought to the Council's attention a recent apology letter signed on September 13, 2018 by the Regional Director of the U.S. Fish and Wildlife Service and the Alaska Department of Fish and Game Commissioner stating the need to "reconcile the past and acknowledge that those regulations harmed hunters and their families. We seek to continue rebuilding relationships with Alaska's Indigenous peoples who were affected by the unintended consequences of past harvest regulations ... ".*

*The Council urges the Federal Subsistence Board to acknowledge the letter signed by the U.S. Fish and Wildlife Service and Alaska Department of Fish and Game in its next scheduled public meeting.*

**Response:**

As indicated by the Council, the apology was made official at the bi-annual gathering of the Annual Migratory Bird Co-management Council (AMBCC) meeting on September 13, 2018. The U. S. Fish and Wildlife Service (USFWS) Alaska Regional Director, Greg Siekaniec, acted on this request during the recent Federal Subsistence Board (Board) meeting April 15-18, 2019. Mr. Siekaniec introduced the video that highlights the hardship placed on Indigenous peoples who were affected by past harvest regulations and provided copies of the signed apology letter to all attending. The Board meeting was an excellent opportunity to reach a large and important

audience. The USFWS and the Alaska Department of Fish and Game (ADF&G) continue outreach regarding the apology and have presented the video and letter at more than 12 other meetings including Regional Advisory Councils, tribal village meetings, Subsistence Resource Commissions, etc. (see following list). Reconciliation does not happen overnight, and the USFWS and ADF&G acknowledge that they are on a long journey to continue to reach as many people as possible with this apology. Regrettably, we have made mistakes and are working towards reconciling those, so that together, we can heal. Below highlights some of the meetings where the apology was acknowledged. This list will continue to grow as we find opportunities to present the apology letter and video. If the Council is aware of a future opportunity to present this important apology, please contact Crystal Leonetti, the USFWS Alaska Native Affairs Specialist, at 907-786-3868 or 907-230-8419 or crystal_leonetti@fws.gov.

Migratory Bird Apology Events

9/13/18 - **Alaska Migratory Bird Co-Management Council** - Official Apology Ceremony, Anchorage, USFWS Regional Director Greg Seikaniec, ADF&G Commissioner Sam Cotton

10/3/18 - **Association of Village Council Presidents** annual meeting, Bethel, Deputy Yukon Delta Refuge Manager Ray Born, Refuge Information Technician Chris Tulik, ADF&G Director Bruce Dale

10/9/18 - **Native Village of Selawik** council meeting, Selawik, Selawik Refuge Manager Susan Georgette

10/10/18 - **Cape Krusenstern Subsistence Resource Commission**, Kotzebue, Refuge Manager Susan Georgette, ADF&G Wildlife Biologist Alex Hansen

10/12/18 - **Kobuk Valley Subsistence Resource Commission**, Kotzebue, Refuge Manager Susan Georgette, ADF&G Wildlife Biologist Alex Hansen

10/23/18 - **Northwest Arctic Borough Assembly**, Kotzebue, Refuge Manager Susan Georgette, ADF&G Wildlife Biologist Alex Hansen

10/24/18 - **Northwest Arctic RAC** meeting, Kotzebue, Refuge Manager, Susan Georgette, ADF&G Regional Supervisor Tony Gorn

11/9/18 - **Maniilaq Tribal Government Committee**, Kotzebue, Refuge Manager Susan Georgette, ADF&G Wildlife Biologist Alex Hansen

3/6/19 – **Eastern Interior RAC**, Fairbanks, Acting Yukon Flats Refuge Manager Nathan Hawkaluk and Refuge Subsistence Specialist Vince Mathews

3/11/19 - **YK Delta RAC** meeting, Bethel, Acting Yukon Delta Refuge Manager Ray Born, ADF&G Biologist

3/26/2019 - **Western Interior RAC** meeting, Fairbanks, Refuge Subsistence Specialist for Kanuti, Arctic, Yukon Flats Vince Mathews, Kanuti Acting Refuge Manager Tina Moran, Koyukuk/Nowitna Innoko Deputy Refuge Manager Bob Rebarchik

4/4/19 - **North Slope RAC** meeting, Utqiagvik, Arctic Refuge Manager Steve Berendzen, ADF&G Management Coordinator Phil Perry

4/18/19 – **Federal Subsistence Board** public meeting, Anchorage, Regional Director Greg Siekaniec

**3. <u>All Council Meeting</u>**

*The Council supports conducting another All Council meeting in Anchorage. It would be beneficial to All Council members attending training sessions.*

*The Council suggests that the following items be on the agenda or part of the program at the next all-Council meeting:*

- *Regulations, and interpretation of them, related to the use of snowmobiles for hunting*
- *Closing session with all Councils to develop resolutions to submit to the Board*
- *Discussion during the closing session for all Councils to develop consensus on management plans or other issues affecting all Councils*

**Response:**

The Board acknowledges the Council's support for another All-Council Meeting in Anchorage and notes that other Councils have endorsed this meeting as well. The Board agrees with the Council that having another All-Council meeting would be beneficial to all members, as it would provide an opportunity to learn about other regions' concerns, participate in Federal Subsistence Management Program specific training and collaborate with other regions in finding joint solutions for fish and wildlife management issues.

The Board notes that there maybe the potential to hold the next All-Council Meeting during the winter 2021 meeting cycle, but the final decision is subject to available funding. The prior All-Council Meeting costs were approximately 30 percent higher than the combined costs of all individual Council meetings in one winter cycle.

The Board appreciates the Council's contribution towards an agenda for the future All-Council Meeting and praises the Council's intent to work jointly with other Councils on developing consensus on management plans and other issues. When the next All-Council meeting is scheduled, the Office of Subsistence Management will consult with all Councils' chairs when developing an agenda and will share this agenda with each Council.

## 4. Sea Gull Population

*Rural communities rely on various subsistence resources throughout the seasonal cycles of subsistence harvest. Local observations report that there are fewer sea gulls present in the Lake Iliamna area. Sea gulls are one of many subsistence resources available in the region. The Council would like to know if the local sea gull population decline is limited to a specific geographic area or is it occurring statewide. Therefore, the Council requests a briefing from the Migratory Bird Program on the population status of sea gulls in the Iliamna Lake area.*

**Response:**

In general, there is very little monitoring of any gull species in Alaska, with exception of Black-legged Kittiwakes, often lumped with gulls. It would be helpful to know what species of gull the local Iliamna Lake contacts are referencing. If local residents have pictures of the birds, the U.S. Fish and Wildlife Service (USFWS) Migratory Bird Program would attempt to identify species from photos. If they have pictures of eggs and can provide a scale reference next to the egg for sizing (a ruler or some kind of size indicator) that may also allow the Migratory Bird Program to identify the species. Please contact Kathy Kuletz at kathy_kuletz@fws.gov or 907-786-3453, if you want to discuss trying to identify the gull species near Iliamna Lake area. The Council may wish to request that a Migratory Bird Program biologist attends the next Council meeting to talk about the trends in sea gull populations.

The Migratory Bird Program does not have colony or nesting data for the Iliamna region, and, thus, location and approximate numbers of gulls would be welcome additions to their Colony Register. We are enclosing a summary of available information on gull populations and four reports on seabird populations for your information.

## 5. RAC Chairs Meeting

*The Council requests the Board to consider a joint Regional Advisory Council Chairs meeting in advance of a regulatory Board meeting. The joint meeting of the ten Regional Advisory Chairs will allow for a forum to discuss concerns they may share with other regions on administrative and resource management issues. The Council requests that the ten Council Chairs are consulted in advance on the agenda items for a joint Chairs meeting.*

**Response:**

The Board is always open to and welcomes the idea of holding a joint Regional Advisory Council Chairs meeting prior to or after a scheduled Board regulatory meeting. For the past several regulatory cycles the Council Coordination Division at the Office of Subsistence Management reached out to all Council Chairs to inquire if they would be interested in organizing such a meeting and what their proposed topics of discussion would be. Unfortunately, very few Chairs were available and interested in participating in the proposed meeting. In fact, a few Council Chairs or their representatives relayed that their busy schedules would not allow them to even attend the entire Board meeting. The Council Coordination

Division will continue to reach out to all ten Councils Chairs prior to the scheduled regulatory meetings regarding the organization of an all Chairs meeting. However, the Board recommends that the Bristol Bay Subsistence Regional Advisory Council prepare a letter encouraging other Councils to send their Chair or a representative to such a meeting along with suggested agenda topics for the meeting.

As a reminder, in its fiscal year 2018 annual report reply, the Board informed the Council that, if an all Chairs meeting is to take place prior to the Board meeting,--the Chairs need to remember that the Federal Advisory Committee Act prohibits a "discussion of topics on which the Councils would or could be giving advice or making recommendations to the Board for its consideration in the rulemaking process."

**6. Positioning of Animals**

*Rural residents are dependent on winter and summer transportation modes to gather, harvest, and hunt subsistence resources. In recent history, snowmachines replaced dog sleds to seek and harvest moose, caribou, wolves, and other land mammals. This is necessary to provide for the Federally qualified subsistence users families and communities, and to assure that subsistence needs are met.*

*Hunters are now using snowmachines to hunt for moose and caribou to meet their subsistence needs. The use of snowmachines to position animals for the purpose of taking has replaced the dog teams of past, and this method of positioning of animals has been used throughout the region. Agency specific regulations allow for the use of snowmachines traditionally employed by local rural residents engaged in subsistence use if they are operated "in such a manner as to prevent the herding ... of wildlife for hunting or other purposes." As a result, the lack of specific regulatory language for Federal public lands in Alaska has caused some conflict among subsistence users and land managing agencies.*

*Currently, no provisions exist to allow for the positioning of animals for Unit 17. The Council is seeking to resolve this issue through regulatory means and requests the Board for its support. The Board, through consultation with Federal land management agencies, should review agency specific regulations to align potential action by the Board in adopting Federal subsistence management regulations to allow for positioning of animals for subsistence purposes.*

**Response:**

The Board appreciates your Council tracking this issue and recognizes that the use of motorized vehicles for subsistence purposes has been a topic of discussion in many areas across Alaska. Specifically, the Board is aware that your Council has submitted two wildlife proposals to change regulations on the use of snowmachines to assist with the harvest of animals in the Bristol Bay area. The regulatory process within the Federal Subsistence Management Program is inclusive and provides multiple opportunities for consultation and public comment. Over the coming year, the Board anticipates robust discussion and testimony from the public and agency

representatives as your proposals and associated staff analysis are discussed at the Council's fall 2019 meeting and at the Board spring 2020 meeting.

In closing, I want to thank you and your Council for your continued involvement and diligence in matters regarding the Federal Subsistence Management Program. I speak for the entire Board in expressing our appreciation for your efforts and am confident that the subsistence users of the Bristol Bay Region are well represented through your work.

Sincerely,

Anthony Christianson
Chair

Enclosures

cc: Federal Subsistence Board
Thomas Doolittle, Acting Assistant Regional Director, Office of Subsistence Management
Thomas Whitford, Acting Deputy Assistant Regional Director
Office of Subsistence Management
Jennifer Hardin, PhD, Subsistence Policy Coordinator, Office of Subsistence Management
Steven Fadden, Acting Council Coordination Division Supervisor,
Office of Subsistence Management
Chris McKee, Wildlife Division Supervisor, Office of Subsistence Management
Greg Risdahl, Fisheries Division Supervisor, Office of Subsistence Management
George Pappas, State Subsistence Liaison, Office of Subsistence Management
Donald Mike, Council Coordinator, Office of Subsistence Management
Bristol Bay Subsistence Regional Advisory Council
Benjamin Mulligan, Deputy Commissioner, Alaska Department of Fish and Game
Mark Burch, Special Project Coordinator, Alaska Department of Fish and Game
Interagency Staff Committee
Administrative Record

# Enclosure 1

Summary of available information on sea gull populations:
In the Lake Iliamna region, you could have Glaucous Gulls, Glaucous-winged gulls, Mew Gulls, Herring Gull, Black-legged Kittiwake, and perhaps a few other species. Sometimes subsistence users also lump in the terns (Arctic and Aleutian terns) with the gull species.

As noted earlier, there is very little population trend data for most of these species, and none specific to the Iliamna area. Based on limited data from monitored sites, species trends vary across the state, but overall, as with other types of seabirds, many populations show evidence of declines. We can access data (sometimes not very current) from the Seabird Colony Register as to what species have been recorded breeding in the area, although the colony database is mainly coastal, and gulls can also nest in very scattered, non-colonial fashion.

Glaucous Gulls are a more northerly, circumpolar species, but do occur in the Alaska Peninsula area (less likely to be breeding there). There is evidence Glaucous Gulls have been declining across circumpolar regions, attributed to egg harvest, contamination, food changes, and unknown impacts during the winter (changes due to climate change, etc.). The Alaska population may be stable, although this is based on very limited data (mostly, opportunistic observations). The attached Petersen et al (2015) article summarizes information on Glaucous Gulls. Because of its circumpolar distribution, the Glaucous Gulls is considered an indicator (or 'focal') species for monitoring ecosystem health in the Arctic, and it is more actively monitored in the Atlantic Arctic.

Glaucous-winged Gull - probably the most abundant large gull species in your area. The Seabird Colony Register (http://axiom.seabirds.net/maps/js/seabirds) does not show any seabird colonies around Lake Iliamna, but there are several colonies along the adjacent coast with several hundred Glaucous-winged gulls nesting at each of multiple colonies in the area. (The Colony Register is mainly marine oriented, so may not have data reported from large inland lakes). The Alaska Maritime National Wildlife Refuge (NWR) has trend data on Glaucous-winged gulls for four colonies (Buldir, Aiktak, Chowiet, St. Lazaria islands), and in their 2018 report population trends indicate substantial declines in the SE Bering Sea, stable populations in northern Gulf of Alaska, and substantial increases in southeast Alaska. (Alaska Maritime NWR 2019). In Prince William Sound boat-based surveys (1989-2016), Glaucous-winged gulls population estimates have been variable, but were below the long-term average in 2016 (2018 data not yet available).

Mew Gulls are a common and widespread mid-sized gull, often breeding in small groups and although mostly marine, they can nest near coastal lakes. The only trend data is in Prince William Sound, where they have shown a slow decline since 1989. At colonies monitored (for Black-legged Kittiwake), the MEGU appeared to have complete breeding failure in 2016.

Herring Gulls are a large gull that is not abundant in Alaska, but may be in the Iliamna area. They tend to aggregate near human communities, for food and nesting. No population or trends data.

Black-legged Kittiwakes could occur in the area, but are typically coastal/marine, and the Colony Register does not indicate that they nest along the adjacent coast. Trends at colonies monitored by AMNWR indicate Black-legged Kittiwake are doing well in most regions except SE Bering

Sea. In Prince William Sound, the Black-legged Kittiwake population has been generally declining, and experienced breeding failures in 2016-2018. At the circumpolar scale, there is concern about overall declining trends of this species, and the Circumpolar Seabird Group (An Arctic Council/Conservation of Arctic Flora and Fauna Expert Network) is nearing completion of a Black-legged Kittiwake Conservation Plan, which will summarize what is known world wide and suggest management and conservation actions.

Arctic Tern, Aleutian Tern are two species of concern for USFWS, as there is evidence they have been declining throughout Alaska, although again, good data is sparse (and it is difficult to tell these two species apart). In addition, terns move colony locations more than most other seabirds, so it can be difficult to get population trends unless you consider a relatively large area as a unit. Both species are sensitive to disturbance. Information on Aleutian tern trends is in Renner et al. 2015 (enclosed). The Pacific Seabird Group (with many USFWS members) has an Aleutian Tern Technical Committee, which is reviewing trends data, risk assessments, and developing a conservation plan.

Gulls, kittiwakes, and terns are important subsistence foods (mainly, eggs), as documented in Naves (2018; attached). Gull eggs comprise almost half of all egg harvest, though it varies among regions and communities. Throughout circumpolar countries, egg harvest is considered to have impacted several species, although in Alaska, the USFWS has only been concerned about potential impact on the two tern species.

To summarize, there are indications of declines in some local populations of several gull, kittiwake, and tern species, but with the exception of kittiwakes, there is little good long-term data. Notably, other seabird species have also shown evidence of decline, and several seabird species experienced poor reproductive success and die offs in the last few years, with lack of food appearing to be the main cause.

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# Enclosure 2

# ASSESSING THE BREEDING DISTRIBUTION AND POPULATION TRENDS OF THE ALEUTIAN TERN *ONYCHOPRION ALEUTICUS*

HEATHER M. RENNER[1], MARC D. ROMANO[1], MARTIN RENNER[2], SANJAY PYARE[3], MICHAEL I. GOLDSTEIN[4] & YURI ARTUKHIN[5]

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[2]*Tern Again Consulting, 388 E. Bayview Ave, Homer, AK 99603, USA*
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[5]*Kamchatka Branch of Pacific Geographical Institute of Far Eastern Branch RAS, Rybakov Prospekt 19a, Petropavlovsk-Kamchatsky, 683024, Russian Federation*

*Received 26 February 2015, accepted 19 May 2015*

**SUMMARY**

RENNER, H.M., ROMANO, M.D., RENNER, M., PYARE, S., GOLDSTEIN, M.I. & ARTHUKIN, Y. 2015. Assessing the breeding distribution and population trends of the Aleutian Tern *Onychoprion aleuticus*. *Marine Ornithology* 43: 179–187.

We compiled survey data on 202 Aleutian Tern colonies throughout Alaska and Russia to assess the current status and colony sizes and to evaluate whether there had been changes in recent decades. We fit a Poisson generalized linear mixed model to all available counts of Alaskan colonies since 1960, excluding colonies in which the temporal spread of counts was < 6 years. Russian data were not included in the trend model due to our inability to resolve dates on a number of counts. We estimate that numbers at known colonies in Alaska have declined 8.1% annually since 1960 or 92.9% over three generations (33 years; 95% CI = 83.3%–97%), with large colonies experiencing greater declines than small colonies. Trends at known colonies within discrete geographic regions of Alaska (Aleutian Islands, Bering Sea, Chukchi Sea, Gulf of Alaska and Kodiak Island) were consistently negative. The most recent counts of all known Alaskan colonies summed to 5 529 birds. This estimate should be considered a rough minimum because it does not account for colonies that have not been surveyed in recent years — the size of which may have changed — or for the fact that the surveys conducted were neither systematic nor inclusive of all potential habitats. In Russia, the sum of the most recent count of all colonies was 25 602 individuals, indicating that Russia may host approximately 80% of the world population. Numbers in some regions in Russia appear to have increased substantially in recent decades, especially on Sakhalin Island and the southern coast of the Koryak Highland. We have no data to identify any population-level stressor that could explain the apparent reduction in numbers in Alaska. However, predation, egging and other anthropogenic disturbances, and degraded habitat may cause population change at local levels. If this overall pattern cannot be explained by other possible but unlikely factors (e.g. establishment of large colonies in new locations within Alaska, or major shifts between Alaska and Russia), then the observed trends in Alaska are, indeed, alarming. Therefore, we urge close monitoring of known colonies within Alaska, studies of dispersal, establishment of management practices to insulate colonies from human disturbance, and more concerted efforts among Alaskan and Russian partners.

Key words: Alaska, Aleutian Tern, colony counts, population change, Russia, world population

## INTRODUCTION

The Aleutian Tern *Onychoprion aleuticus* is a poorly known seabird, with nearly all aspects of behavior, diet, migration, distribution and demographics limited largely to anecdotal information (Lee 1992, Hill & Bishop 1999, North 2013, but see Kaverkina 1986a, 1986b, Nechaev & Lobkov 1988, and Babenko 1996 for Russia). The species is known to breed throughout coastal areas of Alaska and the Russian Far East (North 2013) and to winter in Southeast Asia (Lee 1992, Hill & Bishop 1999, Carey *et al*. 2001, Poole *et al.* 2011).

The Alaskan breeding range of Aleutian Terns (Fig. 1) covers approximately 35% of the state's coast (Gotthardt *et al*. 2012). The northernmost documented breeding location is a small colony at Kasegaluk Lagoon on the Chukchi Sea coast, with colonies extending south along Kotzebue Sound, the Seward Peninsula, Norton Sound, the Yukon-Kuskokwim River delta, and into Bristol Bay along the Alaska Peninsula. Colonies range throughout the Aleutian islands and east into the Gulf of Alaska through the Kodiak Archipelago, Kenai Peninsula, Copper River Delta and as far east as Glacier Bay National Park.

In the Russian Far East, the breeding area of Aleutian Terns (Fig. 1) ranges from Sakhalin Island north to the coast of Anadyr Gulf (Nechaev and Lobkov 1988, Kondratyev *et al*. 2000). In the Sea of Okhotsk, the species is most abundant in Sakhalin, Khabarovsk region coast and Western Kamchatka, although small colonies are located in the Magadan area as well. The species is distributed along the eastern side of the Kamchatka Peninsula, on the southern coast of Koryak Highland (to the Apuka River) and in a few small isolated colonies near Anadyr.

Published estimates of Aleutian Terns breeding in Alaska have ranged from 9 000 to 12 000 birds (Sowls *et al*. 1978, Haney *et al*. 1991, North 2013). However, these estimates are based on counts that are now more than two decades old. Within the last decade, there have been reports of colony declines and disappearances at individual sites in Alaska (e.g. Corcoran 2012). In contrast, breeding populations in the Russian Far East apparently have

increased from 10 000 birds in the 1970s and 1980s (Nechaev 1989) to 22 000–24 000 in the 1990s (Lobkov 2001) and 28 000–30 000 in the 2000s (Lobkov 2006).

Inter-related challenges that have always underpinned an assessment of the Aleutian Tern are its poorly understood breeding behavior, ambiguity in the definition of breeding sites and the general inadequacy of colony abundance data. For instance, nesting microhabitats can range from coastal sandy beaches, sandbars and sand dunes, to inland reticulate and string bogs, wet meadows and tundra, and coastal forest tundra with sparse larch trees (Baird 1986, Nechaev & Lobkov 1988, North 2013). Furthermore, although most Aleutian Tern colonies are <3 km from the coast, they also occur as far as 20 km inland (Nechaev & Lobkov 1988). Additionally, nesting may occur in localized clusters tens to upwards of a hundred kilometers apart, and a clear understanding of whether these clusters function interdependently, spatially or temporally, is lacking (Pyare *et al*. 2013). At the few specific colony locations where annual counts are available (all generated from unmarked individuals), colony size and numbers of breeding pairs may fluctuate from year to year (Nysewander & Barbour 1979, Corcoran 2012, Oehlers 2012). These observations and challenges are not unique and may be analogous to numerous seabird species nesting colonially throughout expansive and remote areas of the North Pacific.

To address the broader relevance of the anecdotal reports of colony decline and disappearance, and to evaluate region-wide breeding colony distribution and population status, we compiled current and past breeding colony information with the specific intent to (1) summarize historic and current colony locations, (2) evaluate Alaskan population trends and (3) review potential causal mechanisms for observed trends. To our knowledge, this represents the first analysis of population trends for this species.

## METHODS

We compiled Aleutian Tern population estimates for 202 colonies using a combination of previously gathered and new information (Appendix 1, available on the website). Our primary source of published data for Alaskan colony (n = 110) size and locations was the North Pacific Seabird Colony Database (USFWS 2013).

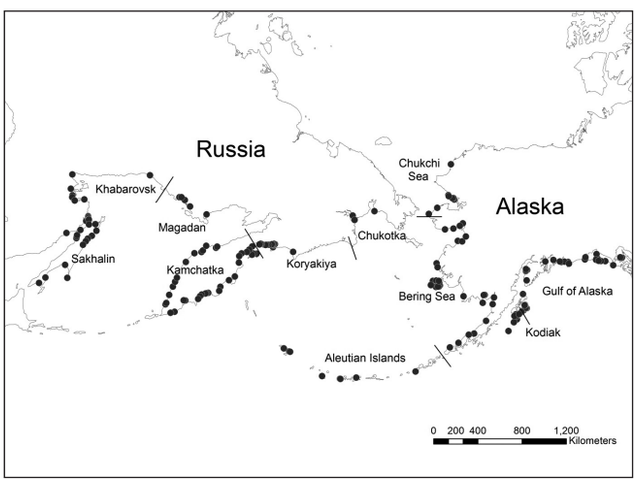


**Fig. 1.** Map of the current worldwide breeding range of Aleutian Terns. Dots represent known colonies that were still occupied during the most recent survey.

In 2012, we acquired additional colony information from a number of sources, including state and federal wildlife biologists, ornithological researchers, professional bird guides, birdwatchers and online databases, including the Alaska Natural Heritage Program's Biotics data portal (ANHPB 2015) and eBird (Audobon and Cornell Lab of Ornithology 2014). In 2013, we opportunistically surveyed 28 Aleutian Tern colonies across Alaska. These data were collected during the egg or chick period (approximately 10 June to 7 July), normally with replicate counts on multiple days and/or with multiple observers. Most counts were visual counts of birds in the air as the observer(s) stood at the edge of the colony; birds in the large colonies (e.g. Situk River/Black Sand Spit near Yakutat) were counted in groups of 20.

We also compiled counts from 92 Russian colonies, mainly from published sources (Appendix 2, available on the website). Russian data were not included in the trend model because we were unable to resolve dates to the year level on a number of important counts (and the surveys were on average much older), but these data were used for distribution information and minimum population estimates.

### Screening of data

Aleutian Terns may nest in dispersed groups, so discrete colonies can sometimes be challenging to delineate. Whenever possible, we deferred to the original data source when determining the limits of a given colony. In a few cases when colonies were within the same general area, we arbitrarily defined birds nesting more than 1 km apart as separate colonies. In some locations, there were insufficient data to determine the spatial distribution of groups of nesting birds; in these cases we lumped nesting birds into broader areas by a common geographic denominator such as a river delta or entire island.

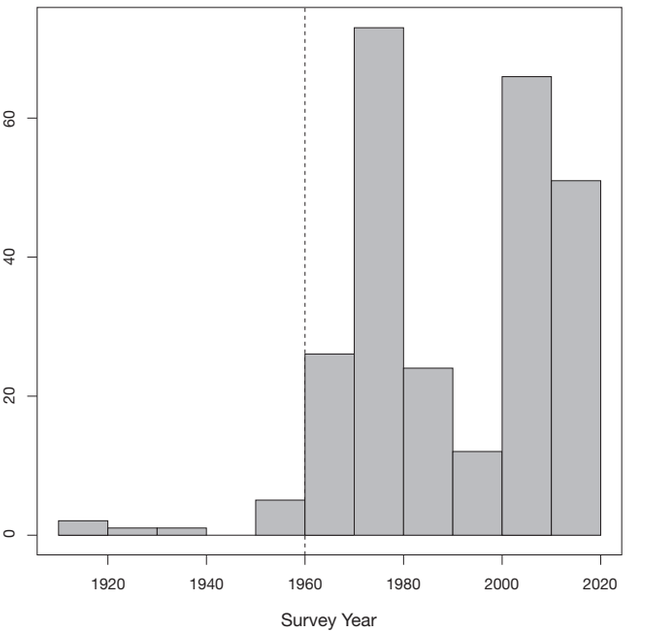


**Fig. 2.** Histogram showing timing of surveys of Aleutian Tern colonies in Alaska. The trend model included only data after 1960 (the dashed line). Single survey dates were used for each colony in a given year. Y-axis is number of colonies surveyed in each decade.

For counts in which observers reported a range in the number of nesting birds for a colony within the same year, based on separate counts, we used the greater number (i.e. if 25 birds were counted on 18 June 2008 and 35 on 23 June 2008, we used 35), since it was considered the closest to the actual number of birds using the colony that year. If the only estimate we had for one year was based on a single observation and reported as a range, we used the midpoint (i.e. if "150–200 birds" were reported on 19 July 2003, our value used for 2003 was 175).

**Statistical analysis**

Before fitting a population change model to the Alaskan data, we restricted our dataset in three ways. First, we omitted all colonies for which there was only a single year's count within the included time period 1960–2013 (n = 31) or for which only qualitative information was available (e.g. "present") because we could not determine a trend. Second, we omitted all counts conducted before 1960 (n = 18). Although datasets include observations from as early as 1914, data before 1960 were sparse (Fig. 2), and calculating a constant long-term trend over a time interval of 100 years did not appear to be biologically meaningful for a seabird of this body size. Third, because we observed that year-to-year colony counts often fluctuated widely, we restricted the dataset to colonies with counts spread over an interval of six years or more. A shorter interval would lead to some colonies having extreme trends over a short period of time, which was more likely to represent noise than changes in population. Ultimately, we used data from 64 Alaskan colonies with 261 total observations in the data set, ranging from 1960 to 2013, to model population trends.

We used a Bayesian framework to calculate a long-term population trend of Aleutian Terns in Alaska. We modeled the colony counts using a generalized linear mixed model (GLMM) with a Poisson error distribution and a log-link function. Markov chain Monte Carlo (MCMC) methods do not suffer the same numerical convergence issues found in approaches based on maximum-likelihood, making them suitable for fitting non-Gaussian GLMMs (McCulloch & Searle 2001). Random effects consisted of survey year and intercept, nested within a colony identifier. Survey year was also treated as a fixed effect (trend). We treated the median of each parameter's posterior distribution as the estimate. We specified uninformative priors, following defaults in package MCMCglmm v. 2.21 (Hadfield 2010). Posterior estimates were obtained based on 20 000 iterations, excluding a burn-in of 5 000 iterations. To reduce autocorrelation, the posterior sample was thinned by considering every tenth iteration. We used graphical checks and standard diagnostics to assess mixing of MCMC chains. Model fitting and all other computations were conducted in R 3.1.2 (R Core Team 2014).

Following the criteria used by the International Union for the Conservation of Nature (IUCN 2013), we transformed the rate of annual change, obtained from the parameter estimates, into the proportional change over three generations. Lacking demographic data for Aleutian Terns, we used a generation length ($g$) of the congeneric Sooty Tern *Onychoprion fuscatus*, reported at 10.9 years (BirdLife International 2014). We chose this value over the 13.4 years generation length calculated for the largely sympatric, similarly sized Arctic Tern *Sterna paradisaea* (BirdLife International 2014), to be conservative with our estimates.

We transformed the parameter estimate $P$ of the overall year fixed effect into a rate of change over three generations $d$ using:

$$d = e^{P^{3g}} - 1$$

We report 95% credible intervals based on the quantiles of the posterior distributions.

To examine whether the trends were consistent across geographic regions, we divided the Alaska data into five broad geographic areas (Gulf of Alaska, Kodiak Island, Aleutian Islands, Bering Sea and Chukchi Sea). We compared trends across these regions by adding the slope estimates of the random effect to the fixed effect and averaging over regions.

**RESULTS**

Based on the most recent counts available, we estimated a minimum worldwide breeding population of Aleutian Terns as 31 131 birds across 202 colonies, with 18% (5 529 birds in 110 colonies) in Alaska and 82% (25 602 birds in 92 colonies) in Russia. The most recent counts varied across colonies from 1959 to 2013 in Russia and from 1946 to 2013 in Alaska (Fig. 3). Our trend analysis indicated that colony counts of Aleutian Terns in Alaska declined on average 8.1% per year (95% credible interval 10.7%–5.5%) between 1960 and 2013. Over three generations (33 years) this equates to a 92.9% decline (95% credible interval 83.3% to 97% decline). The trend in Alaska was consistent across geographic regions (Fig. 4). Intercept and slope estimates of the random effects were negatively correlated ($r$ = -0.70), indicating that, in general, larger colonies experienced greater declines than smaller colonies (Fig. 5). (However, the largest colony in Alaska at Situk River is an exception.) Supporting this quantitative trend, we found widespread disappearances of Alaskan colonies (zero birds observed on most recent visit). Twenty-nine of the 110 Alaskan colonies (26%) were not attended during the most recent visit (Table 1); many of these had at one time contained from hundreds to up to 3 000 individuals

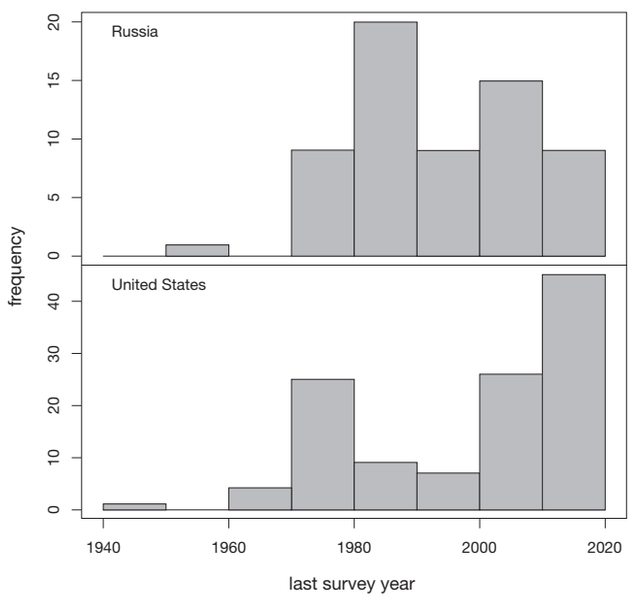


**Fig. 3.** Histogram showing timing of most recent surveys of Aleutian Tern colonies in Russia (top) and Alaska (bottom). Y-axis is number of colonies with their most recent survey in each decade.

(e.g. Amee Island, Kodiak, in 1976). Although 26 colonies were newly reported in Alaska since 1995, they were all small (totaling 834 individuals), and fewer than five of those colonies were presumed to be new (e.g. sites where observers had regularly documented an absence of birds historically). We assume most of the newly documented colonies are not new but were discovered as a result of increased search effort.

For our trend analysis, we did not weight colonies by their relative size, but rather treated each colony equally (i.e. as if they typified a random sample of true colonies). If we assume that the surveyed colonies represent a high percentage of the total population, another approach to the analysis would be to weight colonies by their size, since a change in a large colony will have a greater impact on the total population than a change in a small colony. Had we done so, the estimated decline over three generations (98.3%) would be even more severe than our non-weighted estimate (92.9%). Similarly, the data restrictions we made led to a more conservative estimate of the decline. Reducing the required spread in data at an individual colony from > 5 to > 3 years resulted in a more severe decline. Changing the cut-off from 1960 to 1950 or 1970 had little impact on the parameter estimates.

In Russia, three of 92 colonies (3.3%) had a zero count on the most recent visit. Major colonies at Sakhalin Island and Koryakiya increased during the observation period, although we could not resolve dates on multiple observations sufficiently (i.e. to the year level) to calculate a trend.

**Geographic summaries**

The largest known Aleutian Tern colonies in Alaska are in the Gulf of Alaska (Table 1), with the single largest on Situk River/Black Sand Spit near Yakutat (Appendix 1, available on the website). While numbers of Aleutian Terns have remained stable in Yakutat since first reported in 1914, numbers in the Copper River Delta (also in the Gulf of Alaska region), have declined from approximately 2400 in the 1980s to three birds in 2013.

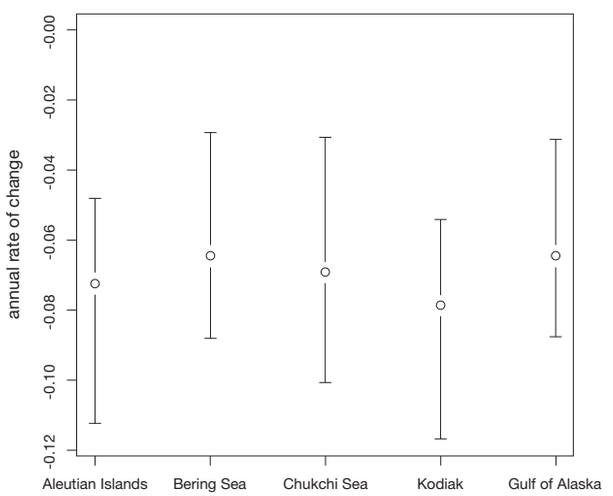


**Fig. 4.** Mean annual rate of change (in %, error bars are 95% credible intervals) in Aleutian Tern colony size in Alaskan geographic regions.

The Kodiak Archipelago supported over 4000 breeding Aleutian Terns as recently as 1995. However, recent counts for the area yielded only 525 breeding birds (Table 1). Aleutian Terns may have been extirpated from Kodiak between the 1890s and 1940s (Friedmann 1935, Gabrielson & Lincoln 1959), although we have little information on how widespread surveys were during that time. Because of their relative accessibility, the many colonies in this area have had more frequent surveys than much of the rest of Alaska.

The Aleutian Archipelago currently supports a minimum of 296 Aleutian Terns in six known colonies. Historically, this area supported 11 known colonies, but five of them have disappeared, and no new colonies have been discovered in this region since 1995. Colonies have persisted on Adak Island and Attu Island despite the presence of introduced mammals (e.g. Norway rat *Rattus norwegicus*) since World War II.

The Bering and Chukchi Sea regions have historically supported 40 known colonies and 4000 breeding birds, but the most recent count of all known colonies in the region totals only 1556 birds. Few contemporary survey data are available for the north side of the Alaska Peninsula, where there are substantial amounts of potential habitat. An observer in 2014 (Nat Drumheller, pers. comm.) noted large numbers of Aleutian Terns near Port Moller (but did not find a breeding colony); none were seen there in 2013 during a targeted survey. The region hosts large amounts of potential habitat that have not been surveyed for Aleutian Terns in recent years.

**DISCUSSION**

Our estimate of a minimum population size of 31140 birds in 202 colonies is low compared with other Northern Hemisphere tern

**TABLE 1**
**Summary of Aleutian Tern colony status in Alaska and Russia, by geographic region**

| Region | No. of colonies (includes inactive) | No. of individuals | No. disappeared[a] | No. new[b] |
|---|---|---|---|---|
| Aleutian Islands | 11 | 296 | 5 | 0 |
| Bering Sea | 32 | 1 248 | 6 | 7 |
| Chukchi Sea | 8 | 308 | 2 | 0 |
| Gulf of Alaska | 29 | 3 152 | 4 | 12 |
| Kodiak | 30 | 525 | 12 | 7 |
| **Alaska total** | **110** | **5 529** | **29** | **26** |
| Chukotka | 3 | 229 | 0 | 0 |
| Koryakiya | 15 | 1 560 | 0 | 9 |
| Kamchatka | 36 | 4 514 | 2 | 2 |
| Magadan | 8 | 467 | 1 | 5 |
| Khabarovsk | 14 | 2 972 | 0 | 0 |
| Sakhalin | 16 | 15 860 | 0 | 0 |
| **Russia total** | **92** | **25 602** | **3** | **16** |
| **Worldwide total** | **202** | **31 131** | **32** | **42** |

[a] Number of colonies with a zero on the most recent count.
[b] Number of colonies first recorded after 1995.

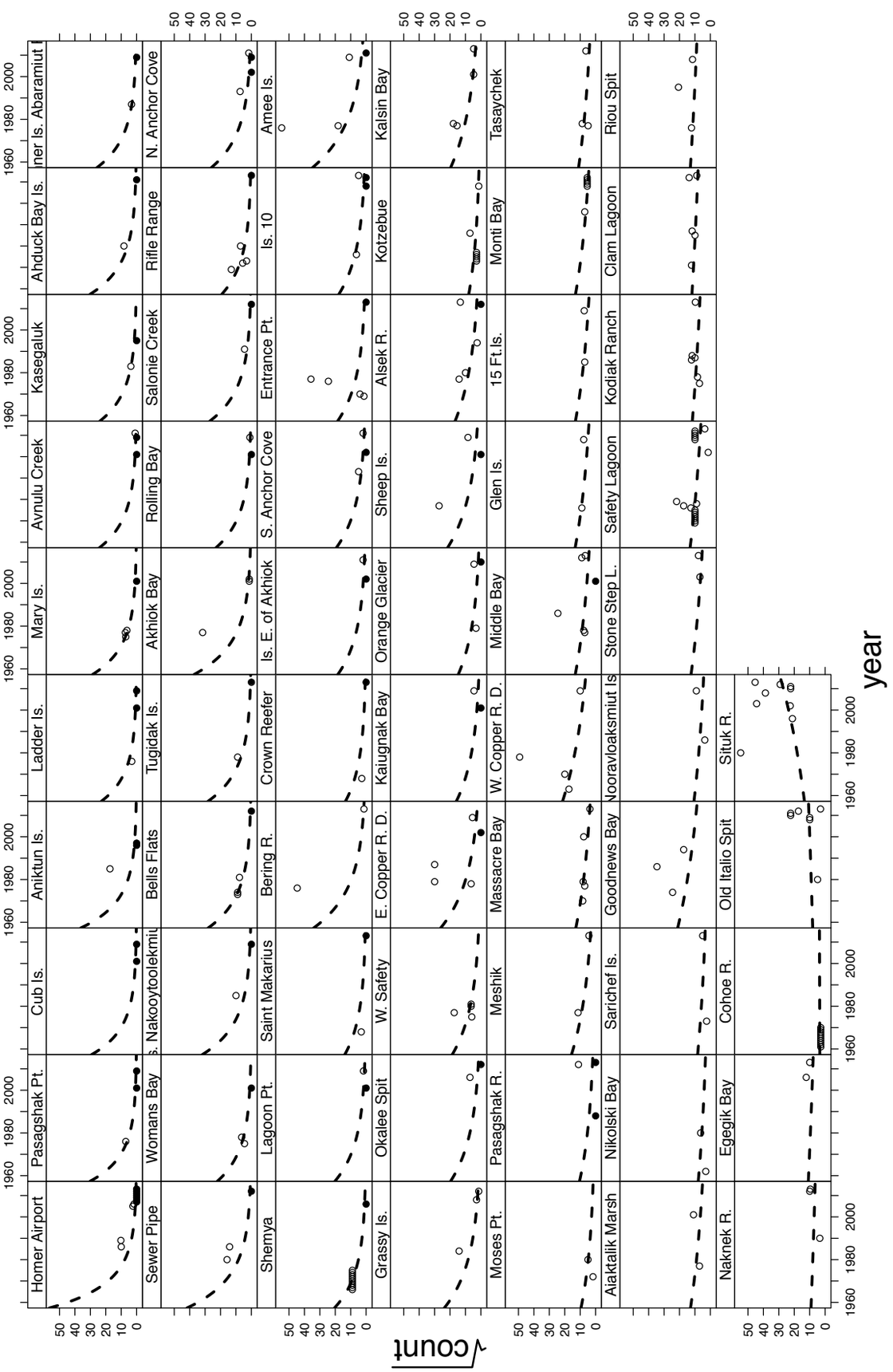


**Fig. 5**. Modeled trends in Alaskan Aleutian Tern colonies since 1960. For graphical visualization, colony counts were square-root transformed. Colonies were ordered by the size of the mean count.

species (e.g. Common Terns *Sterna hirundo* [1.6–4.6 million], Arctic Tern [>2 million] and Caspian Tern *Hydroprogne caspia* [240000–420000]; IUCN 2014). Globally, this estimate puts Aleutian Tern probably among the 10 (out of 41–43 species) rarest terns by population size (IUCN 2014). Our trend analysis indicates a large-scale change in previously documented populations in Alaska. To put this potential decline in perspective, one of the criteria for categorizing a species as Critically Endangered by the IUCN Red List program (IUCN 2013) is a decline of >80% over three generations (estimated near 33 years for Aleutian Terns), and our Alaskan data indicated a 92.9% decline over that time period. Although we were unable to complete a trend analysis on the available Russian Aleutian Tern colony data, it does not appear that the overall population there is declining. Local populations appear to be increasing in the South Koryakiya and Sakhalin Island regions, and they appear stable in Kamchatka. The northern end of Sakhalin Island may support half the world's population of breeding Aleutian Terns, with the majority found in the Piltun Gulf. Further surveys are needed across Alaska and Russia to confirm whether additional colonies exist.

Our estimates of population size are dependent on a number of underlying assumptions. A few Alaskan areas that we believe may still have nesting Aleutian Terns lack recent surveys; these include Goodnews Bay, Dillingham (Grassy Island), Izembek Lagoon and Port Moller, each of which has previously supported hundreds of birds. Likewise, the Alaskan and Siberian coastlines are vast, and these findings do not account for a significant amount of unsurveyed area that could potentially support nesting Aleutian Terns. Moreover, we do not know whether birds from colonies that have declined or are no longer active have moved to new locations and established colonies that have not yet been identified. Banding or satellite tagging studies are needed to understand intercolony movements.

Even where count data are available, inference is drawn from a relatively small number of sampling events in any one colony location. Until 2013, counts were not conducted following a formal protocol. Furthermore, counts were not conducted within a standard temporal window during the breeding season, a standardized metric was not used for counts (e.g. birds in the air, nests etc.), and data quality is low in many cases (e.g. estimates were occasionally guesses rather than counts and were rarely replicated). In addition, there is known variability in attendance, both within and among years (Pyare *et al*. 2013); as a result, the limited data are confounded by extreme variation in attendance, partly due to breeding failure, and occasional colony movement (Oehlers 2012). However, recognizing this limitation, we see no reason for directional bias in the estimates. The strength of our analysis is based on the large number of colonies combined into a single model, together indicating a trend.

We are unaware of any published data on dispersal or philopatry in Aleutian Terns. Limited evidence from Alaska and Kamchatka suggests that Aleutian Terns can visit potential breeding sites 10–100 km apart from one year to the next (Lobkov 1998, Pyare *et al*. 2013). Movement between breeding colonies is common in some tern species (but see Braby *et al*. 2012), and this movement complicates the interpretation of colony count data. Emigration from a breeding colony can be caused by a variety of factors, including predation (Brindley *et al*. 1999, Cuthbert and Wires 1999), human disturbance from egging (Feare and Lesperance 2002), food availability (Crawford 2003) and management actions (Roby *et al*. 2002). The resulting immigration to neighboring colonies by dispersing individuals can have a profound effect on colony growth rate (Szostek *et al*. 2014). Although dispersing terns may occasionally establish new colonies (Roby *et al*. 2002), it seems more common that they will move to a previously established colony (e.g. Feare & Lesperance 2002, Tims *et al*. 2004, Devlin *et al*. 2008, Spendelow *et al*. 2010). For some species of tern, high rates of fidelity to previous breeding colonies have been observed, particularly at colonies that experience low rates of predation and disturbance (Spendelow *et al*. 1995, Devlin *et al*. 2008). Given the limitations of our data, we cannot quantify the influence that dispersal may have on the population dynamics of Aleutian Terns. We acknowledge the possibility that some of the observed decline at individual Aleutian Tern colonies in Alaska may be due, in part, to dispersal and that Aleutian Terns in Alaska likely comprise a metapopulation of local populations distributed among patches of suitable habitat. However, we believe that the effect of dispersal alone may not be enough to explain the observed declines in known colonies, because (1) dispersal rates may be low for remote colonies in Alaska that do not have high levels of disturbance, (2) dispersing birds may be more attracted to established colonies (as opposed to establishing new colonies, thus making them more likely to be counted at a neighboring colony), and (3) there would have to be considerably more emigration from known colonies to unknown colonies rather than the other way around (i.e. dispersal would have to be biased). Disturbance could cause such a bias, and would likely lead to increased breeding failure and decreased productivity as well.

Clearly, there is a need to examine potential habitat areas outside known colonies to confirm our results. Nonetheless, within Alaska, from our experience searching large areas for these colonies, we think it is unlikely birds could have relocated in Alaska, to locations not subsequently discovered, sufficiently to counter the large decline observed in known colonies.

At an even broader scale, the question about connectivity between Russian and Alaskan populations is still open. Based on data collected from two birds equipped with geolocators, the migration route for Alaskan Aleutian Terns overlapped some of the coastline where Russian birds have established colonies (Pyare *et al*. 2013). Still, birdwatchers' reports suggest a highly pelagic migration is most likely, with birds seen from land only during or after major storms.

We have no evidence of a single stressor responsible for the apparent reduction in Aleutian Terns in Alaska. Several factors, including predation, traditional harvest of eggs and disturbance by humans likely play a role in population change at local scales and, cumulatively, may have wider population-level effects. Aleutian Tern eggs and chicks are taken by a large variety of avian and terrestrial predators, and heavy predation can negatively affect reproductive success, particularly when combined with other forms of colony disturbance (Nechaev & Lobkov 1988, Haney *et al*. 1991, Oehlers 2007, North 2013). Subsistence egging by Alaska natives occurs at many colonies (e.g. Yakutat, Cape Krusenstern, Dillingham, Goodnews Bay, Kodiak Island, Situk River). Aleutian Terns can be highly sensitive to human disturbance (Buckley & Buckley 1979, North 2013) and have abandoned colonies after just a single human visit (Haney *et al*. 1991). Some of the large tern colonies in Alaska as well as in the south Sea of Okhotsk and southwest Bering Sea are near areas of substantial human activity, and we received anecdotal reports of regular disturbance at many colonies (see also Nechaev & Lobkov 1988, Lobkov 1998). Sometimes disturbance and predation can have a strong effect on single colonies: for example, Babenko (1996) identified egging and disturbance as the main threats to Aleutian Terns in the Schastya Gulf.

The availability of suitable nesting habitat is not known to be a limiting factor for Aleutian Terns at the population level, although habitat change has created local-scale effects in a few instances that may influence long-term tern nesting success (e.g. tectonic uplift in the Copper River Delta [Holtan 1980], coastal and fluvial processes at Situk River, Yakutat [Oehlers 2007], and storm tides and erosion on coastal barrier islands in the Bering Sea [Gill 2008]).

Other factors that may impact Aleutian Terns, and have not been studied, include the status of the marine-based food supply within foraging distance of breeding colonies and habitat quality in wintering areas. Changes in food availability have been implicated in a 57% Arctic Tern decline in Maine in the last decade (Linda Welch, pers. comm.; Gulf of Maine Seabird Working Group 2014). On a local level, food availability has also been shown to significantly influence colony size and fidelity in Greater Crested Terns *Thalasseus bergii* (Crawford 2003). Although the wintering areas of Aleutian Terns are still largely unknown, some evidence indicates that some birds spend the winter in Southeast Asia and Oceania in the tropical western Pacific (Haney *et al*. 1991, North 2013, Pyare *et al*. 2013). In particular, there are a small number of old specimen records from the Philippines and Indonesia (Lee 1992, Hill & Bishop 1999, Carey *et al*. 2001). Since the early 1990s, the species has been recorded annually in the fall off Hong Kong and less frequently in spring (Hill & Bishop 1999). In addition, a wintering area has been found recently in the Strait of Malacca (Poole *et al*. 2011). Little is known about the potential habitat quality or threats to Aleutian Terns in these areas.

Apparent numbers of Aleutian Terns in Alaskan colonies have declined dramatically since the 1960s. If these counts were to reflect the population history of the species, it would represent an almost unparalleled population crash within Alaskan seabirds. Many unanswered questions remain, however.

**Recommendations**

Although some effort has been made to monitor Aleutian Terns in a few discrete locations in Alaska (e.g. Yakutat, Kodiak Island), a coordinated, range-wide monitoring program, including an appropriate sampling design and protocol development, is needed to track the population. Surveys should also be conducted at historical colonies, particularly in the Aleutian Islands and Bering Sea/Alaska Peninsula (north side), where limited contemporary survey data are available. Tagging studies to determine inter-colony movement, and broad food habits studies, are needed. In the interim, we urge management efforts to insulate colonies from human disturbance and more concerted efforts among Alaska and Russian partners, especially focused on understanding colony movements and dispersal.

Outside of the breeding grounds, priority should be given to collecting information on Aleutian Tern wintering locations and ecology. Current information is limited to a handful of sight records and is insufficient to determine whether potential threats on the wintering grounds could be negatively impacting the species.

**ACKNOWLEDGEMENTS**

We thank B. Atkinson, Attours Inc., B. Benter, M. Bishop, T. Burke, E. Cooper, N. Catterson, R. Corcoran, T. Eskelin, C. Field, D. Forsell, J. Frederick, C. Gales, S. Georgette, A. Harding, I. Helmericks, D. Hobcroft, D. Ikis, D. Irons, J. Johnson, M. Johnson, R. Kaler, K. Kuletz, M. Kissling, A. Kholsa, E. Kwon, T. Lewis, R. MacDonald, R. Macintosh, J. Maniscalco, B. McCaffery, J. Meehan, R. Meyers, S. Minton, T. Moran, S. Oehlers, C. Peterson, J. Puschock, D. Rudis, R. Russell, D. Ruthrauff, S. Savage, J. Schwarz, M. Schwitters, K. Sowl, L. Spitler, S. Stephensen, M. Swaim, J. Williams, J. Withrow and D. Zwiefelhofer for generously providing unpublished data and observations for this analysis. N. Rojek assisted with literature review, and reviews by B. Drummond, R. Gill, D. Irons, M. Kissling, S. Sethi, L. Slater and an anonymous reviewer improved earlier drafts of the manuscript. The findings and conclusions in this manuscript are those of the authors and do not necessarily represent the views of the US Fish and Wildlife Service.

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# Enclosure 3

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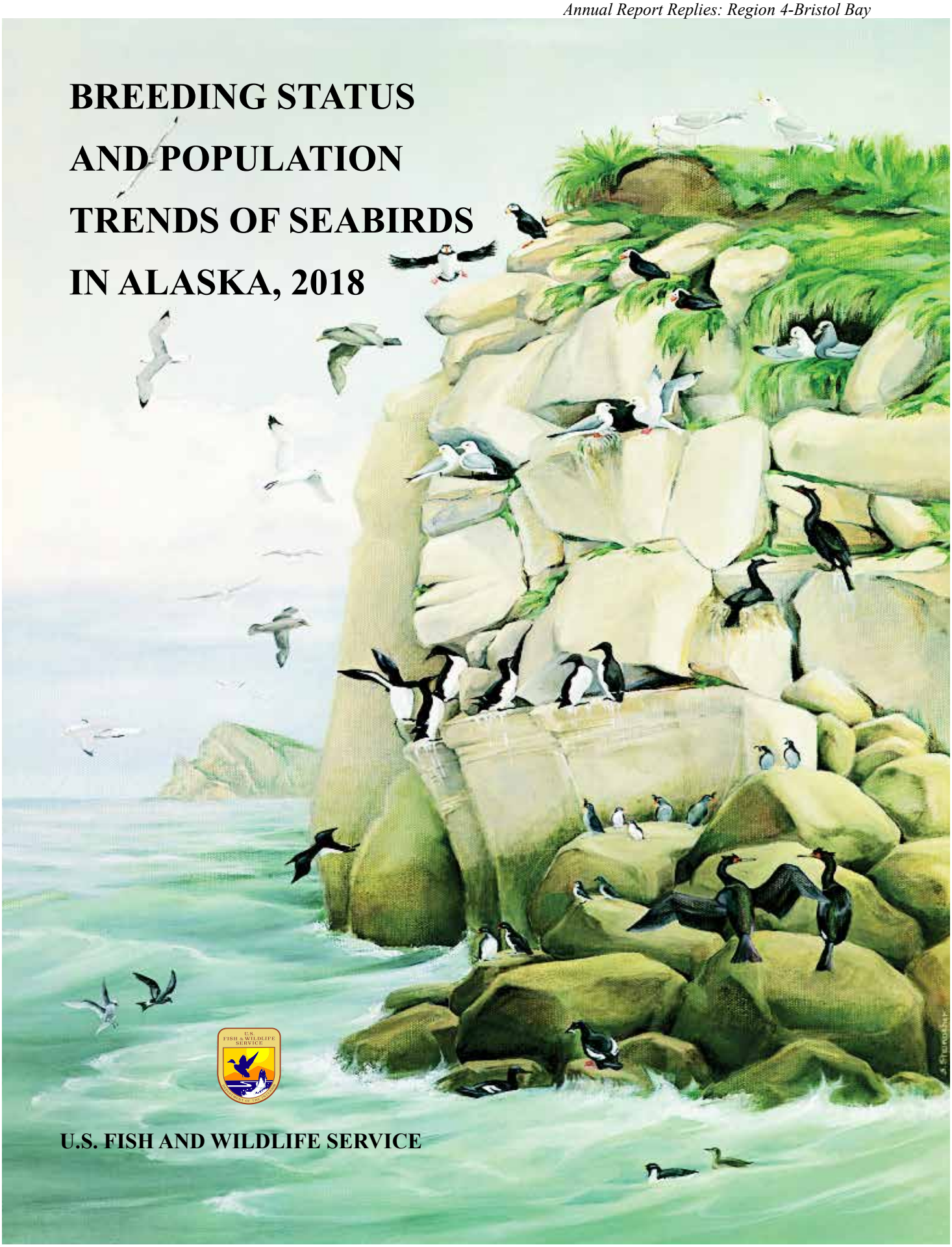
# BREEDING STATUS AND POPULATION TRENDS OF SEABIRDS IN ALASKA, 2018



**U.S. FISH AND WILDLIFE SERVICE**

**AMNWR 2019/03**

# BREEDING STATUS AND POPULATION TRENDS OF SEABIRDS IN ALASKA, 2018

Compiled By:

Donald E. Dragoo, Heather M. Renner and Robb S. A. Kaler[a]

Key words: *Aethia*, Alaska, Aleutian Islands, ancient murrelet, Bering Sea, black-legged kittiwake, *Cepphus, Cerorhinca*, Chukchi Sea, common murre, crested auklet, fork-tailed storm-petrel, *Fratercula*, *Fulmarus*, glaucous-winged gull, Gulf of Alaska, hatching chronology, horned puffin, *Larus*, Leach's storm-petrel, least auklet, long-term monitoring, northern fulmar, *Oceanodroma*, parakeet auklet, pelagic cormorant, *Phalacrocorax*, pigeon guillemot, Prince William Sound, productivity, red-faced cormorant, red-legged kittiwake, rhinoceros auklet, *Rissa*, seabirds, *Synthliboramphus,* thick-billed murre, tufted puffin, *Uria*, whiskered auklet.

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April 2019

Cite as: Dragoo, D. E., H. M. Renner, and R. S. A. Kaler. 2019. Breeding status and population trends of seabirds in Alaska, 2018. U.S. Fish and Wildlife Service Report AMNWR 2019/03. Homer, Alaska.

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The findings and conclusions in this report are those of the author(s) and do not necessarily represent the views of the U.S. Fish and Wildlife Service or the Department of the Interior.

## Executive Summary

Data are collected annually for selected species of marine birds at breeding colonies on the far-flung Alaska Maritime National Wildlife Refuge (NWR), and at other areas in Alaska, to monitor the condition of the marine ecosystem and to evaluate the conservation status of species under the trust of the U. S. Fish and Wildlife Service. The strategy for colony monitoring includes estimating timing of nesting events, rates of reproductive success, and population trends of representative species of various foraging guilds (e.g., offshore diving fish-feeders, diving plankton-feeders) at geographically dispersed breeding sites. This information enables managers to better understand ecosystem processes and respond appropriately to resource issues. It also provides a basis for researchers to test hypotheses about ecosystem change. The value of the marine bird monitoring program is enhanced by having sufficiently long time-series to describe patterns for these long-lived species.

During the summer of 2018, seabird data were gathered at seven of the eight annual monitoring sites on the Alaska Maritime NWR. Birds were not monitored at Cape Lisburne in 2018. The species/species groups monitored were murres, pigeon guillemots, ancient murrelets, auklets, puffins, kittiwakes, glaucous-winged gulls, northern fulmars, storm-petrels, and cormorants. In addition, data were gathered at seven other locations which are visited intermittently, or were part of a research or monitoring program outside the refuge.

### **Timing of breeding** (Table A)

• Statewide, in 2018 mean hatch date was early in 20%, average in 20%, and late in 60% of monitored species. Hatch dates of only three species (ancient murrelets, least auklets, and tufted puffins) were earlier than average in 2018. Most other species were late, with three species exhibiting average timing.

• Murre and kittiwake eggs failed to hatch on study plots at some monitored colonies in 2018 (e. g., murres at Aiktak Island; black-legged kittiwakes at St. George Island; red-legged kittiwakes at St. Paul Island). Least auklets hatched early at St. George Island for the fifth year in a row. Murres hatched later than average for the second year at the Pribilof Islands.

Table A. Regional and statewide seabird breeding chronology[a] compared to averages for past years within regions and the state of Alaska as a whole. Only regions for which there were data from 2018 are included.

| Region | COMU[b] | TBMU | ANMU | PAAU | LEAU | WHAU | CRAU | HOPU | TUPU | BLKI | RLKI | GWGU | FTSP | LHSP | RFCO |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SE Bering | L | L | E | | E | | | A | E | L | | A | L | L | A |
| SW Bering | | L | | L | A | A | L | L | | L | L | L | L | L | |
| N. GOA[c] | A | A | | L | | | | E | E | A | | A | | | |
| Southeast | L | L | | | | | | | | | | L | E | A | |
| **Alaska** | L | L | E | L | E | A | L | A | E | L | L | L | L | L | A |

[a]Codes:
"E" and red cell color indicate hatching chronology was > 3 days earlier than the average for sites in this region.
"A" and yellow cell color indicate hatching chronology was within 3 days of average.
"L" and green cell color indicate hatching chronology was > 3 days later than the average for sites in this region.

[b]COMU=common murre, TBMU=thick-billed murre, ANMU=ancient murrelet, PAAU=parakeet auklet, LEAU=least auklet, WHAU=whiskered auklet, CRAU=crested auklet, HOPU=horned puffin, TUPU=tufted puffin, BLKI=black-legged kittiwake, RLKI=red-legged kittiwake, GWGU=glaucous-winged gull, FTSP=fork-tailed storm-petrel, LHSP=Leach's storm-petrel, RFCO=red-faced cormorant.

[c]GOA=Gulf of Alaska.

### **Productivity** (Table B)

• Statewide, only red-faced cormorants exhibited higher than average productivity in 2018 (6% of monitored species). Productivity was average in 59% of species, and below average in 35%.

• In 2018, common murres and black-legged kittiwakes exhibited widespread breeding failures, especially in the southeastern Bering Sea and Gulf of Alaska. However, in contrast to birds in other Gulf of Alaska colonies, murres, puffins, black-legged kittiwakes, and red-faced cormorants all exhibited higher than average

productivity at Chowiet Island in 2018.

• Observations made during a short visit to the Chukchi Sea indicated that murre productivity was very low at capes Lisburne and Thompson as well as at Sledge Island and Bluff in 2018.

Table B. Regional and statewide seabird breeding productivity levels[a] compared to averages for past years within regions and the state of Alaska as a whole. Only regions for which there were data from 2018 are included.

| Region | COMU[c] | TBMU | ANMU | PAAU | LEAU | WHAU | CRAU | RHAU | HOPU | TUPU | BLKI | RLKI | GWGU | FTSP | LHSP | RFCO | PECO |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SE Bering | L | L | A | | L | | | | L | H | L | L | L | L | A | L | L |
| SW Bering | L | L | | H | A | A | A | | A | L | A | A | A | A | A | | |
| N. GOA[b] | L | H | | L | | | | L | H | H | L | | A | | | H | A |
| Southeast | A | H | | | | | | A | | | | | L | A | A | | |
| **Alaska** | L | A | A | A | L | A | A | A | A | A | L | L | L | A | A | H | L |

[a]Codes:
"L" and red cell color indicate productivity was > 20% below the average for the region.
"A" and yellow cell color indicate productivity was within 20% of average.
"H" and green cell color indicate productivity was > 20% above the average for the region.

[b]GOA=Gulf of Alaska.

[c]COMU=common murre, TBMU=thick-billed murre, ANMU=ancient murrelet, PAAU=parakeet auklet, LEAU=least auklet, WHAU=whiskered auklet, CRAU=crested auklet, RHAU=rhinoceros auklet, HOPU=horned puffin, TUPU=tufted puffin, BLKI=black-legged kittiwake, RLKI=red-legged kittiwake, GWGU=glaucous-winged gull, FTSP=fork-tailed storm-petrel, LHSP=Leach's storm-petrel, RFCO=red-faced cormorant, PECO=pelagic cormorant.

**Population trends during 2009-2018** (Table C)

• Statewide, 12.5% of species/species groups showed increasing population trends, 37.5% were stable, and 50% declined between 2009 and 2018.

• Low colony attendance in recent years following the 2015-2016 winter die off may be a consequence of poor breeding performance, which could be due to local habitat conditions but also could be a result of poor body condition from the winter. Birds not attending the cliffs frequently form large rafts in nearby waters.

• In some cases, recent counts were a small fraction of prior years' counts. For example, the 2016-2018 counts of common murres at Cape Peirce all were below 100 birds, whereas counts prior to 2016 averaged almost 3000 birds. Future counts will be necessary to determine whether there was mortality, whether breeding birds emigrated out of the area, or whether they simply didn't breed in recent years.

Table C. Regional and statewide seabird population trends[a] between 2009 and 2018 within regions and the state of Alaska as a whole. Only sites for which there were data from at least two years (at least 5 years apart) within the target decade are included.

| Region[b] | COMU[c] | TBMU | UNMU | PIGU | LEAU | RHAU | TUPU | BLKI | RLKI | GWGU | NOFU | FTSP | STPE | RFCO | PECO | UNCO |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| N. BS/CS | | | ↑ | | | | | ↑ | | | | | | | | |
| SE Bering | ↓ | ↔ | ↓ | | ↓ | | ↔ | ↓ | ↓ | ↓ | ↔ | | ↔ | ↓ | ↓ | ↓ |
| SW Bering | | | ↔ | | | | | ↑ | ↑ | | | | | | ↓ | ↔ |
| N. GOA | ↑ | | ↓ | ↑ | | ↔ | ↓ | ↑ | | ↔ | ↓ | ↓ | | | | |
| Southeast | | | ↔ | ↔ | | ↑ | | | | ↑ | | | ↔ | | ↑ | |
| **Alaska** | ↓ | ↔ | ↓ | ↑ | ↓ | ↔ | ↓ | ↑ | ↔ | ↔ | ↔ | ↓ | ↔ | ↓ | ↓ | ↓ |

[a]Codes:
↓ and red cell color indicate a negative population trend of ≥3% per annum for this site or region.
↔ and yellow cell color indicate no population trend.
↑ and green cell color indicate a positive population trend of ≥3% per annum for this site or region.

[b]BS=Bering Sea, CS=Chukchi Sea, GOA=Gulf of Alaska.

[c]COMU=common murre, TBMU=thick-billed murre, UNMU=unspecified murre, PIGU=pigeon guillemot, LEAU=least auklet, RHAU=rhinoceros auklet, TUPU=tufted puffin, BLKI=black-legged kittiwake, RLKI=red-legged kittiwake, GWGU=glaucous-winged gull, NOFU=northern fulmar, FTSP=fork-tailed storm-petrel, STPE=unspecified storm-petrel, RFCO=red-faced cormorant, PECO=pelagic cormorant, UNCO=unspecified cormorant.

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## Introduction

This report is the latest in a series of annual reports summarizing the results of seabird monitoring efforts at breeding colonies on the Alaska Maritime National Wildlife Refuge (NWR) and elsewhere in Alaska (see Byrd and Dragoo 1997, Byrd et al. 1998 and 1999, Dragoo et al. 2000, 2001, 2003, 2004 and 2006-2018 for compilations of previous years' data). The seabird monitoring program in Alaska is designed to keep track of selected species of marine birds that indicate changes in the ocean environment. Furthermore, the U. S. Fish and Wildlife Service has the responsibility to conserve seabirds, and monitoring data are used to identify conservation problems. The objective is to provide long-term, time-series data from which biologically significant changes may be detected and from which hypotheses about causes of changes may be tested.

The Alaska Maritime NWR was established specifically to conserve marine bird populations and habitats in their natural diversity and the marine resources upon which they rely, and to provide for an international program for research on marine resources (Alaska National Interests Land Conservation Act of 1982). The monitoring program is an integral part of the management of this refuge and provides data that can be used to define "normal" variability in demographic parameters and identify patterns that fall outside norms and thereby constitute potential conservation issues. Although approximately 80% of the seabird nesting colonies in Alaska occur on the Alaska Maritime NWR, marine bird nesting colonies occur on other public lands (e.g., national and state refuges) and on private lands as well.

The strategy for colony monitoring includes estimating timing of nesting events, reproductive success, population trends, and prey used by representative species of various foraging guilds (e.g., murres are offshore diving fish-feeders, kittiwakes are surface-feeding fish-feeders, auklets are diving plankton-feeders, etc.) at geographically dispersed breeding sites along the entire coastline of Alaska (Figure 1). A total of eight sites on the Alaska Maritime NWR, located roughly 300-500 km apart, are scheduled for annual surveys (Byrd 2007). During the summer of 2018, seabird data were gathered at seven of the eight annual monitoring sites on the Alaska Maritime NWR. Birds were not monitored at Cape Lisburne in 2018, although a short visit to the area occurred in late July-early August. Furthermore, data are recorded annually or semiannually at other sites in Alaska (e.g., Cape Peirce, Togiak NWR; Round and Middleton islands; Prince William Sound). In addition, colonies near the annual sites are identified for less frequent surveys to "calibrate" the information at the annual sites (e.g., Cape Thompson). Data provided from other research projects (e.g., those associated with evaluating the impacts of invasive rodents on marine birds) also supplement the monitoring database.

In this report, we summarize information from 2018 for each species; i.e., tables with estimates of average hatch dates and reproductive success, and maps with symbols indicating the relative timing of hatching and reproductive success at various sites. In addition, historical patterns of hatching chronology and productivity are illustrated for those sites for which we have sufficient data. Population trend information is included for sites where adequate data are available.

## Methods

Data collection methods followed standardized protocols (e.g., AMNWR 2018). Timing of nesting events and productivity usually were based on periodic checks of samples of nests (usually in plots) throughout the breeding season, but a few estimates of productivity were based on single visits to colonies late in the breeding season (as noted in the tables). Hatch dates were used to describe nesting chronology. Productivity typically was expressed as chicks fledged per egg, but occasionally other variables were used (Table 1). Population surveys were conducted for ledge-nesting species at times of the day and breeding season when variability in attendance was reduced. Most burrow-nester counts were made early in the season before vegetation obscured burrow entrances. Deviations from standard methods are indicated in reports from individual sites which are referenced herein.

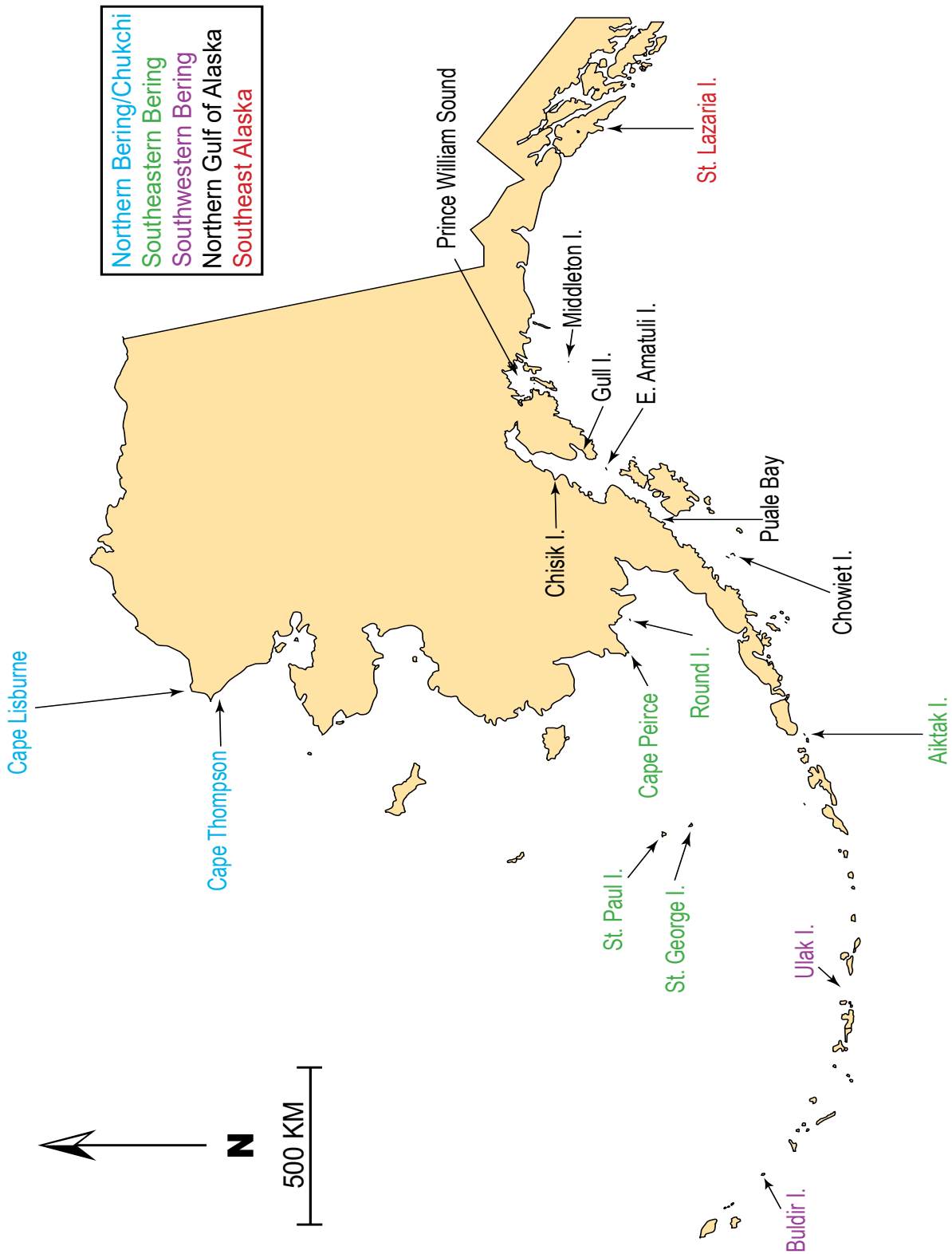



Figure 1. Map of Alaska showing the locations of seabird monitoring sites summarized in this report. Text color indicates geographic regions.

Table 1. Productivity parameters used in this report (see AMNWR 2018).

| Species | Productivity Value |
|---|---|
| Murres | Chicks Fledged/Nest Site (Total chicks fledged/Total sites where egg was laid) |
| Ancient murrelet | Chicks Fledged/Egg (Total chicks fledged/Total eggs) |
| Auklets (except RHAU) | Chicks Fledged/Nest Site (Total chicks fledged/Total sites where egg was laid) |
| Rhinoceros auklet | Overall Residency Index (Late apparent occupancy/Early apparent occupancy) |
| Horned puffin | Chicks Fledged/Egg (Total chicks fledged/Total eggs) |
| Tufted puffin | Overall Residency Index (Late apparent occupancy/Early apparent occupancy) |
| Kittiwakes | Chicks Fledged/Nest (Total chicks fledged/Total nests) |
| Glaucous-winged gull | Hatching Success (Total chicks/Total eggs) |
| Storm-petrels | Chicks Fledged/Egg (Total chicks fledged/Total eggs) |
| Cormorants | Chicks Fledged/Nest (Total chicks fledged/Total nests) |

This report summarizes monitoring data from 2018, and compares 2018 results with previous years. For sites with at least two years of data prior to 2018, site averages were used for comparisons. For chronology, we considered dates within 3 days of the long-term average to be "normal"; larger deviations represented relatively early or late dates. For productivity, we defined significant deviations from "normal" as any that differed by more than 20% from the site average. Population trends were analyzed using linear regression models on log-transformed data (ln) to calculate the slope of the line. The resultant slope is equivalent to the annual rate of population change. A trend was defined as any change greater than or equal to a three percent per annum increase or decline (≥3% p.a.). Population counts were analyzed using two time frames: 1) data from all available years, and 2) data from just the last decade (2009-2018 for this report). A percent per annum change was calculated for each data set during both time periods, if sufficient data were available. We also summarized seabird phenology and productivity, as well as recent population trends (from 2009-2018), by region and for the entire state.

Chronology was calculated for each species in a region using data from all colonies. Each colony was weighted equally within each region. The chronology was averaged for all sites within each region resulting in a value for each species, thus producing one statewide value for each species.

Productivity was calculated for each species in a region using data from all colonies. Each colony was weighted equally within each region. The productivity was averaged for all sites within each region resulting in a value for each species. Species productivities were then averaged to calculate a statewide value for each species.

Population trends were calculated for each species/species group in a region using data from all colonies. In some cases, birds were not identified to species during counts, making it necessary for us to use species groups for analysis (e.g., unspecified murres [UNMU], storm-petrels [STPE], and cormorants [CORM]). Each colony was weighted equally within each region. Trends (line slopes) were averaged for all sites within each region resulting in a regional value for each species/species group. Only sites for which there were data from at least two years (at least 5 years apart) between 2009 and 2018 were included.

## Results

### Common murre (*Uria aalge*)

Table 2. Hatching chronology of common murres at Alaskan sites monitored in 2018.

| Site | Mean Hatch Date | Long-term Average | Reference |
|---|---|---|---|
| St. Paul I. | 16 Aug (15)[a] | 4 Aug (30)[a] | Mong et al. 2019 |
| St. George I. | 20 Aug (5) | 4 Aug (33) | Guitart et al. 2018 |
| Chowiet I. | 21 Jul (37) | 22 Jul (21) | Higgins et al. 2018 |
| St. Lazaria I. | 30 Aug (43) | 13 Aug (22) | Evans et al. 2018 |

[a]Sample size in parentheses represents the number of nest sites used to calculate the mean hatch date and the number of years used to calculate the long-term average. Current year not included in long-term average.

Table 3. Reproductive performance of common murres at Alaskan sites monitored in 2018.

| Site | Chicks Fledged/ Nest Site[a] | No. of Plots | Long-term Average | Reference |
|---|---|---|---|---|
| St. Paul I. | 0.50 | 3 (42)[b] | 0.47 (31)[b] | Mong et al. 2019 |
| St. George I. | 0.41 | 3 (22) | 0.48 (34) | Guitart et al. 2018 |
| Round I. | 0.00 | 3 (6) | 0.17 (17) | E. Weiss Unpubl. Data |
| Buldir I. | 0.00 | 1 (6) | 0.42 (18) | Pietzak et al. 2018 |
| Aiktak I. | 0.00 | 1 (3) | 0.22 (21) | Youngren et al. 2019 |
| Chowiet I. | 0.66 | 11 (187) | 0.50 (23) | Higgins et al. 2018 |
| Gull I. | 0.00 | NA[c] | 0.39 (7) | S. Schoen Unpubl. Data |
| Chisik I. | 0.00 | NA | 0.37 (6) | S. Schoen Unpubl. Data |
| St. Lazaria I. | 0.47 | 9 (43) | 0.47 (23) | Evans et al. 2018 |

[a]Since murres do not build nests, nest sites were defined as sites where eggs were laid.

[b]Sample size in parentheses represents the number of nest sites used to calculate productivity and the number of years used to calculate the long-term average. Current year not used in long-term average.

[c]Not applicable or not reported.

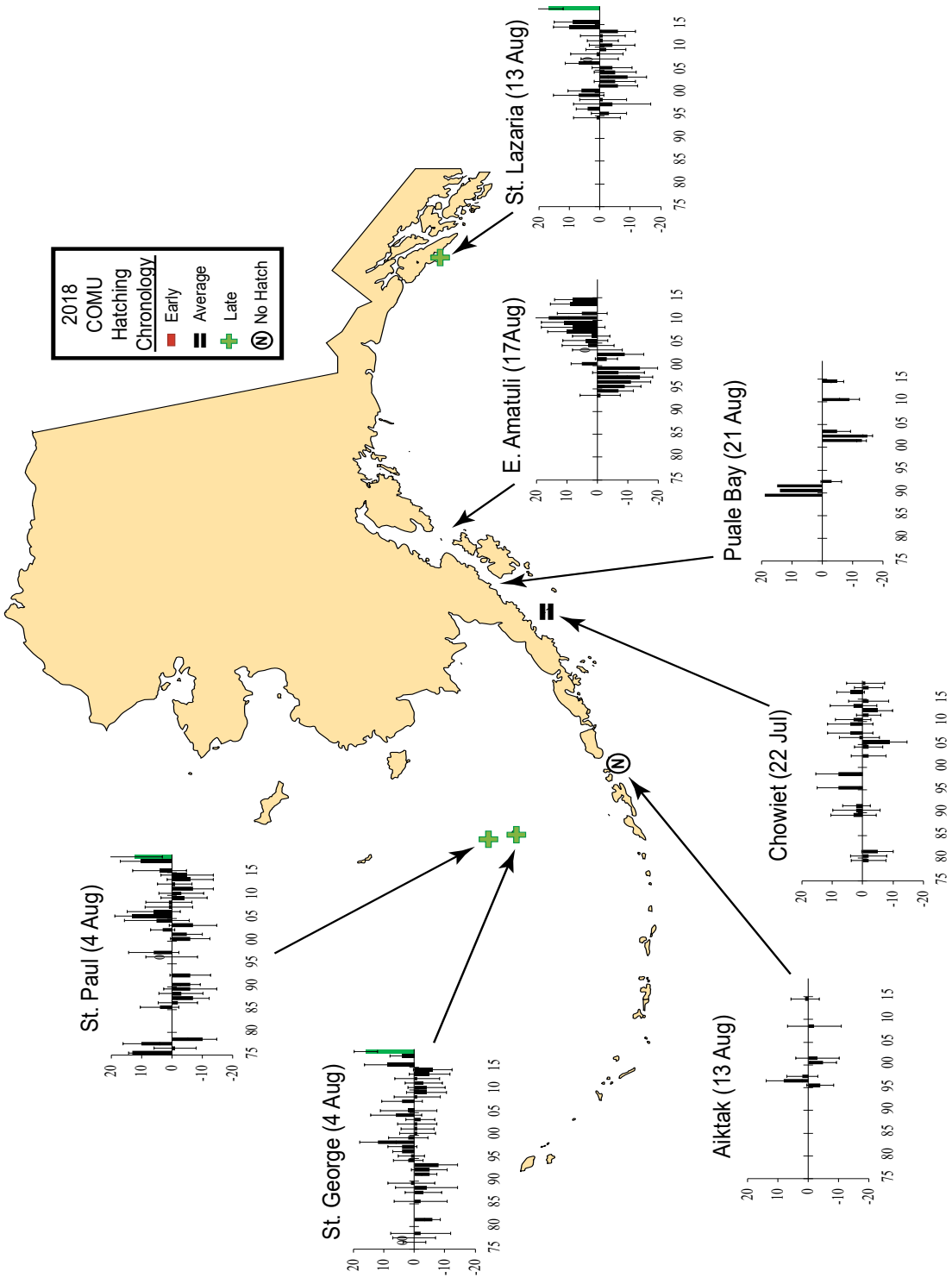



Figure 2. Hatching chronology of common murres at Alaskan sites. Graphs indicate the departure in days (if any) from the site mean (value in parentheses; current year not included). Lack of bars indicates that no data were gathered in those years. Color of graph bar and map symbol indicates how current year's success compared to the site mean (red is >3 days early, black is within 3 days and green is >3 days later than the site mean). Error bars represent ± 1 standard deviation.

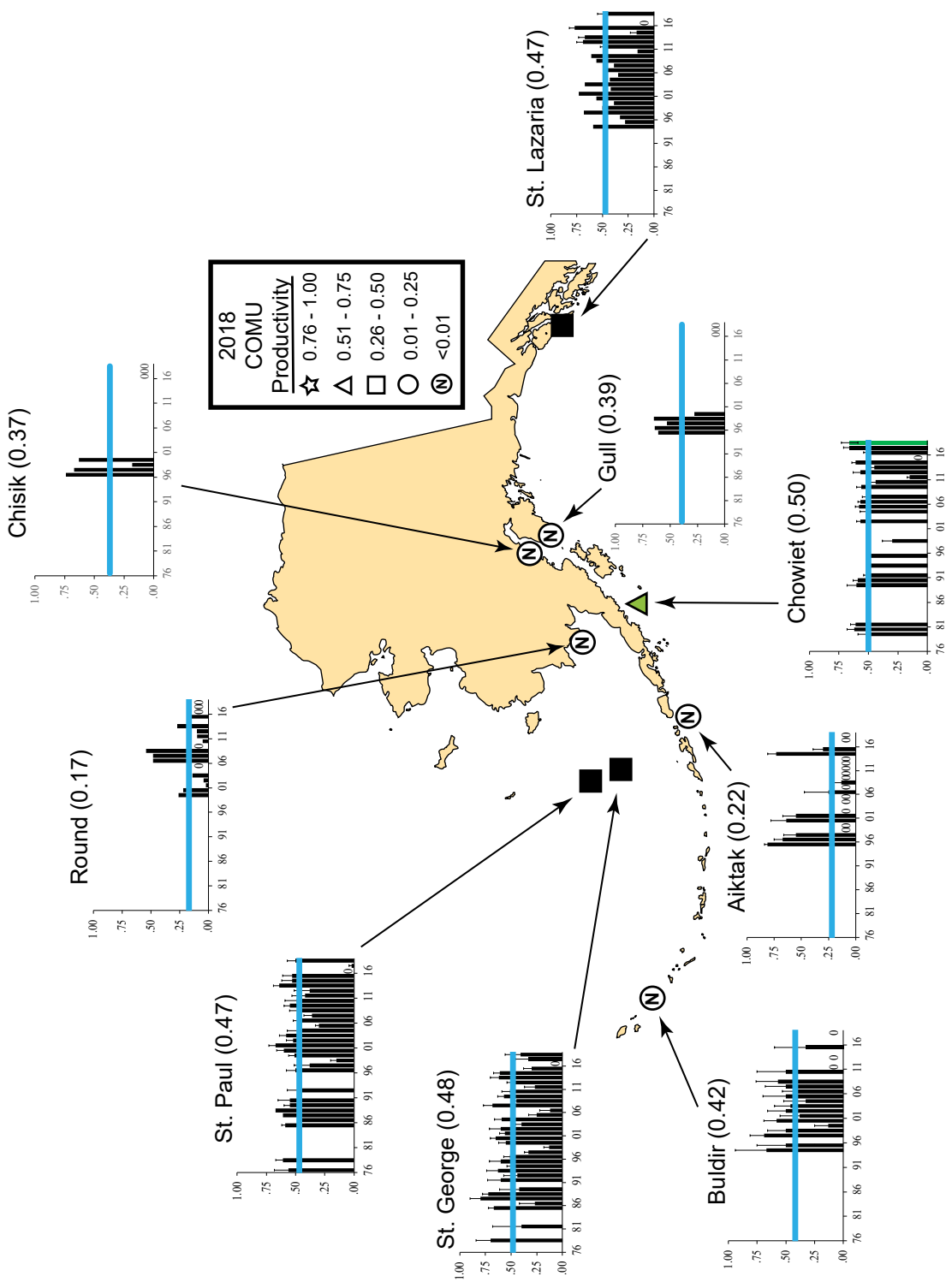



Figure 3. Productivity of common murres (chicks fledged/nest site) at Alaskan sites. Lack of bars indicates that no data were gathered in those years. Zeros indicate complete breeding failure. Blue line is the mean productivity at the site (value in parentheses; current year not included). Color of graph bar and map symbol indicates how current year's success compared to the site mean (red is >20% below, black is within 20% and green is >20% above site mean). Error bars represent ± 1 standard deviation.

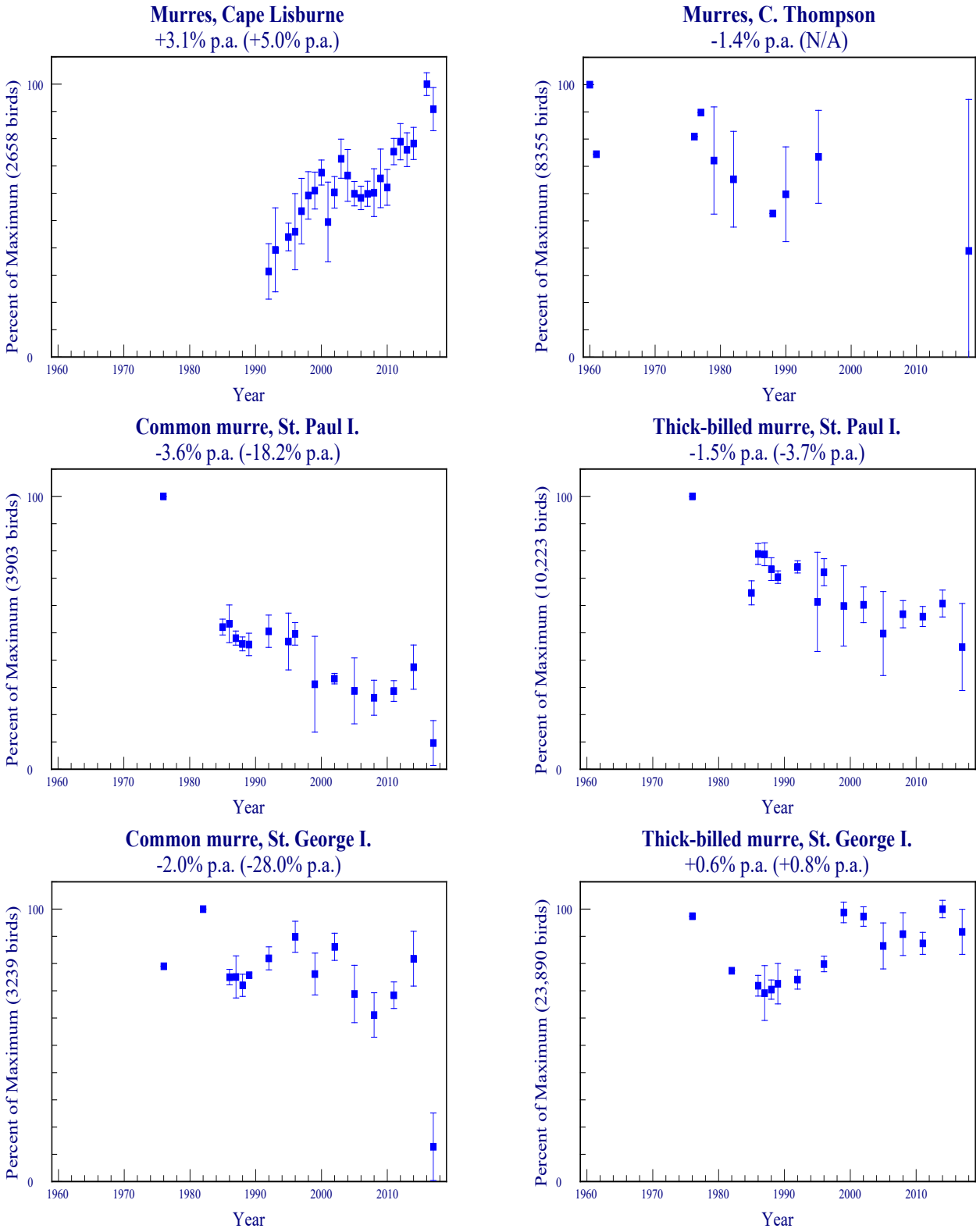



Figure 4. Trends in populations of murres at Alaskan sites. Error bars (90% confidence intervals) are shown for years with multiple counts. Percent per annum (p.a.) changes are indicated for all years and for just the last decade (2009-2018, in parentheses). "N/A" indicates that insufficient data were available.

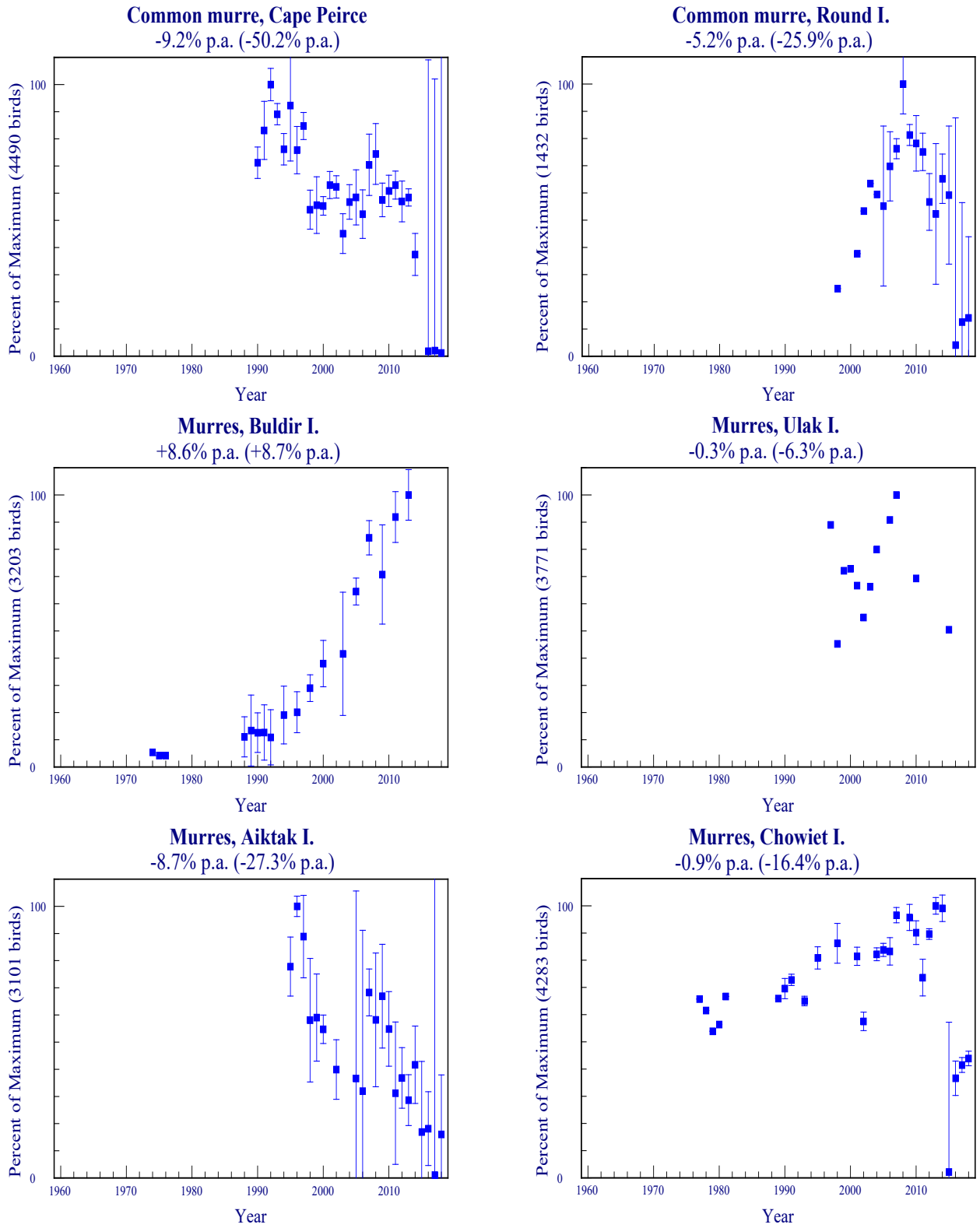



Figure 4 (continued). Trends in populations of murres at Alaskan sites. Error bars (90% confidence intervals) are shown for years with multiple counts. Percent per annum (p.a.) changes are indicated for all years and for just the last decade (2009-2018, in parentheses).

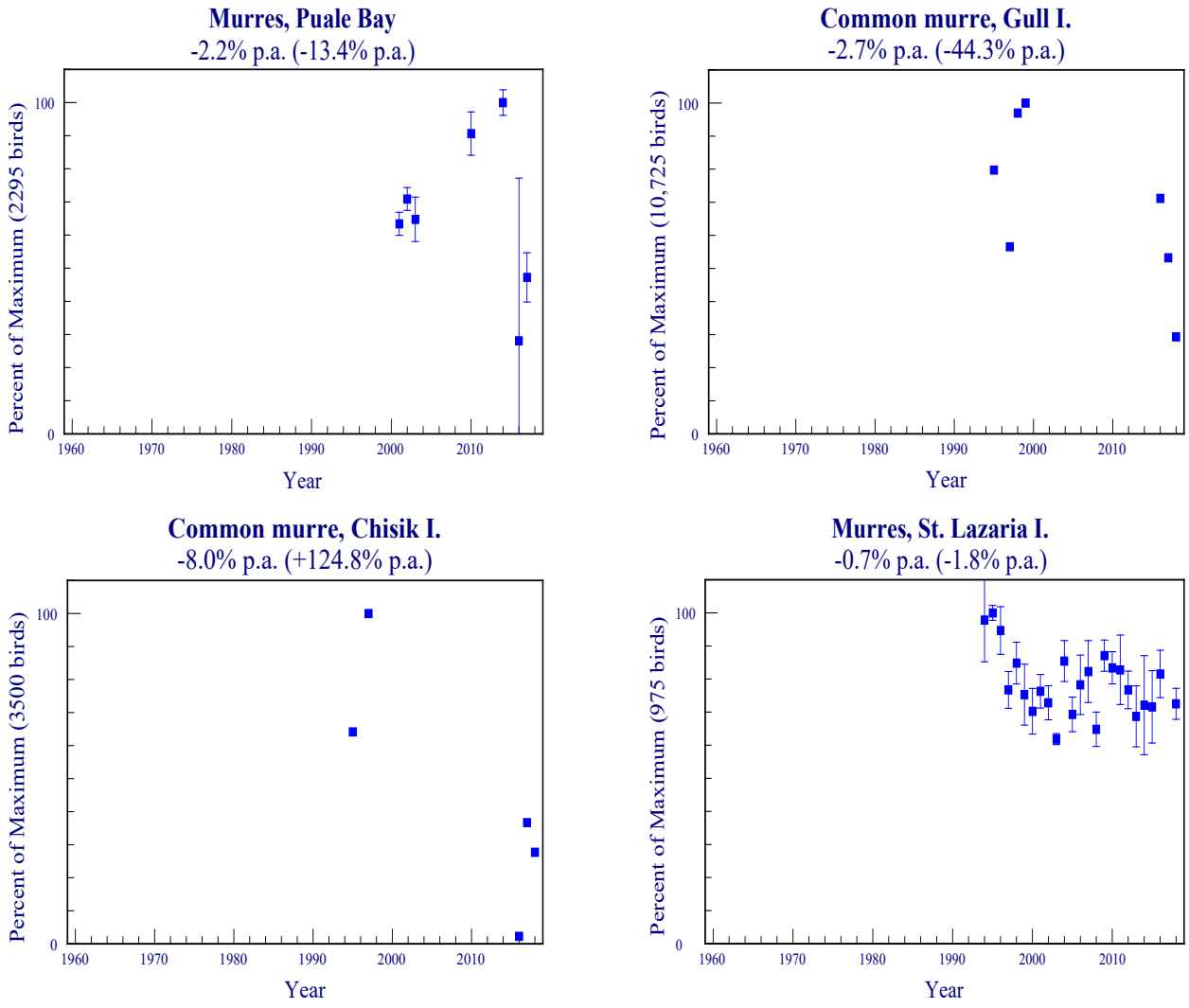



Figure 4 (continued). Trends in populations of murres at Alaskan sites. Error bars (90% confidence intervals) are shown for years with multiple counts. Percent per annum (p.a.) changes are indicated for all years and for just the last decade (2009-2018, in parentheses).

**Thick-billed murre (*Uria lomvia*)**

Table 4. Hatching chronology of thick-billed murres at Alaskan sites monitored in 2018.

| Site | Mean Hatch Date | Long-term Average | Reference |
|---|---|---|---|
| St. Paul I. | 21 Aug (141)[a] | 6 Aug (33)[a] | Mong et al. 2019 |
| St. George I. | 17 Aug (112) | 1 Aug (36) | Guitart et al. 2018 |
| Buldir I. | 25 Jul (120) | 19 Jul (30) | Pietrzak et al. 2018 |
| Chowiet I. | 23 Jul (27) | 21 Jul (20) | Higgins et al. 2018 |
| St. Lazaria I. | 1 Sep (7) | 11 Aug (21) | Evans et al. 2018 |

[a]Sample size in parentheses represents the number of nest sites used to calculate the mean hatch date and the number of years used to calculate the long-term average. Current year not included in long-term average.

Table 5. Reproductive performance of thick-billed murres at Alaskan sites monitored in 2018.

| Site | Chicks Fledged/ Nest Site[a] | No. of Plots | Long-term Average | Reference |
|---|---|---|---|---|
| St. Paul I. | 0.34 | 13 (396)[b] | 0.43 (33)[b] | Mong et al. 2019 |
| St. George I. | 0.42 | 15 (358) | 0.49 (37) | Guitart et al. 2018 |
| Buldir I. | 0.41 | 9 (298) | 0.65 (30) | Pietrzak et al. 2018 |
| Aiktak I. | 0.00 | NA[c] (7) | 0.25 (17) | Youngren et al. 2019 |
| Chowiet I. | 0.56 | 5 (108) | 0.40 (23) | Higgins et al. 2018 |
| St. Lazaria I. | 0.60 | 5 (5) | 0.44 (23) | Evans et al. 2018 |

[a]Since murres do not build nests, nest sites were defined as sites where eggs were laid.

[b]Sample size in parentheses represents the number of nest sites used to calculate productivity and the number of years used to calculate the long-term average. Current year not used in long-term average.

[c]Not applicable or not reported.

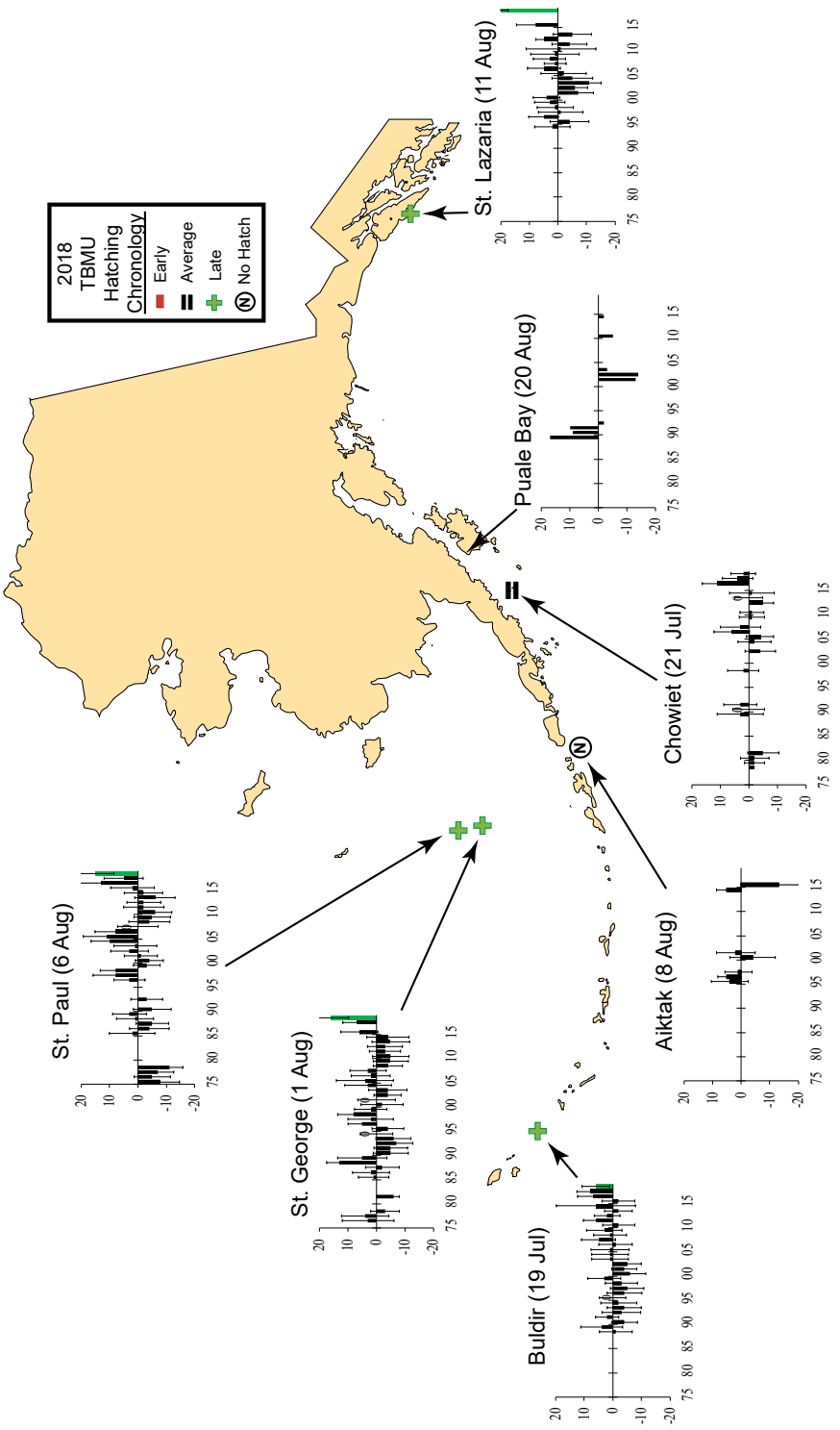



Figure 5. Hatching chronology of thick-billed murres at Alaskan sites. Graphs indicate the departure in days (if any) from the site mean (value in parentheses; current year not included). Lack of bars indicates that no data were gathered in those years. Color of graph bar and map symbol indicates how current year's success compared to the site mean (red is >3 days early, black is within 3 days and green is >3 days later than the site mean). Error bars represent ± 1 standard deviation.

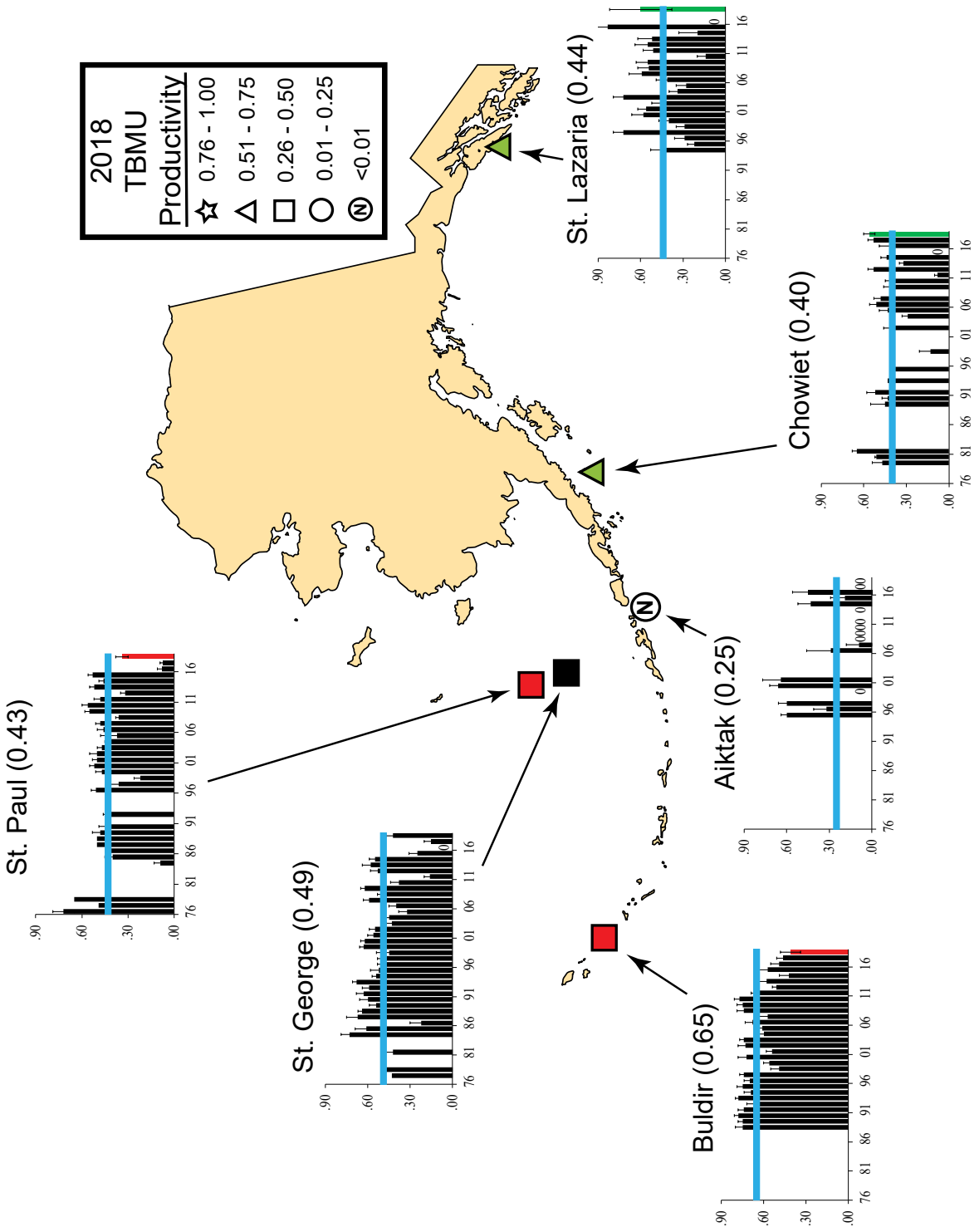
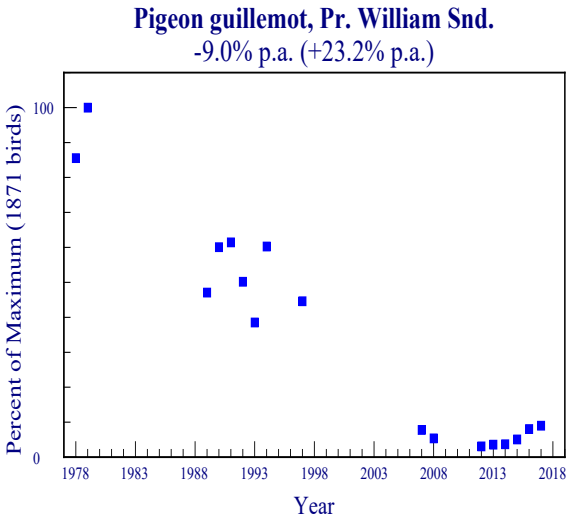



Figure 6. Productivity of thick-billed murres (chicks fledged/nest site) at Alaskan sites. Lack of bars indicates that no data were gathered in those years. Zeros indicate complete breeding failure. Blue line is the mean productivity at the site (value in parentheses; current year not included). Color of graph bar and map symbol indicates how current year's success compared to the site mean (red is >20% below, black is within 20% and green is >20% above site mean). Error bars represent ± 1 standard deviation.

**Pigeon guillemot** (*Cepphus columba*)



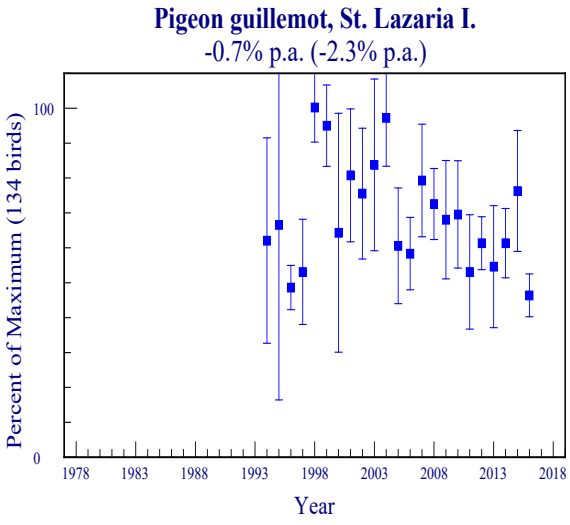




Figure 7. Trends in populations of pigeon guillemots at Alaskan sites. Error bars (90% confidence intervals) are shown for years with multiple counts. Percent per annum (p.a.) changes are indicated for all years and for just the last decade (2009-2018, in parentheses).

**Ancient murrelet** (*Synthliboramphus antiquus*)

Table 6. Hatching chronology of ancient murrelets at Alaskan sites monitored in 2018.

| Site | Mean Hatch Date | Long-term Average | Reference |
|---|---|---|---|
| Aiktak I. | 28 Jun (76)[a] | 3 Jul (21)[a] | Youngren et al. 2019 |

[a]Sample size in parentheses represents the number of nest sites used to calculate the mean hatch date and the number of years used to calculate the long-term average. Current year not included in long-term average.

Table 7. Reproductive performance of ancient murrelets at Alaskan sites monitored in 2018.

| Site | Chicks Fledged/Egg[a] | No. of Plots | Long-term Average | Reference |
|---|---|---|---|---|
| Aiktak I. | 0.87 | NA[b] (167)[c] | 0.80 (21)[c] | Youngren et al. 2019 |

[a]Total chicks fledged/Total eggs.
[b]Not applicable or not reported.
[c]Sample size in parentheses represents the number of eggs used to calculate productivity and the number of years used to calculate the long-term average. Current year not used in long-term average.

**Parakeet auklet (*Aethia psittacula*)**

Table 8. Hatching chronology of parakeet auklets at Alaskan sites monitored in 2018.

| Site | Mean Hatch Date | Long-term Average | Reference |
|---|---|---|---|
| Buldir I. | 8 Jul (27)[a] | 4 Jul (26)[a] | Pietrzak et al. 2018 |
| Chowiet I. | 10 Jul (33) | 4 Jul (13) | Higgins et al. 2018 |

[a]Sample size in parentheses represents the number of nest sites used to calculate the mean hatch date and the number of years used to calculate the long-term average. Current year not included in long-term average.

Table 9. Reproductive performance of parakeet auklets at Alaskan sites monitored in 2018.

| Site | Chicks Fledged/ Nest Site[a] | No. of Plots | Long-term Average | Reference |
|---|---|---|---|---|
| Buldir I. | 0.82 | NA[b] (68)[c] | 0.53 (26)[c] | Pietrzak et al. 2018 |
| Chowiet I. | 0.14 | NA (69) | 0.40 (13) | Higgins et al. 2018 |

[a]Nest site is defined as a site where an egg was laid.

[b]Not applicable or not reported.

[c]Sample size in parentheses represents the number of nest sites used to calculate productivity and the number of years used to calculate the long-term average. Current year not used in long-term average.

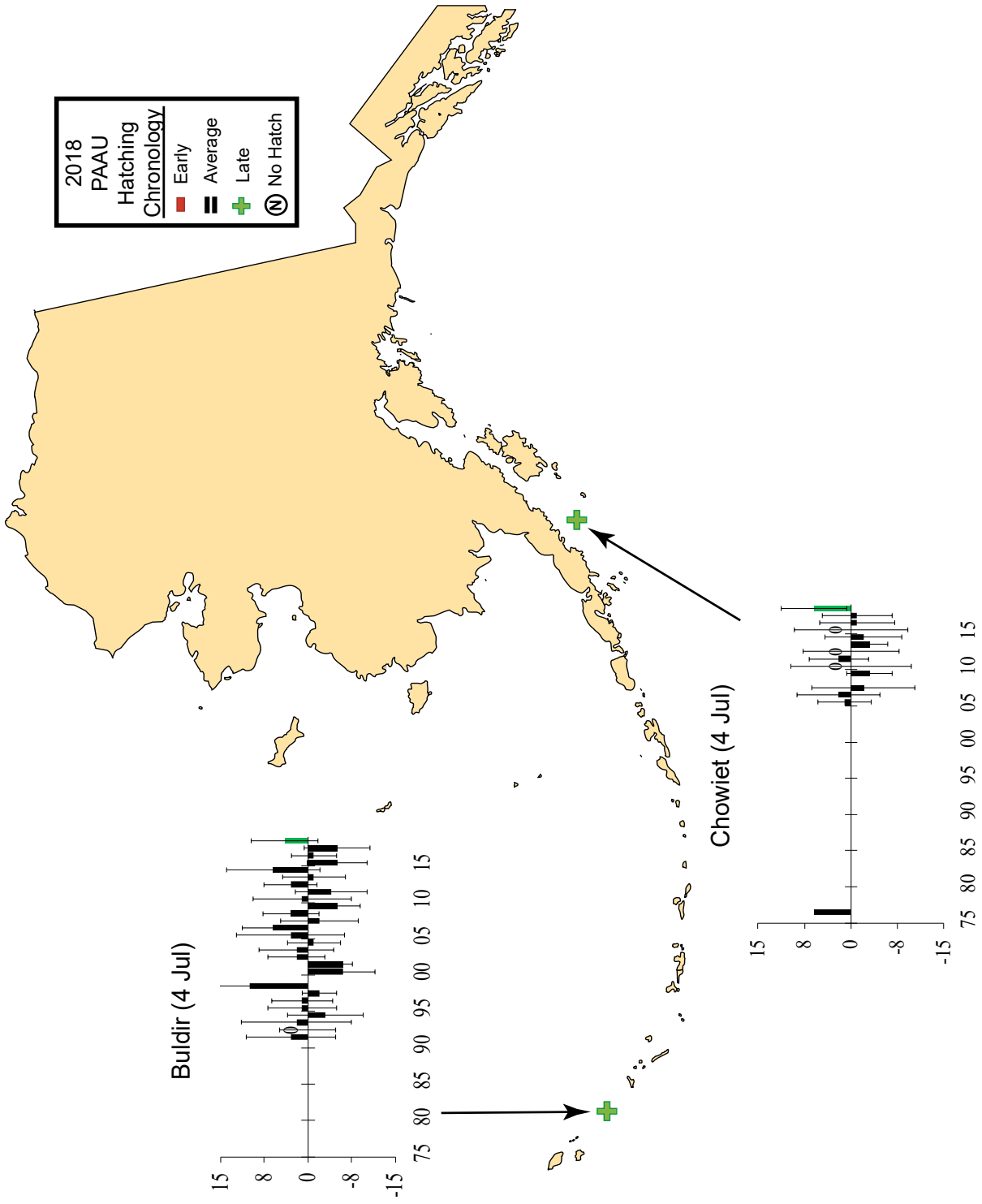



Figure 8. Hatching chronology of parakeet auklets at Alaskan sites. Graphs indicate the departure in days (if any) from the site mean (value in parentheses; current year not included). Lack of bars indicates that no data were gathered in those years. Color of graph bar and map symbol indicates how current year's success compared to the site mean (red is >3 days early, black is within 3 days and green is >3 days later than the site mean). Error bars represent ± 1 standard deviation.

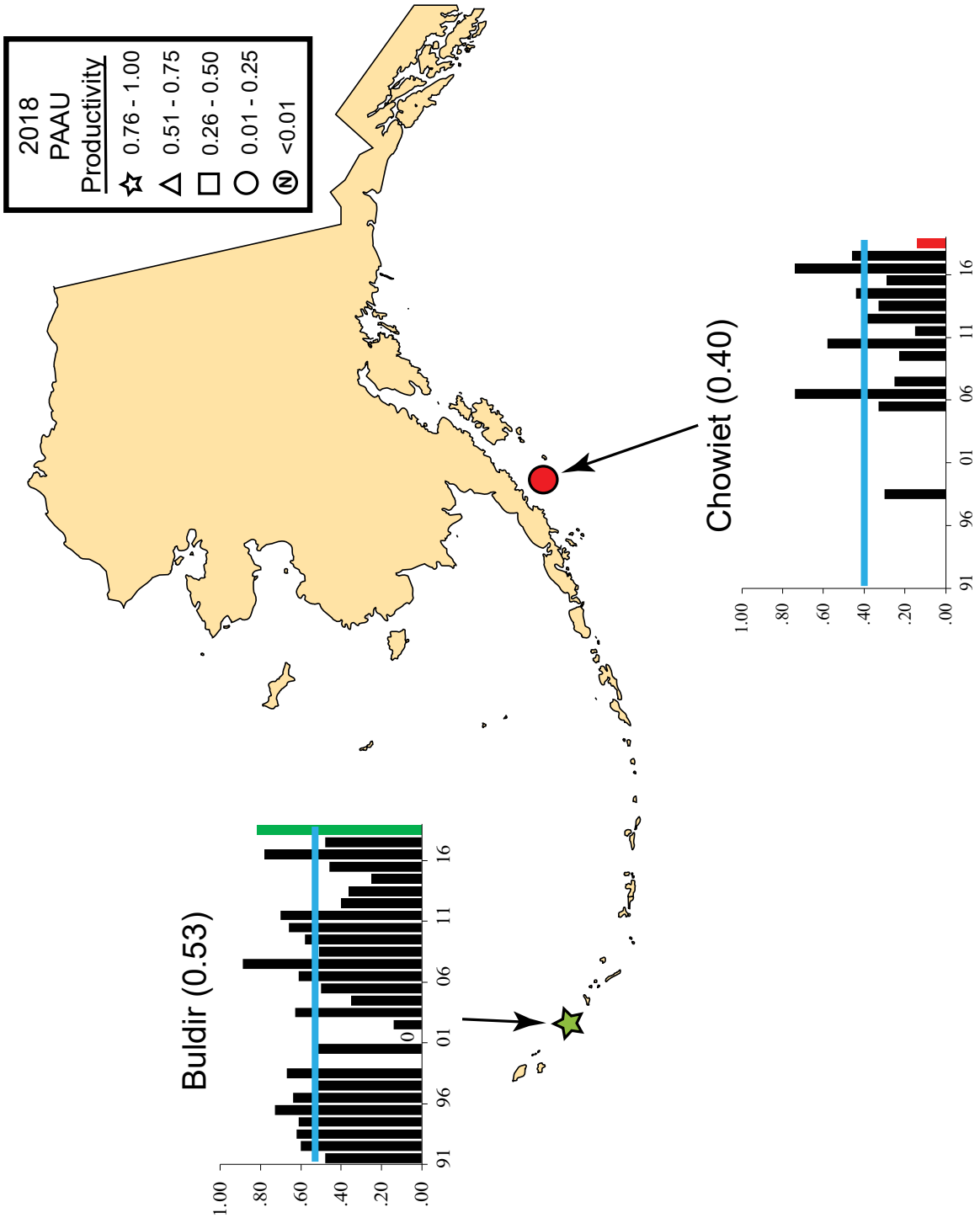



Figure 9. Productivity of parakeet auklets (chicks fledged/nest site) at Alaskan sites. Lack of bars indicates that no data were gathered in those years. Zeros indicate complete breeding failure. Blue line is the mean productivity at the site (value in parentheses; current year not included). Color of graph bar and map symbol indicates how current year's success compared to the site mean (red is >20% below, black is within 20% and green is >20% above site mean).

**Least auklet (*Aethia pusilla*)**

Table 10. Hatching chronology of least auklets at Alaskan sites monitored in 2018.

| Site | Mean Hatch Date | Long-term Average | Reference |
|---|---|---|---|
| St. George I. | 4 Jul (3)[a] | 12 Jul (10)[a] | Guitart et al. 2018 |
| Buldir I. | 28 Jun (26) | 27 Jun (28) | Pietrzak et al. 2018 |

[a]Sample size in parentheses represents the number of nest sites used to calculate the mean hatch date and the number of years used to calculate the long-term average. Current year not included in long-term average.

Table 11. Reproductive performance of least auklets at Alaskan sites monitored in 2018.

| Site | Chicks Fledged/ Nest Site[a] | No. of Plots | Long-term Average | Reference |
|---|---|---|---|---|
| St. George I. | 0.24 | NA[b] (21)[c] | 0.58 (10)[c] | Guitart et al. 2018 |
| Buldir I. | 0.63 | NA (65) | 0.58 (29) | Pietrzak et al. 2018 |

[a]Nest site is defined as a site where an egg was laid.
[b]Not applicable or not reported.
[c]Sample size in parentheses represents the number of nest sites used to calculate productivity and the number of years used to calculate the long-term average. Current year not used in long-term average.

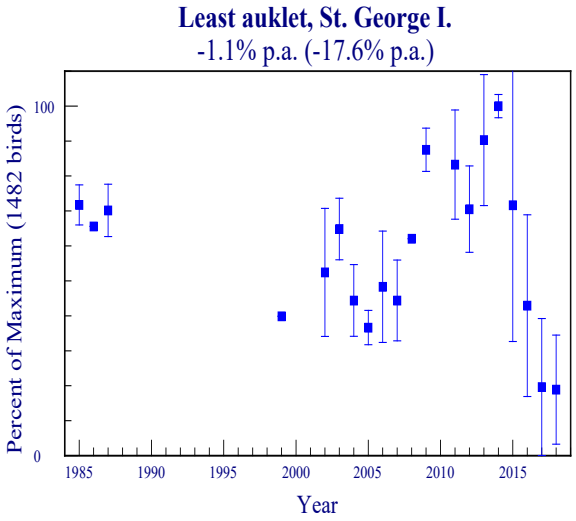



Figure 10. Trends in surface counts of least auklets at Alaskan sites. Error bars (90% confidence intervals) are shown for years with multiple counts. Percent per annum (p.a.) changes are indicated for all years and for just the last decade (2009-2018, in parentheses).

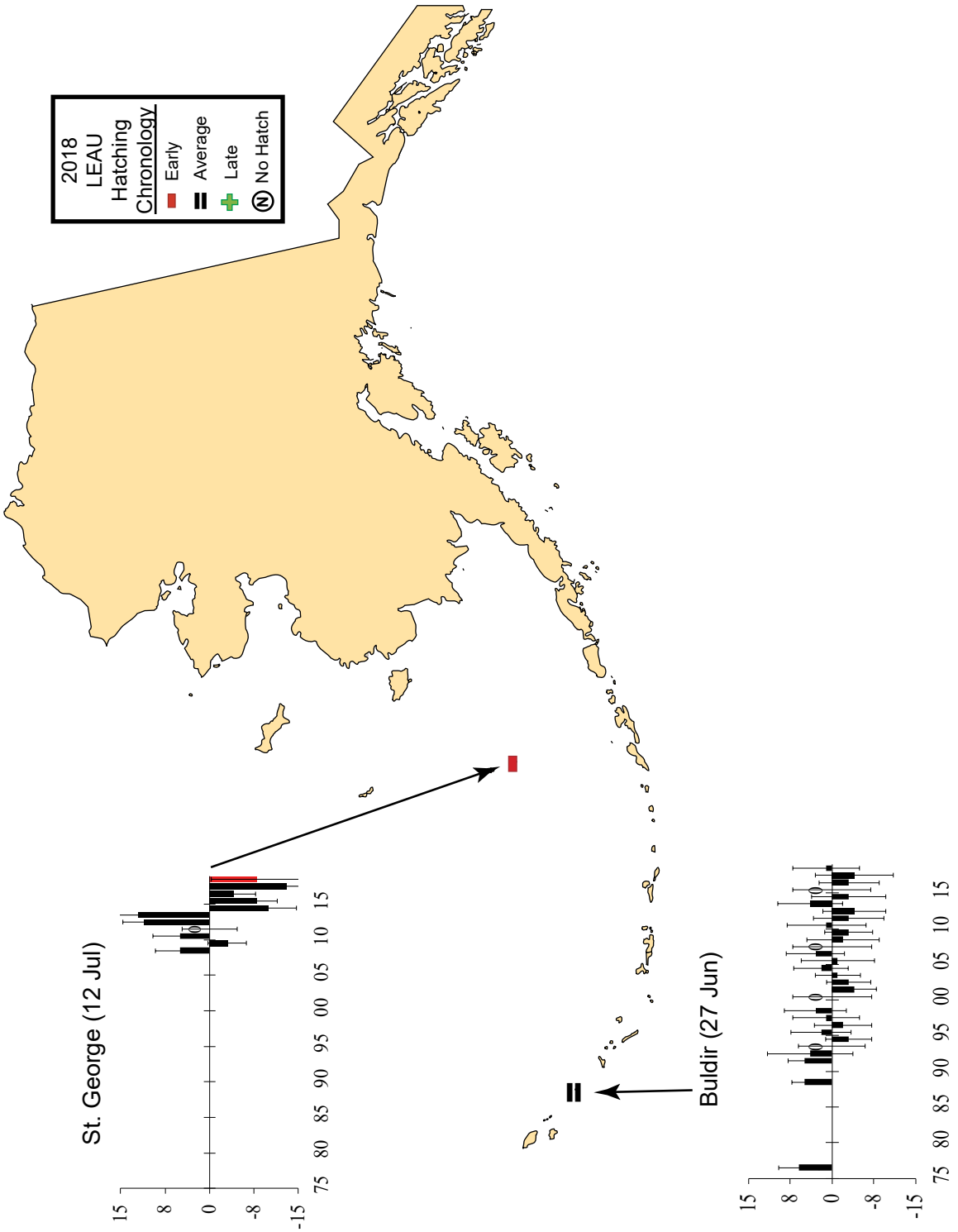



Figure 11. Hatching chronology of least auklets at Alaskan sites. Graphs indicate the departure in days (if any) from the site mean (value in parentheses; current year not included). Lack of bars indicates that no data were gathered in those years. Color of graph bar and map symbol indicates how current year's success compared to the site mean (red is >3 days early, black is within 3 days and green is >3 days later than the site mean). Error bars represent ± 1 standard deviation.

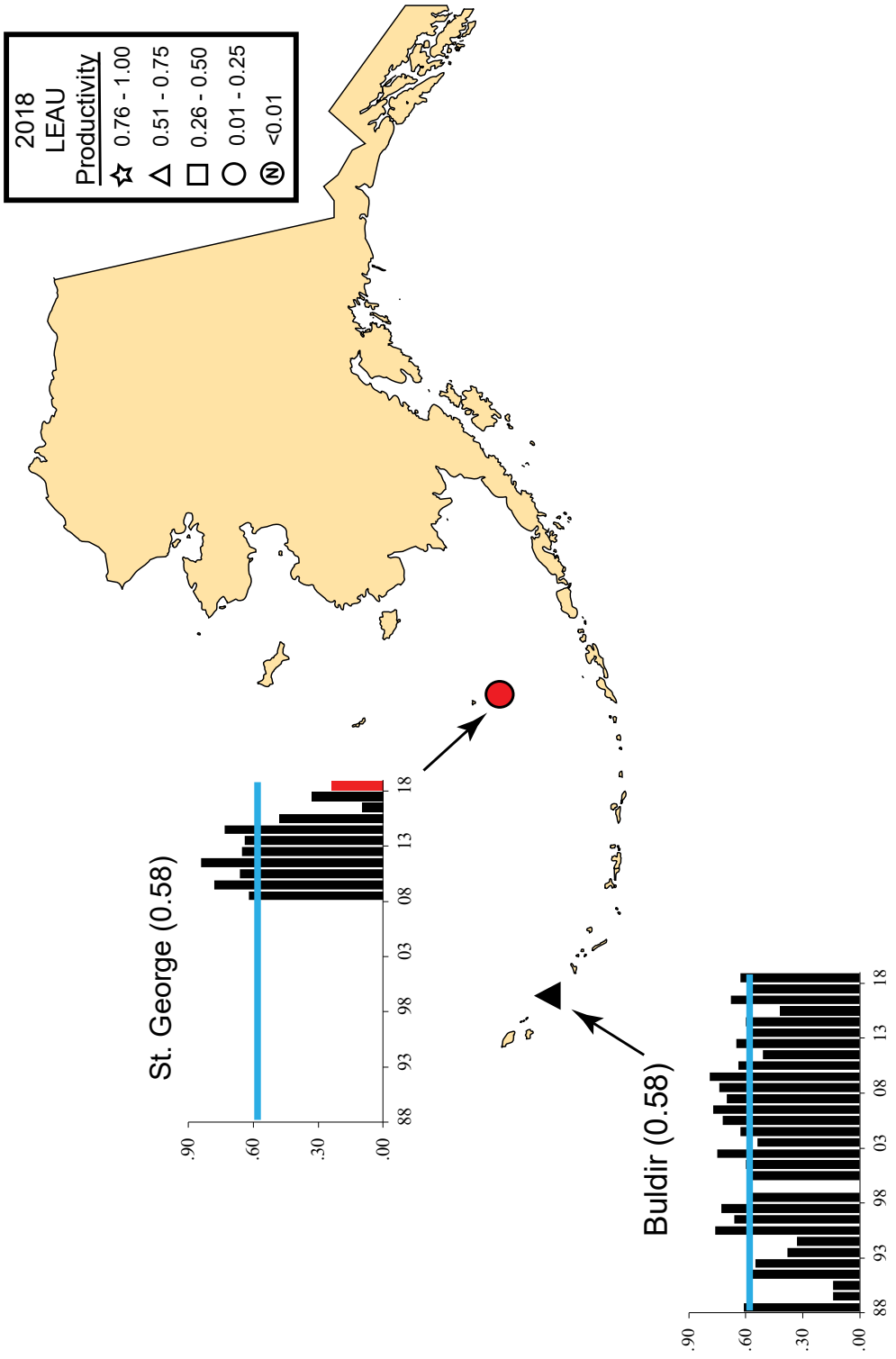



Figure 12. Productivity of least auklets (chicks fledged/nest site) at Alaskan sites. Lack of bars indicates that no data were gathered in those years. Blue line is the mean productivity at the site (value in parentheses; current year not included). Color of graph bar and map symbol indicates how current year's success compared to the site mean (red is >20% below, black is within 20% and green is >20% above site mean).

**Whiskered auklet (*Aethia pygmaea*)**

Table 12. Hatching chronology of whiskered auklets at Alaskan sites monitored in 2018.

| Site | Mean Hatch Date | Long-term Average | Reference |
|---|---|---|---|
| Buldir I. | 22 Jun (34)[a] | 21 Jun (27)[a] | Pietrzak et al. 2018 |

[a] Sample size in parentheses represents the number of nest sites used to calculate the mean hatch date and the number of years used to calculate the long-term average. Current year not included in long-term average.

Table 13. Reproductive performance of whiskered auklets at Alaskan sites monitored in 2018.

| Site | Chicks Fledged/ Nest Site[a] | No. of Plots | Long-term Average | Reference |
|---|---|---|---|---|
| Buldir I. | 0.77 | NA[b] (87)[c] | 0.65 (28)[c] | Pietrzak et al. 2018 |

[a]Nest site is defined as a site where an egg was laid.
[b]Not applicable or not reported.
[c]Sample size in parentheses represents the number of nest sites used to calculate productivity and the number of years used to calculate the long-term average. Current year not used in long-term average.

**Crested auklet (*Aethia cristatella*)**

Table 14. Hatching chronology of crested auklets at Alaskan sites monitored in 2018.

| Site | Mean Hatch Date | Long-term Average | Reference |
|---|---|---|---|
| Buldir I. | 3 Jul (42)[a] | 28 Jun (28)[a] | Pietrzak et al. 2018 |

[a]Sample size in parentheses represents the number of nest sites used to calculate the mean hatch date and the number of years used to calculate the long-term average. Current year not included in long-term average.

Table 15. Reproductive performance of crested auklets at Alaskan sites monitored in 2018.

| Site | Chicks Fledged/ Nest Site[a] | No. of Plots | Long-term Average | Reference |
|---|---|---|---|---|
| Buldir I. | 0.76 | NA[b] (108)[c] | 0.65 (29)[c] | Pietrzak et al. 2018 |

[a]Nest site is defined as a site where an egg was laid.
[b]Not applicable or not reported.
[c]Sample size in parentheses represents the number of nest sites used to calculate productivity and the number of years used to calculate the long-term average. Current year not used in long-term average.

**Rhinoceros auklet (*Cerorhinca monocerata*)**

Table 16. Reproductive performance of rhinoceros auklets at Alaskan sites monitored in 2018.

| Site | Chicks Fledged/Egg | No. of Plots | Long-term Average | Reference |
|---|---|---|---|---|
| Middleton I. | 0.54 | NA[a] (61)[b] | 0.68 (18)[b] | ISRC 2018 |
| St. Lazaria I. | 0.71 | 3 (205) | 0.65 (23) | Evans et al. 2018 |

[a]Not applicable or not reported.
[b]Sample size in parentheses represents the number of burrows used to calculate productivity and the number of years used to calculate the long-term average. Current year not used in long-term average.

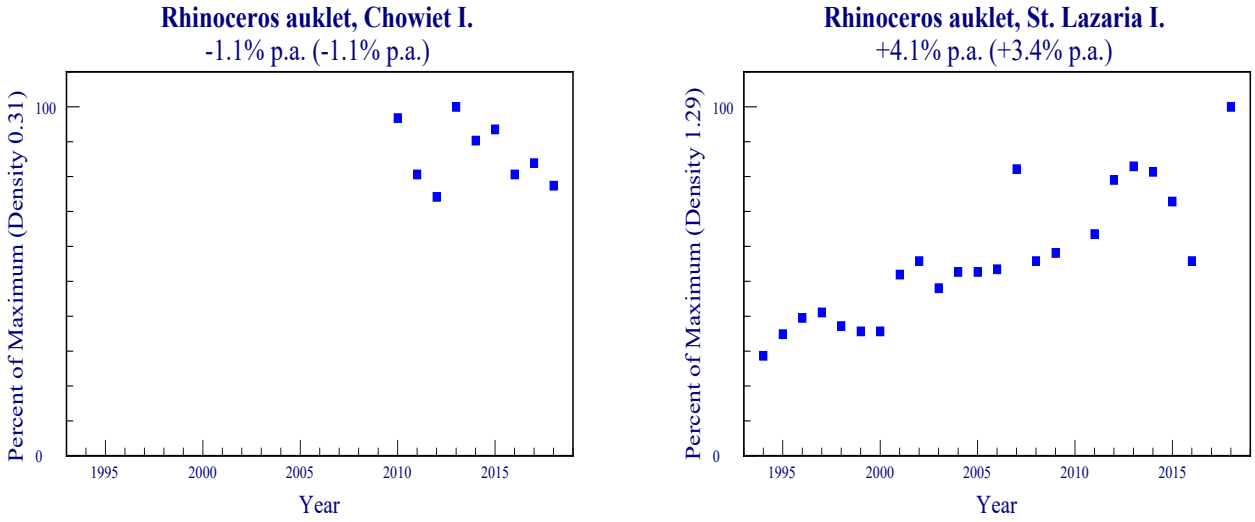



Figure 13. Trends in populations of rhinoceros auklets at Alaskan sites. Percent per annum (p.a.) changes are indicated for all years and for just the last decade (2009-2018, in parentheses).

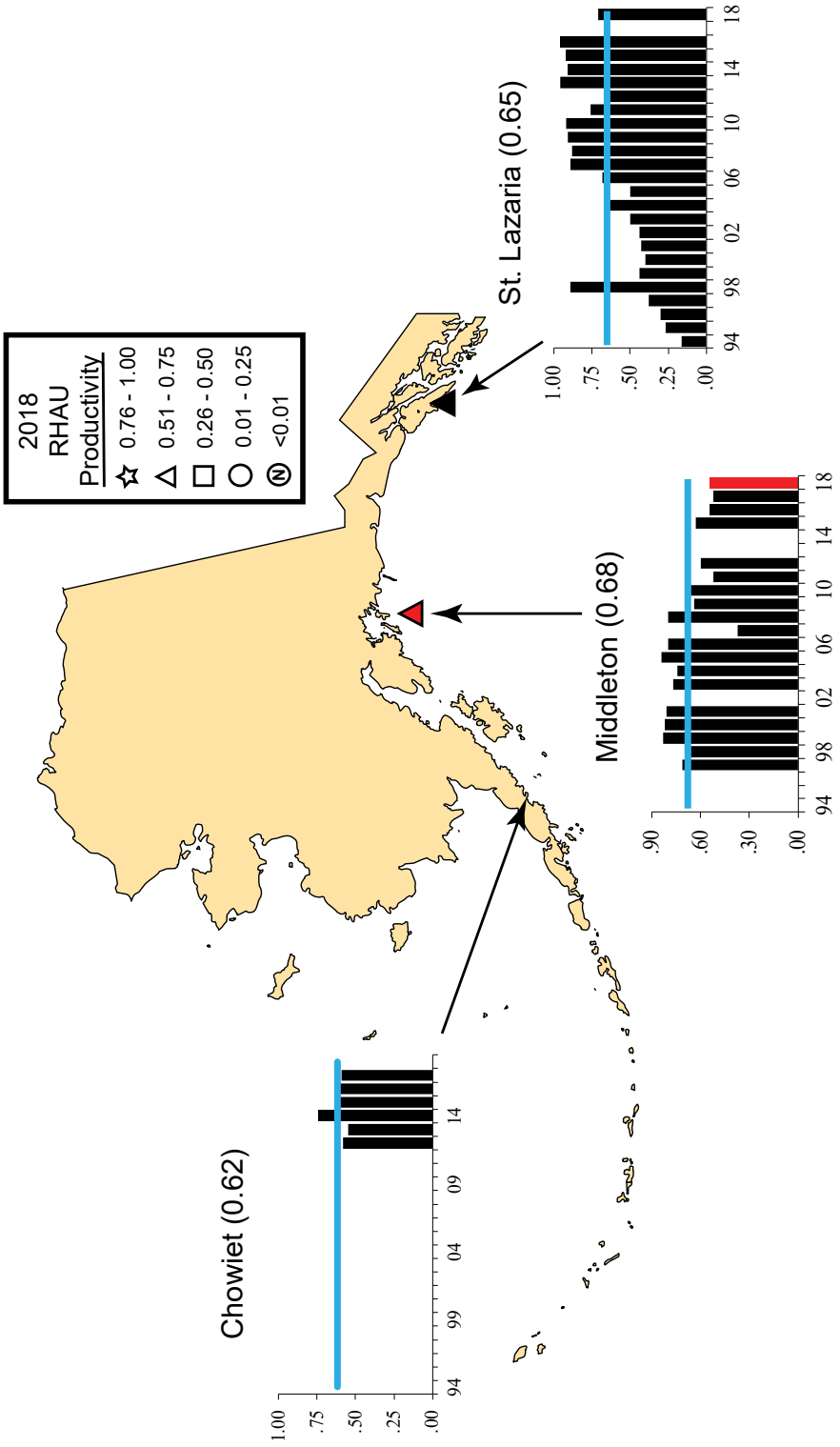



Figure 14. Productivity of rhinoceros auklets (chicks fledged/nest site) at Alaskan sites. Lack of bars indicates that no data were gathered in those years. Blue line is the mean productivity at the site (value in parentheses; current year not included). Color of graph bar and map symbol indicates how current year's success compared to the site mean (red is >20% below, black is within 20% and green is >20% above site mean).

**Horned puffin (*Fratercula corniculata*)**

Table 17. Hatching chronology of horned puffins at Alaskan sites monitored in 2018.

| Site | Mean Hatch Date | Long-term Average | Reference |
|---|---|---|---|
| Buldir I. | 1 Aug (34)[a] | 25 Jul (28)[a] | Pietrzak et al. 2018 |
| Aiktak I. | 30 Jul (5) | 31 Jul (13) | Youngren et al. 2019 |
| Chowiet I. | 22 Jul (47) | 30 Jul (14) | Higgins et al. 2018 |

[a]Sample size in parentheses represents the number of nest sites used to calculate the mean hatch date and the number of years used to calculate the long-term average. Current year not included in long-term average.

Table 18. Reproductive performance of horned puffins at Alaskan sites monitored in 2018.

| Site | Chicks Fledged[a]/Egg | No. of Plots | Long-term Average | Reference |
|---|---|---|---|---|
| Buldir I. | 0.45 | NA[b] (61)[c] | 0.48 (30)[c] | Pietrzak et al. 2018 |
| Aiktak I. | 0.29 | NA (15) | 0.58 (16) | Youngren et al. 2019 |
| Chowiet I. | 0.67 | NA (88) | 0.35 (13) | Higgins et al. 2018 |

[a]Fledged chick defined as being still alive at last check in August or September.

[b]Not applicable or not reported.

[c]Sample size in parentheses represents the number of eggs used to calculate productivity and the number of years used to calculate the long-term average. Current year not used in long-term average.

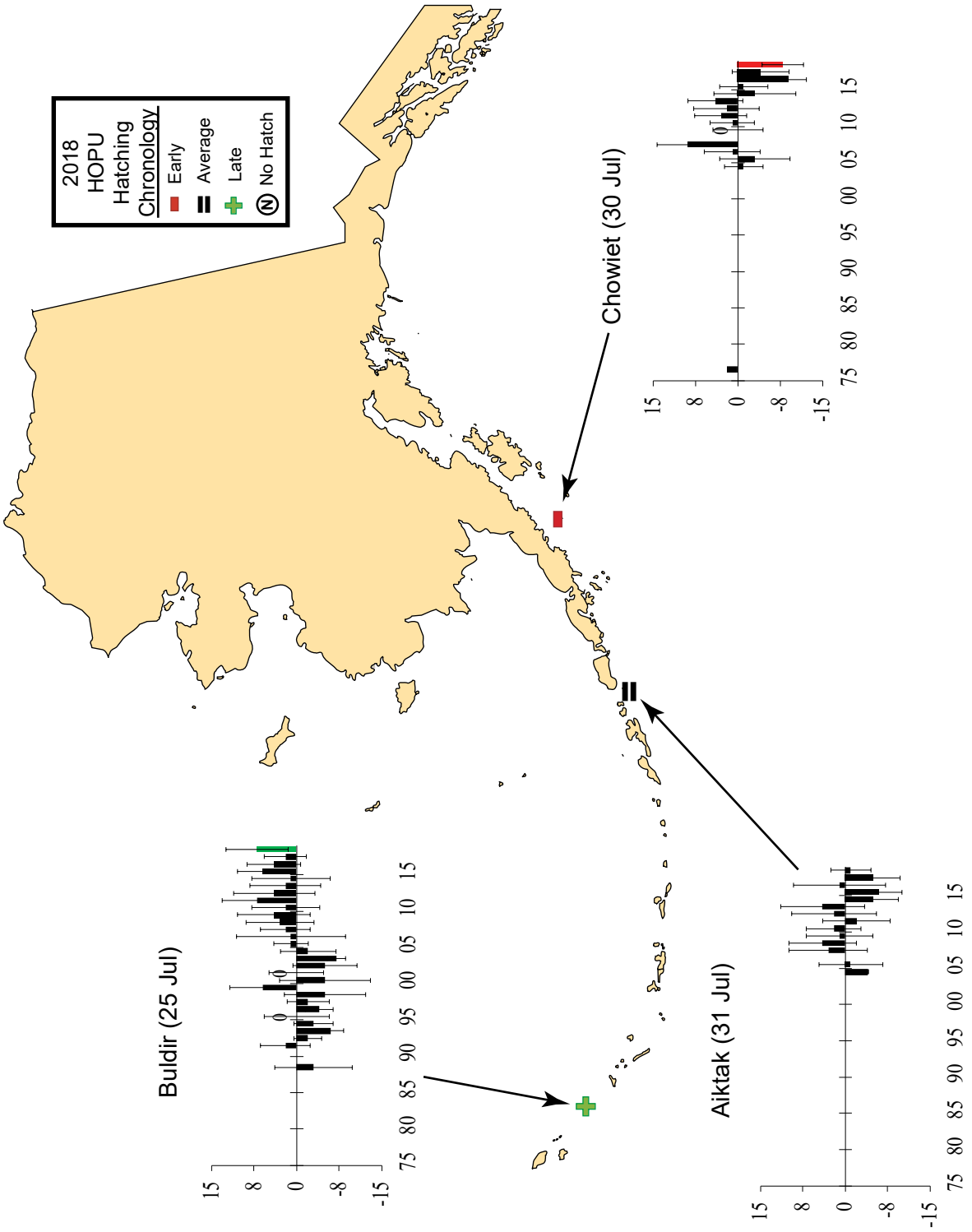



Figure 15. Hatching chronology of horned puffins at Alaskan sites. Graphs indicate the departure in days (if any) from the site mean (value in parentheses; current year not included). Lack of bars indicates that no data were gathered in those years. Color of graph bar and map symbol indicates how current year's success compared to the site mean (red is >3 days early, black is within 3 days and green is >3 days later than the site mean). Error bars represent ± 1 standard deviation.

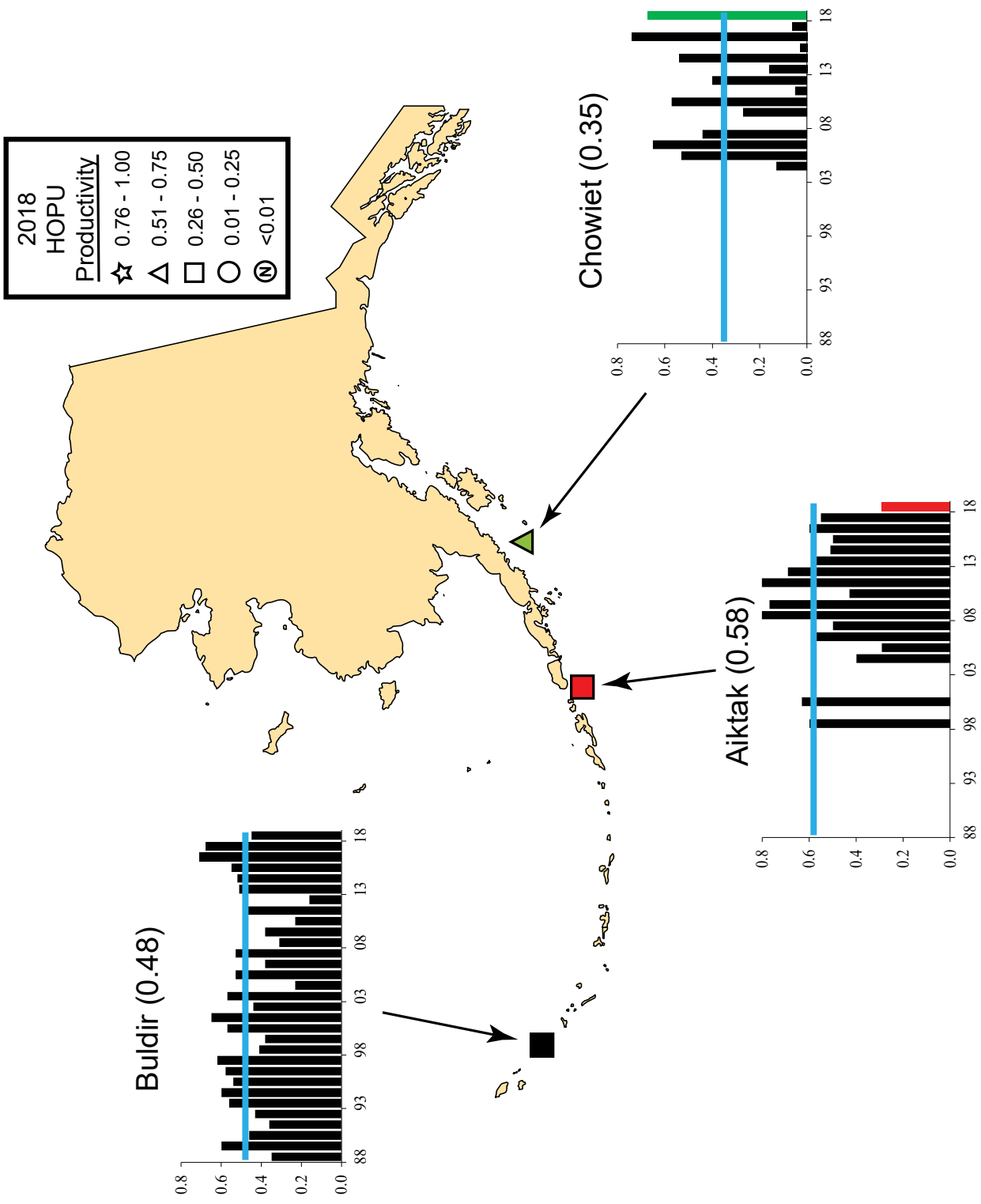



Figure 16. Productivity of horned puffins (chicks fledged/egg) at Alaskan sites. Lack of bars indicates that no data were gathered in those years. Blue line is the mean productivity at the site (value in parentheses; current year not included). Color of graph bar and map symbol indicates how current year's success compared to the site mean (red is >20% below, black is within 20% and green is >20% above site mean).

**Tufted puffin (*Fratercula cirrhata*)**

Table 19. Hatching chronology of tufted puffins at Alaskan sites monitored in 2018.

| Site | Mean Hatch Date | Long-term Average | Reference |
|---|---|---|---|
| Aiktak I. | 27 Jul (32)[a] | 31 Jul (21)[a] | Youngren et al. 2019 |
| Chowiet I. | 19 Jul (29) | 24 Jul (13) | Higgins et al. 2018 |

[a]Sample size in parentheses represents the number of nest sites used to calculate the mean hatch date and the number of years used to calculate the long-term average. Current year not included in long-term average.

Table 20. Reproductive performance of tufted puffins at Alaskan sites monitored in 2018.

| Site | Chicks Fledged[a]/Egg | No. of Plots | Long-term Average | Reference |
|---|---|---|---|---|
| Buldir I. | 0.00 | NA[b] (28)[c] | 0.38 (30)[c] | Pietrzak et al. 2018 |
| Aiktak I. | 0.81 | NA (84) | 0.54 (22) | Youngren et al. 2019 |
| Chowiet I. | 0.61 | NA (61) | 0.37 (12) | Higgins et al. 2018 |
| Middleton I. | 0.43 | NA (71) | 0.39 (13) | ISRC 2018 |

[a]Fledged chick defined as being still alive at last check in August or September.
[b]Not applicable or not reported.
[c]Sample size in parentheses represents the number of burrows used to calculate productivity and the number of years used to calculate the long-term average. Current year not used in long-term average.

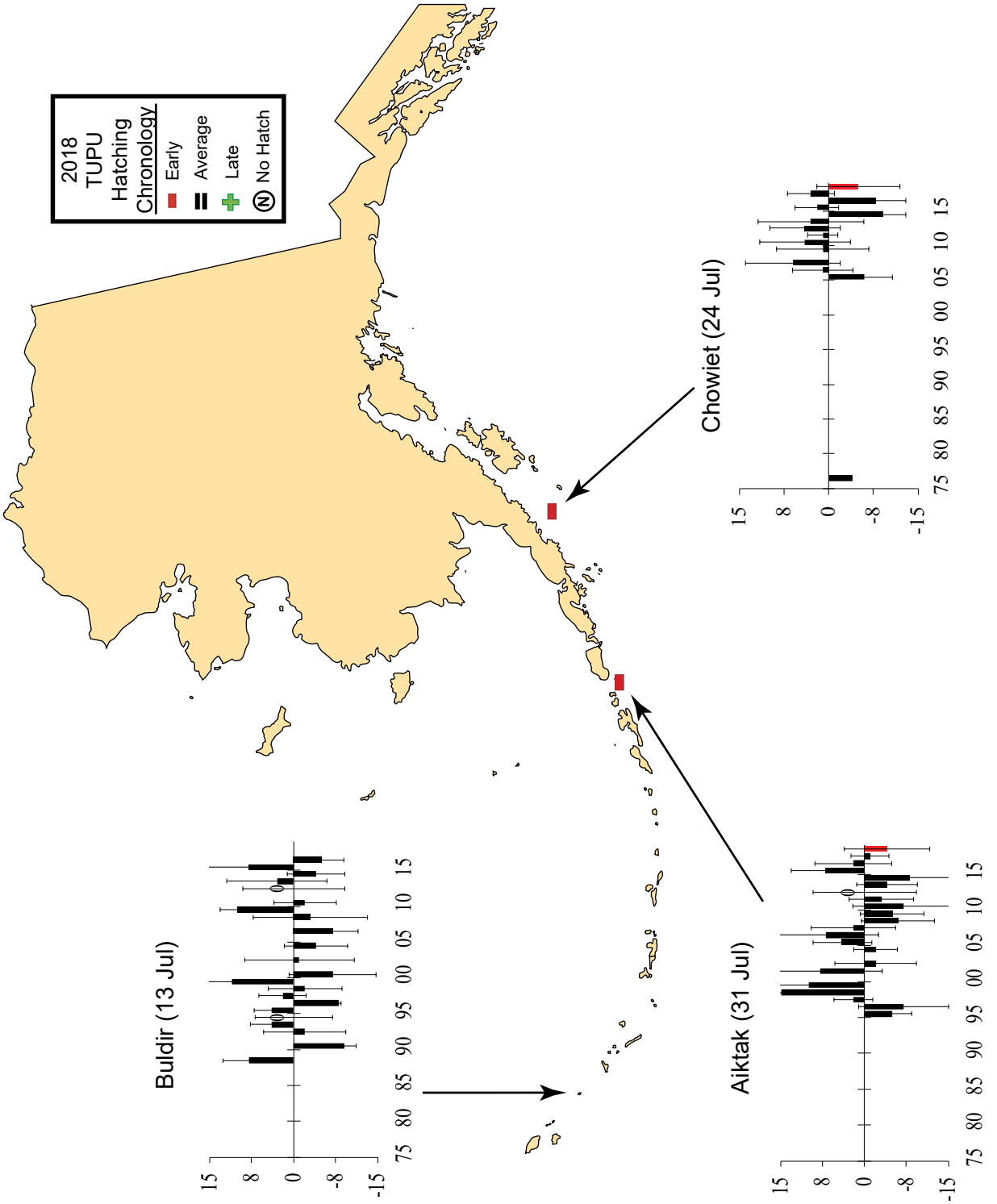



Figure 17. Hatching chronology of tufted puffins at Alaskan sites. Graphs indicate the departure in days (if any) from the site mean (value in parentheses; current year not included). Lack of bars indicates that no data were gathered in those years. Color of graph bar and map symbol indicates how current year's success compared to the site mean (red is >3 days early, black is within 3 days and green is >3 days later than the site mean). Error bars represent ± 1 standard deviation.

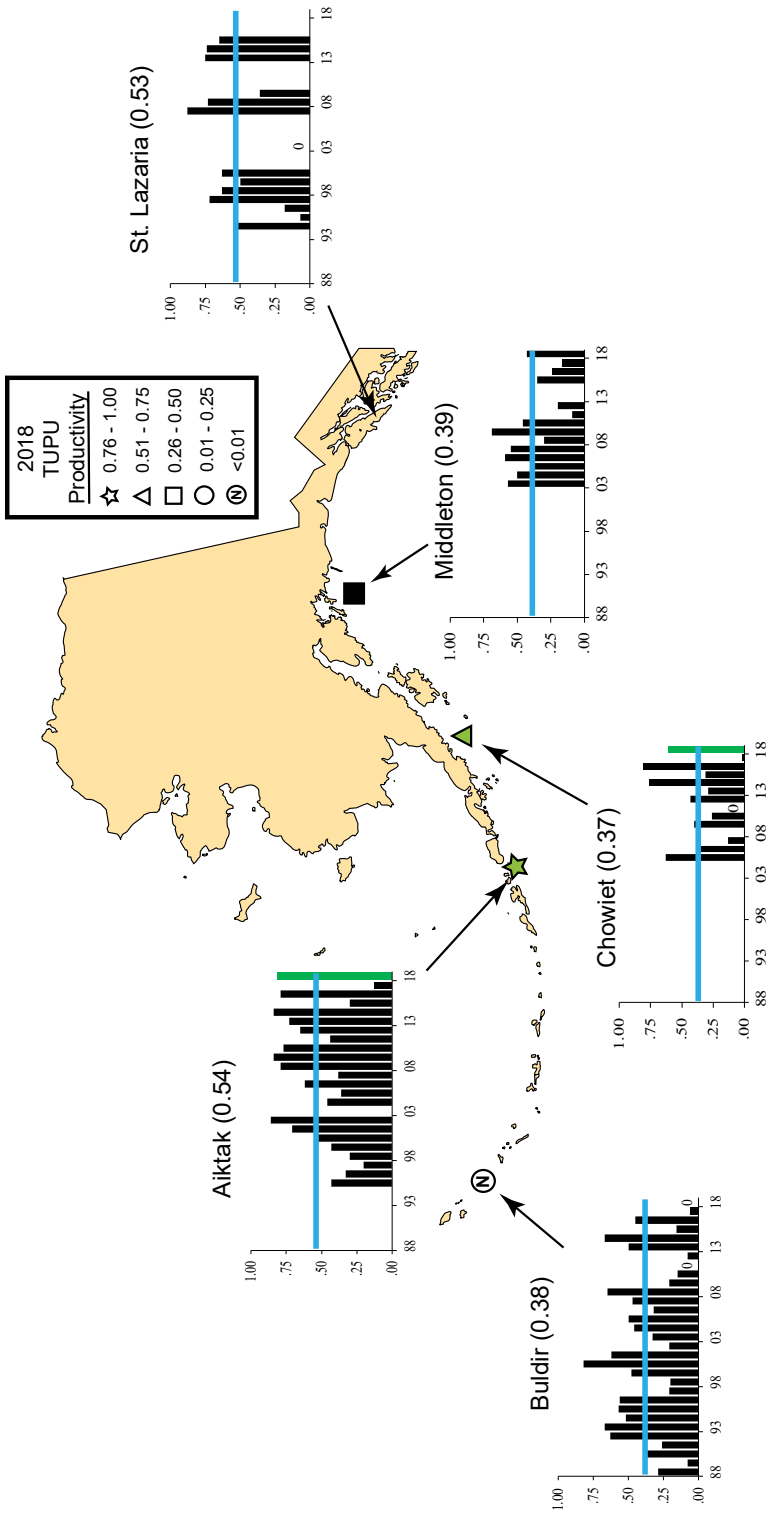



Figure 18. Productivity of tufted puffins (chicks fledged/egg) at Alaskan sites. Lack of bars indicates that no data were gathered in those years. Zeros indicate complete breeding failure. Blue line is the mean productivity at the site (value in parentheses; current year not included). Color of graph bar and map symbol indicates how current year's success compared to the site mean (red is >20% below, black is within 20% and green is >20% above site mean).

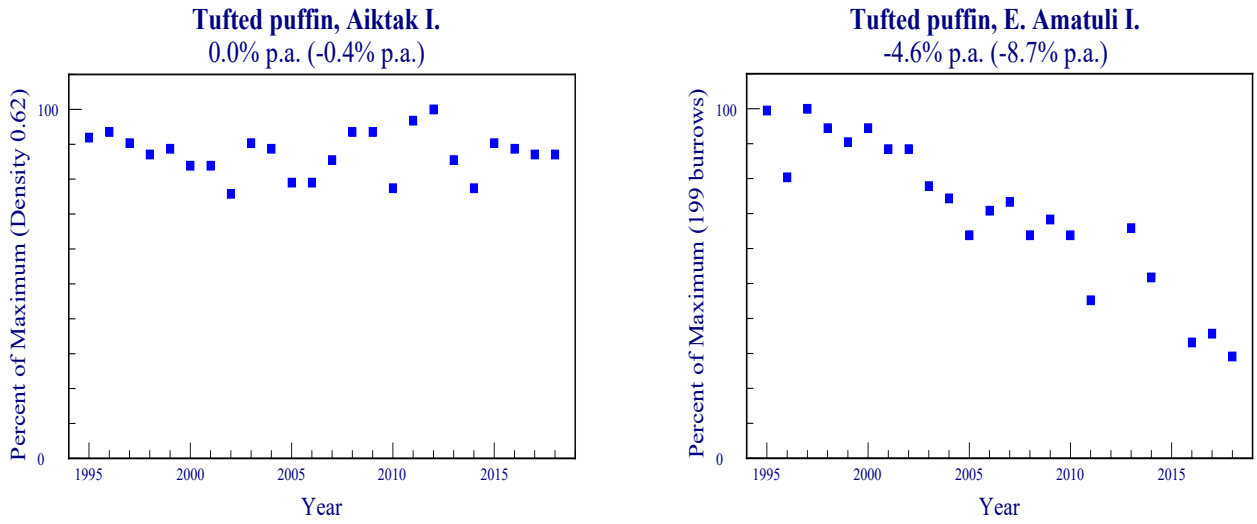



Figure 19. Trends in populations of tufted puffins at Alaskan sites. Percent per annum (p.a.) changes are indicated for all years and for just the last decade (2009-2018, in parentheses).

**Black-legged kittiwake (*Rissa tridactyla*)**

Table 21. Hatching chronology of black-legged kittiwakes at Alaskan sites monitored in 2018.

| Site | Mean Hatch Date | Long-term Average | Reference |
|---|---|---|---|
| St. Paul I. | 8 Aug (3)[a] | 17 Jul (33)[a] | Mong et al. 2019 |
| Buldir I. | 22 Jul (51) | 8 Jul (30) | Pietrzak et al. 2018 |
| Chowiet I. | 19 Jul (93) | 17 Jul (21) | Higgins et al. 2018 |

[a]Sample size in parentheses represents the number of nest sites used to calculate the mean hatch date and the number of years used to calculate the long-term average. Current year not included in long-term average.

Table 22. Reproductive performance of black-legged kittiwakes at Alaskan sites monitored in 2018.

| Site | Chicks Fledged[a]/Nest | No. of Plots | Long-term Average | Reference |
|---|---|---|---|---|
| St. Paul I. | 0.01 | 7 (159)[b] | 0.26 (38)[b] | Mong et al. 2019 |
| St. George I. | 0.00 | 7 (186) | 0.20 (42) | Guitart et al. 2018 |
| C. Peirce | 0.00 | 7 (161) | 0.20 (33) | K. Hilwig Unpubl. Data |
| Round I. | 0.00 | 4 (112) | 0.18 (21) | E. Weiss Unpubl. Data |
| Buldir I. | 0.14 | 7 (213) | 0.16 (30) | Pietrzak et al. 2018 |
| Chowiet I. | 0.36 | 11 (295) | 0.19 (22) | Higgins et al. 2018 |
| Gull I. | 0.00 | NA[c] | 0.42 (7) | S. Schoen Unpubl. Data |
| Chisik I. | 0.00 | NA | 0.03 (6) | S. Schoen Unpubl. Data |
| Inner PWS[d] | 0.00[e] | NA (11,629) | 0.28 (33) | D. Irons Unpubl. Data |
| Outer PWS[d] | 0.07[e] | NA (2599) | 0.09 (33) | D. Irons Unpubl. Data |
| Middleton I. | 0.31 | NA (134) | 0.36 (38) | ISRC 2018 |

[a]Total chicks fledged/Total nests.

[b]Sample size in parentheses represents the number of nests used to calculate productivity and the number of years used to calculate the long-term average. Current year not used in long-term average.

[c]Not applicable or not reported.

[d]Prince William Sound.

[e]Short visit.

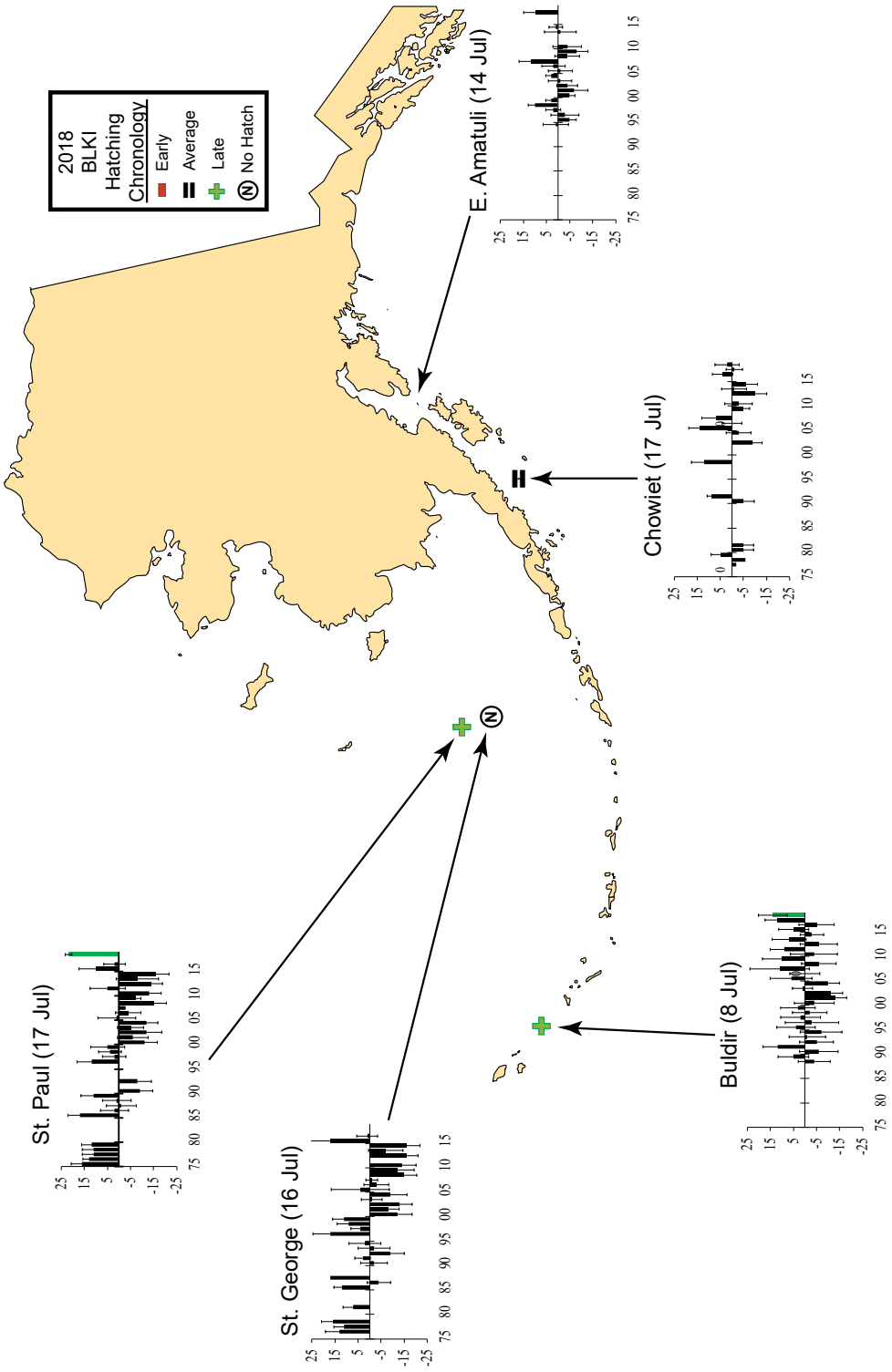



Figure 20. Hatching chronology of black-legged kittiwakes at Alaskan sites. Graphs indicate the departure in days (if any) from the site mean (value in parentheses; current year not included). Lack of bars indicates that no data were gathered in those years. Color of graph bar and map symbol indicates how current year's success compared to the site mean (red is >3 days early, black is within 3 days and green is >3 days later than the site mean). Error bars represent ± 1 standard deviation.

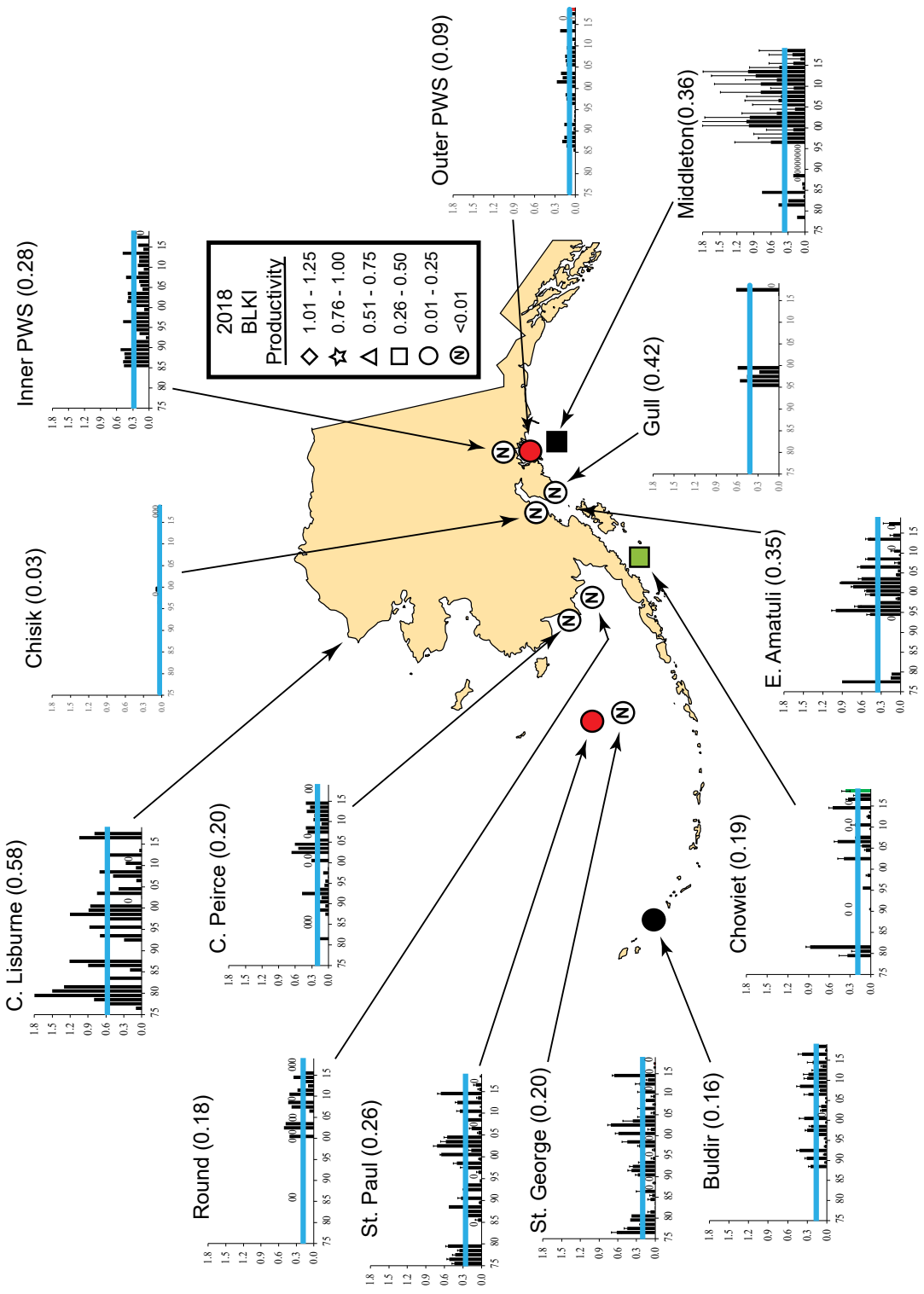



Figure 21. Productivity of black-legged kittiwakes (chicks fledged/nest) at Alaskan sites. Lack of bars indicates that no data were gathered in those years. Zeros indicate complete breeding failure. Blue line is the mean productivity at the site (value in parentheses; current year not included). Color of graph bar and map symbol indicates how current year's success compared to the site mean (red is >20% below, black is within 20% and green is >20% above site mean). Error bars represent ± 1 standard deviation.

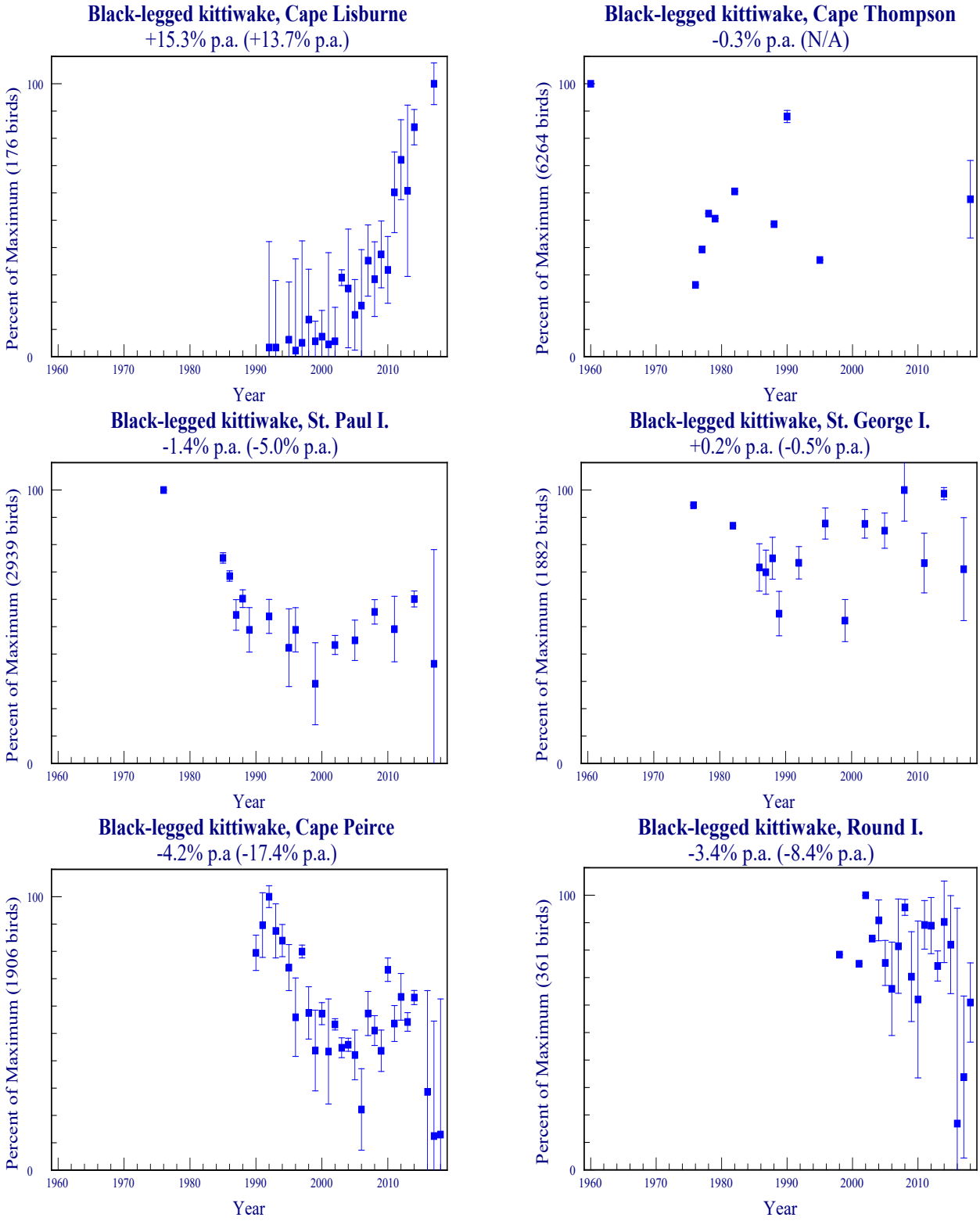



Figure 22. Trends in populations of black-legged kittiwakes at Alaskan sites. Error bars (90% confidence intervals) are shown for years with multiple counts. Percent per annum (p.a.) changes are indicated for all years and for just the last decade (2009-2018, in parentheses). "N/A" indicates that insufficient data were available.

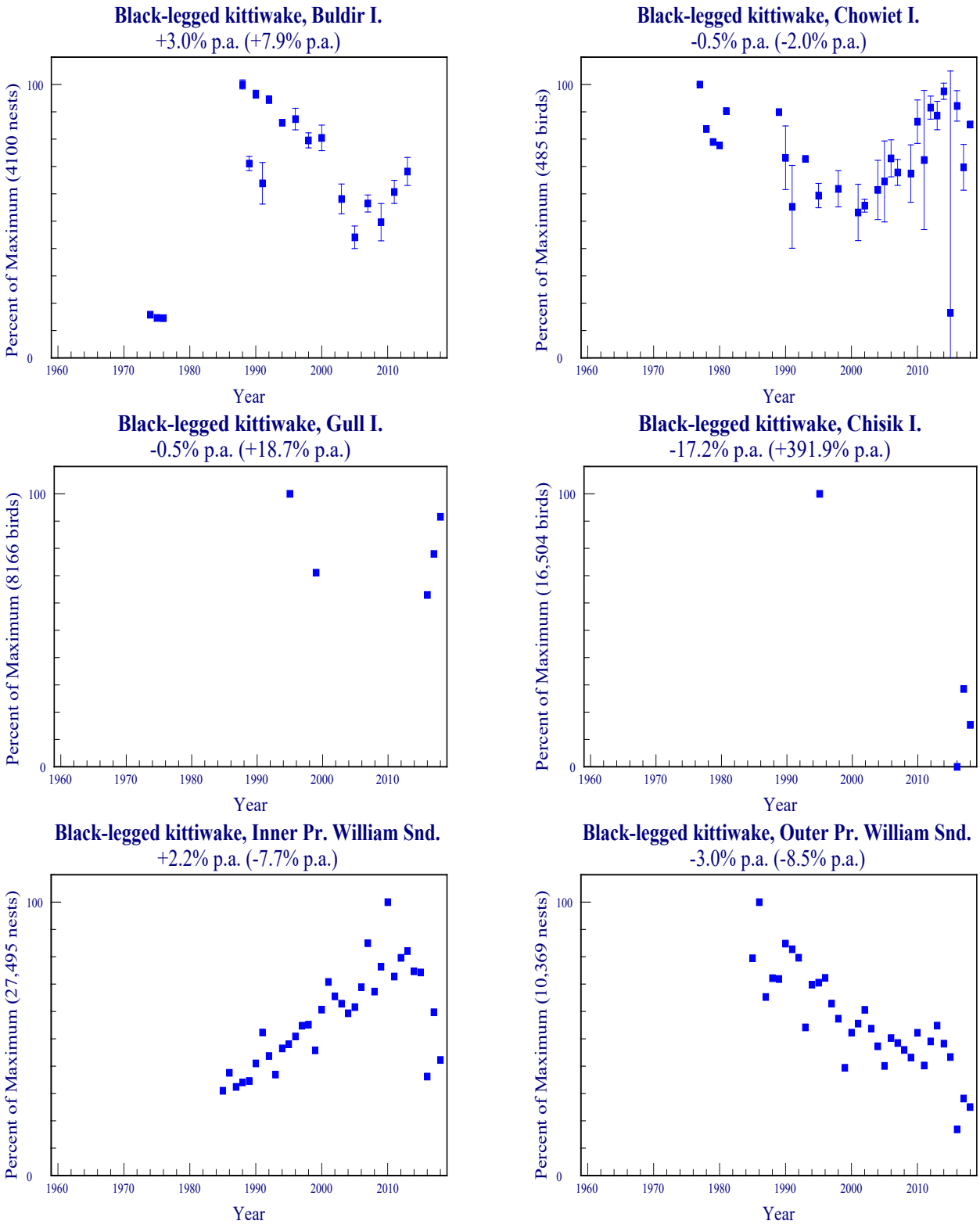



Figure 22 (continued). Trends in populations of black-legged kittiwakes at Alaskan sites. Error bars (90% confidence intervals) are shown for years with multiple counts. Percent per annum (p.a.) changes are indicated for all years and for just the last decade (2009-2018, in parentheses).

**Red-legged kittiwake (*Rissa brevirostris*)**

Table 23. Hatching chronology of red-legged kittiwakes at Alaskan sites monitored in 2018.

| Site | Mean Hatch Date | Long-term Average | Reference |
|---|---|---|---|
| Buldir I. | 23 Jul (14)[a] | 10 Jul (25)[a] | Pietrzak et al. 2018 |

[a]Sample size in parentheses represents the number of nest sites used to calculate the mean hatch date and the number of years used to calculate the long-term average. Current year not included in long-term average.

Table 24. Reproductive performance of red-legged kittiwakes at Alaskan sites monitored in 2018.

| Site | Chicks Fledged[a]/Nest | No. of Plots | Long-term Average | Reference |
|---|---|---|---|---|
| St. Paul I. | 0.00 | 1 (3)[b] | 0.24 (35)[b] | Mong et al. 2019 |
| St. George I. | 0.01 | 9 (205) | 0.24 (42) | Guitart et al. 2018 |
| Buldir I. | 0.21 | 6 (38) | 0.18 (30) | Pietrzak et al. 2018 |

[a]Total chicks fledged/Total nests.

[b]Sample size in parentheses represents the number of nests used to calculate productivity and the number of years used to calculate the long-term average. Current year not used in long-term average.

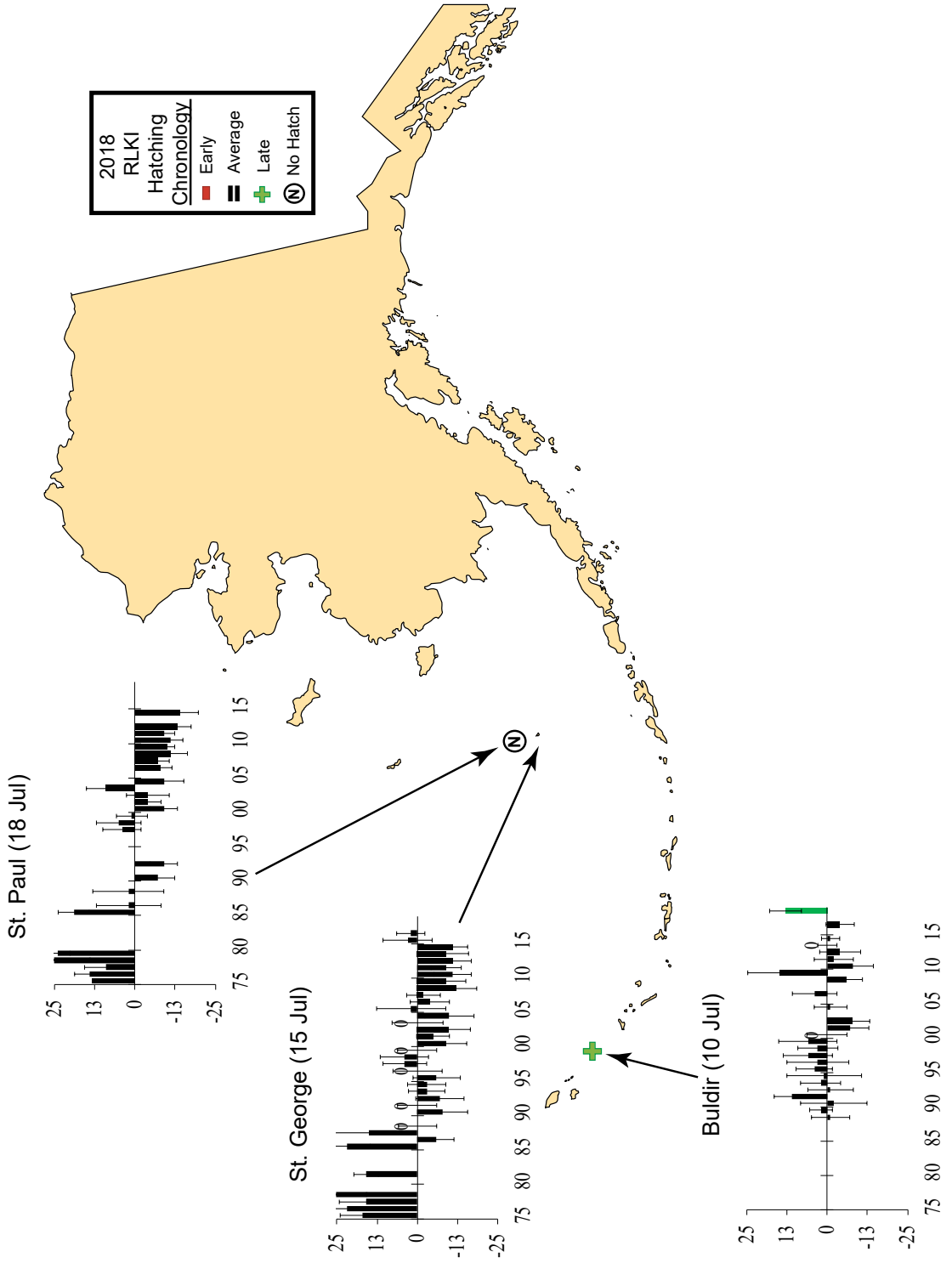



Figure 23. Hatching chronology of red-legged kittiwakes at Alaskan sites. Graphs indicate the departure in days (if any) from the site mean (value in parentheses; current year not included). Lack of bars indicates that no data were gathered in those years. Color of graph bar and map symbol indicates how current year's success compared to the site mean (red is >3 days early, black is within 3 days and green is >3 days later than the site mean). Error bars represent ± 1 standard deviation.

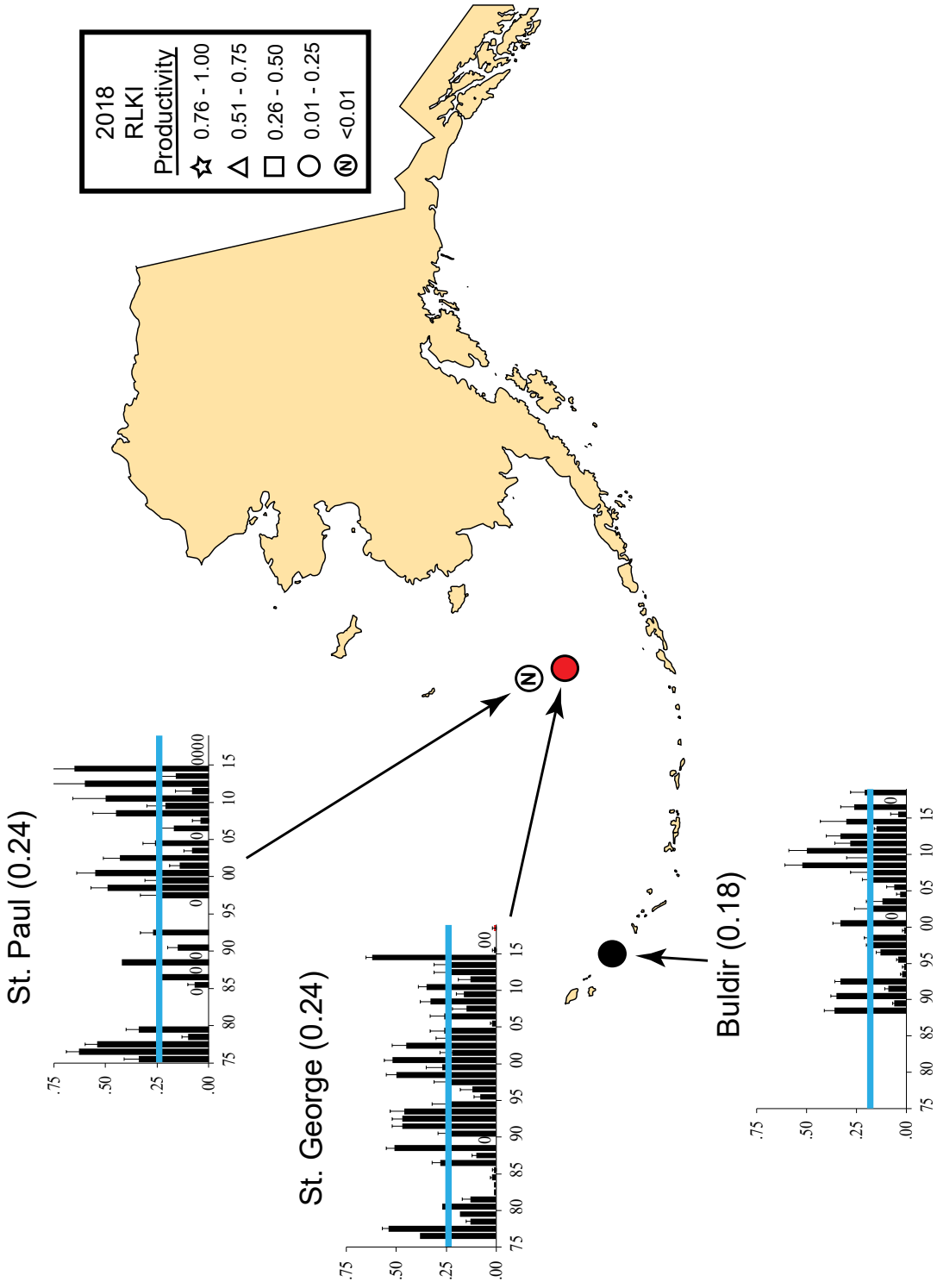



Figure 24. Productivity of red-legged kittiwakes (chicks fledged/nest) at Alaskan sites. Lack of bars indicates that no data were gathered in those years. Zeros indicate complete breeding failure. Blue line is the mean productivity at the site (value in parentheses; current year not included). Color of graph bar and map symbol indicates how current year's success compared to the site mean (red is >20% below, black is within 20% and green is >20% above site mean). Error bars represent ± 1 standard deviation.

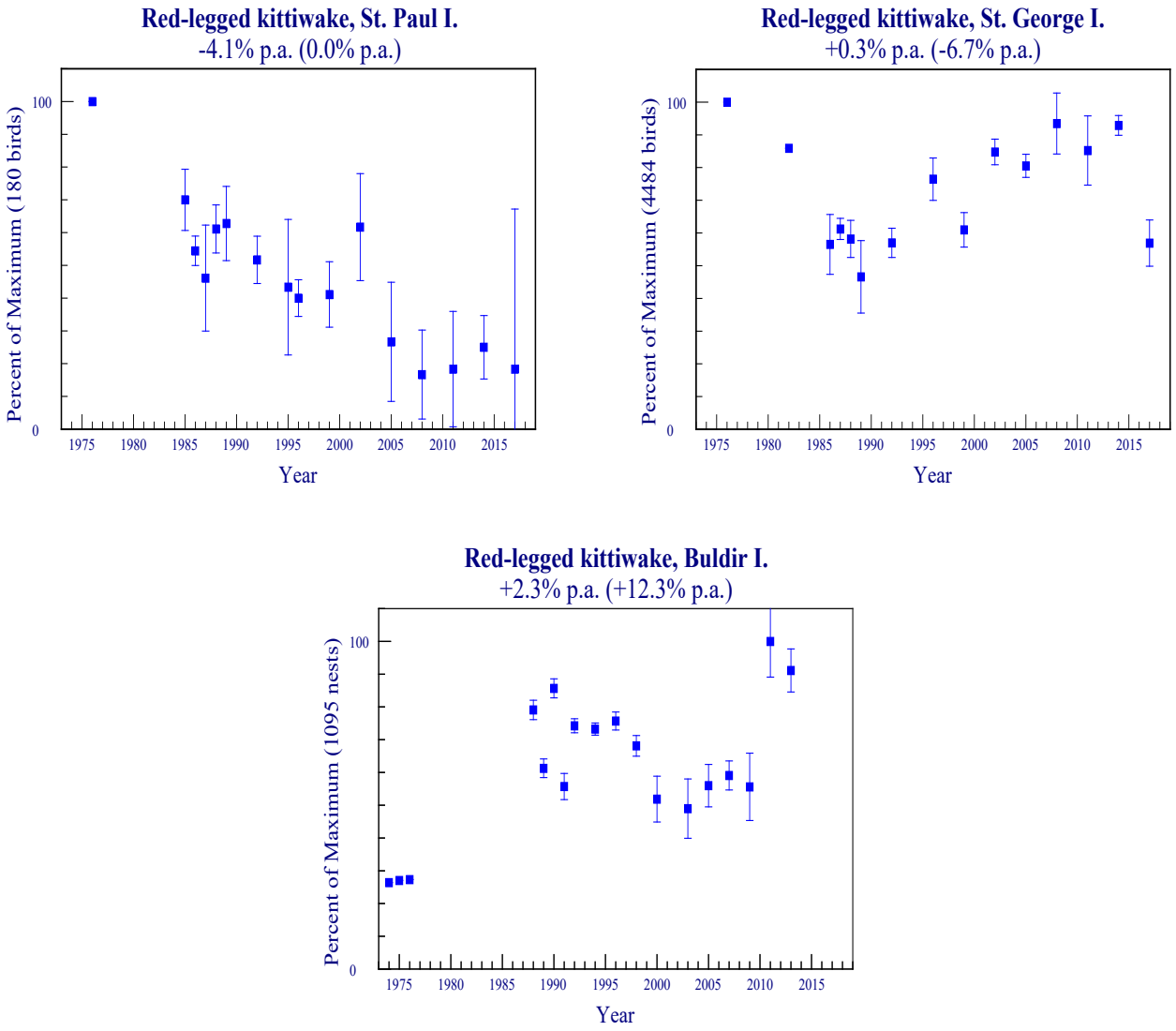



Figure 25. Trends in populations of red-legged kittiwakes at Alaskan sites. Error bars (90% confidence intervals) are shown for years with multiple counts. Percent per annum (p.a.) changes are indicated for all years and for just the last decade (2009-2018, in parentheses).

**Glaucous-winged gull (*Larus glaucescens*)**

Table 25. Hatching chronology of glaucous-winged gulls at Alaskan sites monitored in 2018.

| Site | Mean Hatch Date | Long-term Average | Reference |
|---|---|---|---|
| Buldir I. | 4 Jul (8)[a] | 24 Jun (17)[a] | Pietrzak et al. 2018 |
| Aiktak I. | 10 Jul (41) | 11 Jul (23) | Youngren et al. 2019 |
| Chowiet I. | 29 Jun (33) | 2 Jul (12) | Higgins et al. 2018 |
| St. Lazaria I. | 24 Jul (21) | 5 Jul (19) | Evans et al. 2018 |

[a]Sample size in parentheses represents the number of nest sites used to calculate the mean hatch date and the number of years used to calculate the long-term average. Current year not included in long-term average.

Table 26. Reproductive performance of glaucous-winged gulls at Alaskan sites monitored in 2018.

| Site | Hatching Success[a] | No. of Plots | Long-term Average | Reference |
|---|---|---|---|---|
| Buldir I. | 0.48 | NA[b] (46)[c] | 0.47 (20)[c] | Pietrzak et al. 2018 |
| Aiktak I. | 0.34 | 4 (225) | 0.54 (23) | Youngren et al. 2019 |
| Chowiet I. | 0.68 | 3 (86) | 0.63 (11) | Higgins et al. 2018 |
| St. Lazaria I. | 0.17 | 3 (194) | 0.53 (23) | Evans et al. 2018 |

[a]Total chicks/Total eggs.
[b]Not applicable or not reported.
[c]Sample size in parentheses represents the number of eggs used to calculate hatching success and the number of years used to calculate the long-term average. Current year not used in long-term average.

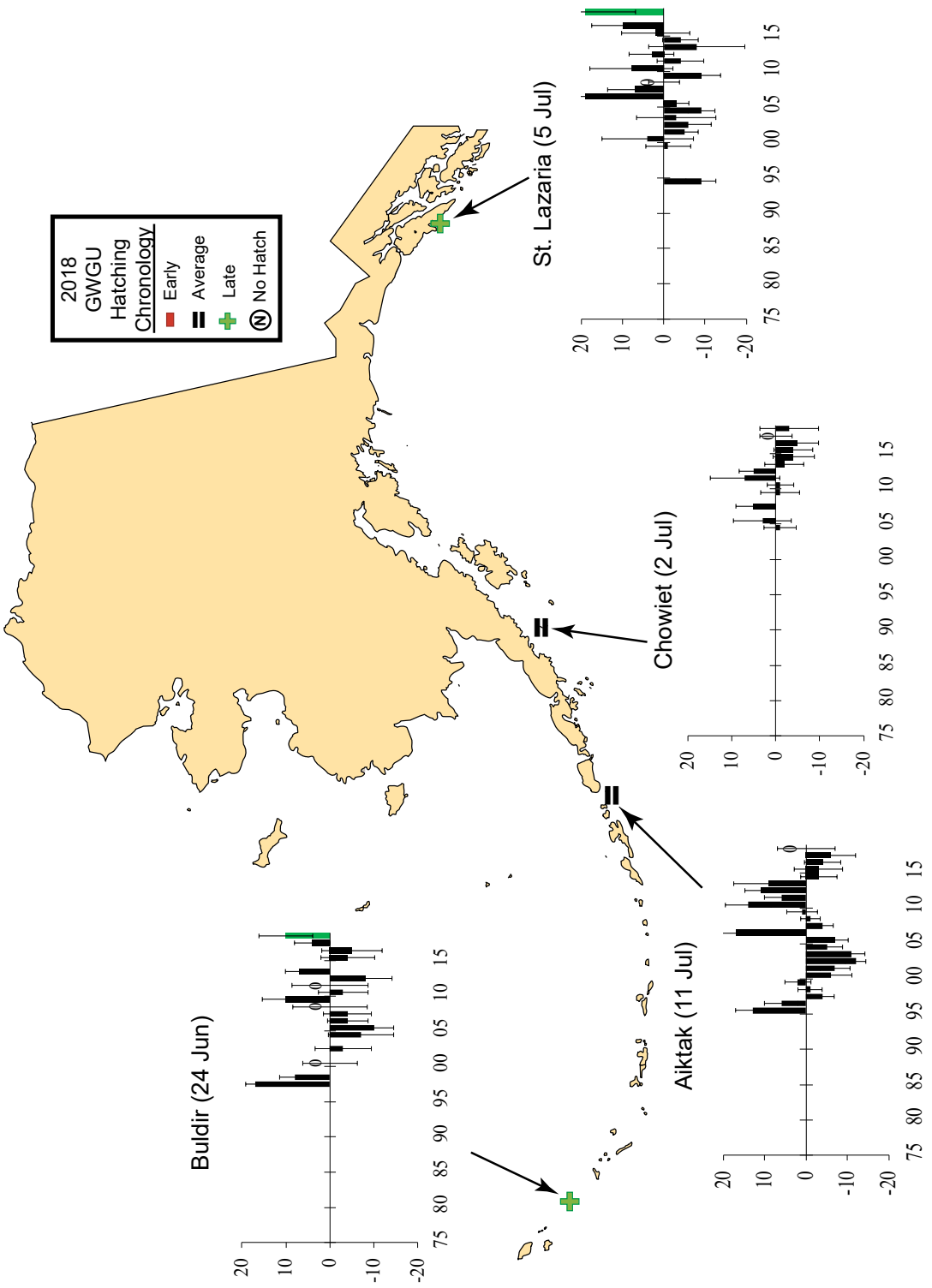



Figure 26. Hatching chronology of glaucous-winged gulls at Alaskan sites. Graphs indicate the departure in days (if any) from the site mean (value in parentheses; current year not included). Lack of bars indicates that no data were gathered in those years. Color of graph bar and map symbol indicates how current year's success compared to the site mean (red is >3 days early, black is within 3 days and green is >3 days later than the site mean). Error bars represent ± 1 standard deviation.

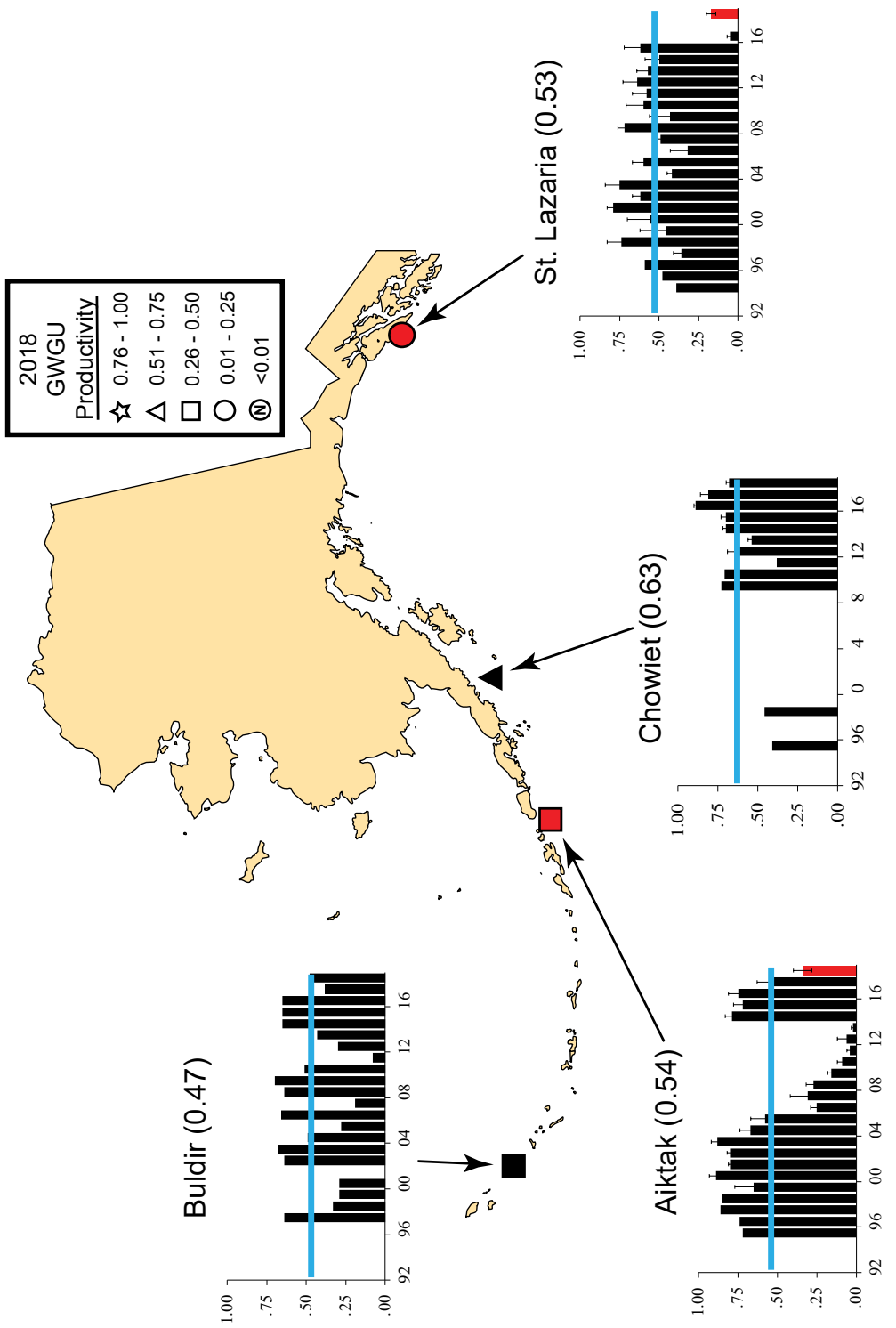



Figure 27. Productivity of glaucous-winged gulls (hatching success) at Alaskan sites. Lack of bars indicates that no data were gathered in those years. Zeros indicate complete breeding failure. Blue line is the mean productivity at the site (value in parentheses; current year not included). Color of graph bar and map symbol indicates how current year's success compared to the site mean (red is >20% below, black is within 20% and green is >20% above site mean). Error bars represent ± 1 standard deviation.

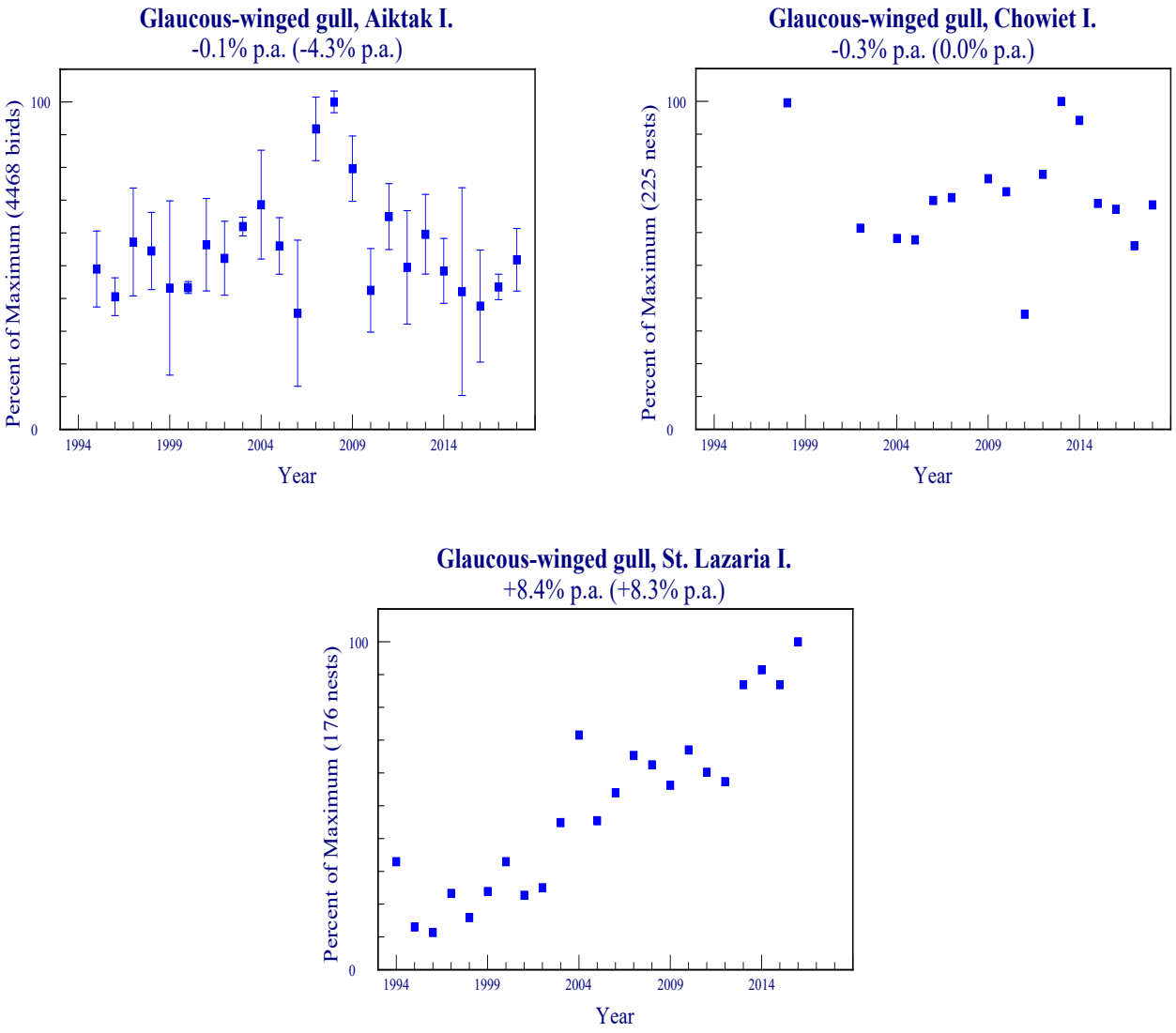



Figure 28. Trends in populations of glaucous-winged gulls at Alaskan sites. Error bars (90% confidence intervals) are shown for years with multiple counts. Percent per annum (p.a.) changes are indicated for all years and for just the last decade (2009-2018, in parentheses).

## Northern fulmar (*Fulmarus glacialis*)

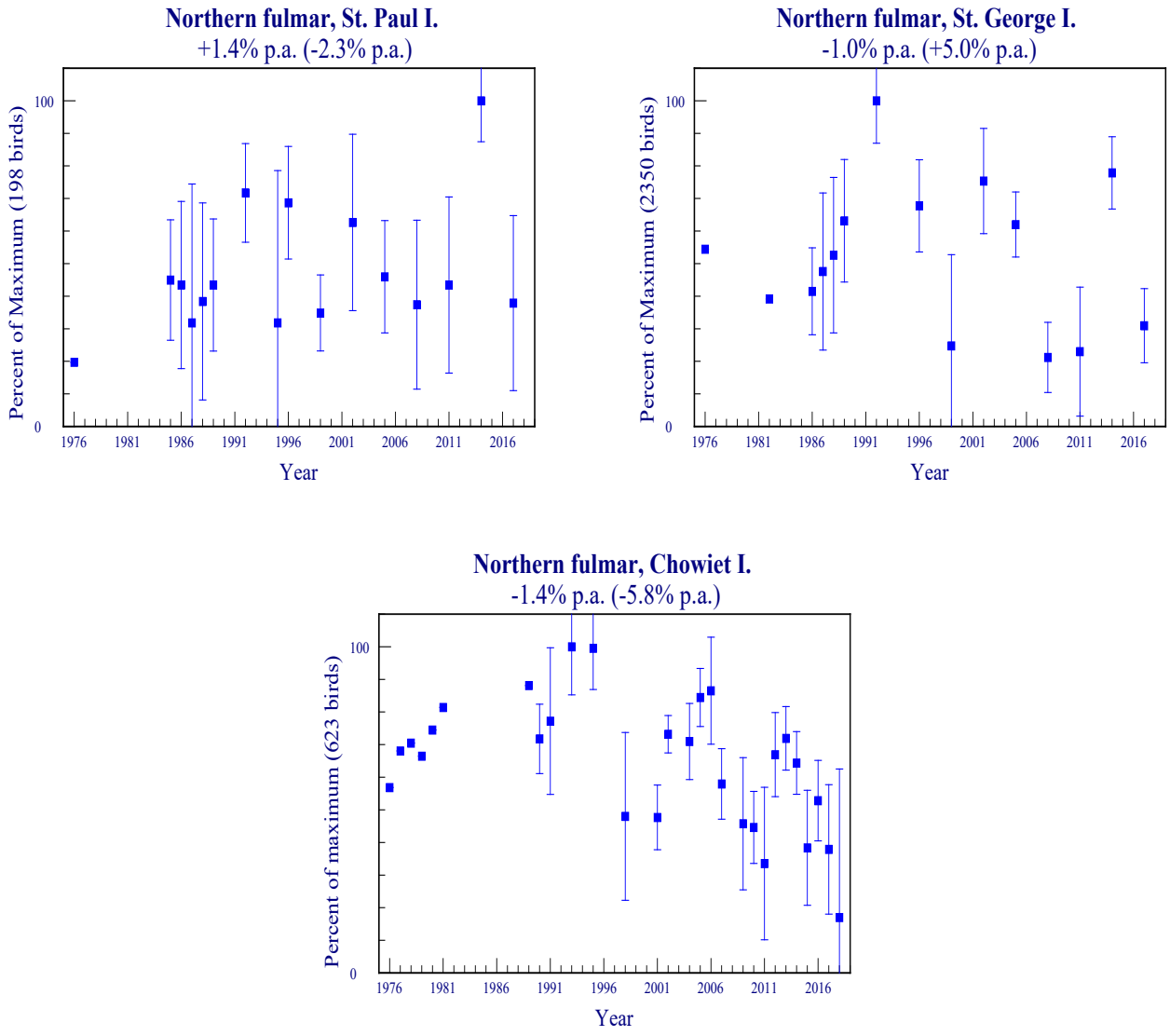



Figure 29. Trends in populations of northern fulmars at Alaskan sites. Error bars (90% confidence intervals) are shown for years with multiple counts. Percent per annum (p.a.) changes are indicated for all years and for just the last decade (2009-2018, in parentheses).

**Fork-tailed storm-petrel (*Oceanodroma furcata*)**

Table 27. Hatching chronology of fork-tailed storm-petrels at Alaskan sites monitored in 2018.

| Site | Mean Hatch Date | Long-term Average | Reference |
|---|---|---|---|
| Buldir I. | 3 Aug (11)[a] | 11 Jul (2)[a] | Pietrzak et al. 2018 |
| Aiktak I. | 4 Aug (26) | 15 Jul (21) | Youngren et al. 2019 |
| St. Lazaria I. | 29 Jun (36) | 14 Jul (13) | Evans et al. 2018 |

[a]Sample size in parentheses represents the number of nest sites used to calculate the mean hatch date and the number of years used to calculate the long-term average. Current year not included in long-term average.

Table 28. Reproductive performance of fork-tailed storm-petrels at Alaskan sites monitored in 2018.

| Site | Chicks Fledged[a]/Egg | No. of Plots | Long-term Average | Reference |
|---|---|---|---|---|
| Buldir I. | 0.73 | 5 (11)[b] | 0.71 (31)[b] | Pietrzak et al. 2018 |
| Aiktak I. | 0.62 | 13 (61) | 0.80 (18) | Youngren et al. 2019 |
| St. Lazaria I. | 0.80 | 8 (85) | 0.68 (22) | Evans et al. 2018 |

[a]Fledged chick defined as being alive at last check in August or September.

[b]Sample size in parentheses represents the number of eggs used to calculate productivity and the number of years used to calculate the long-term average. Current year not used in long-term average.

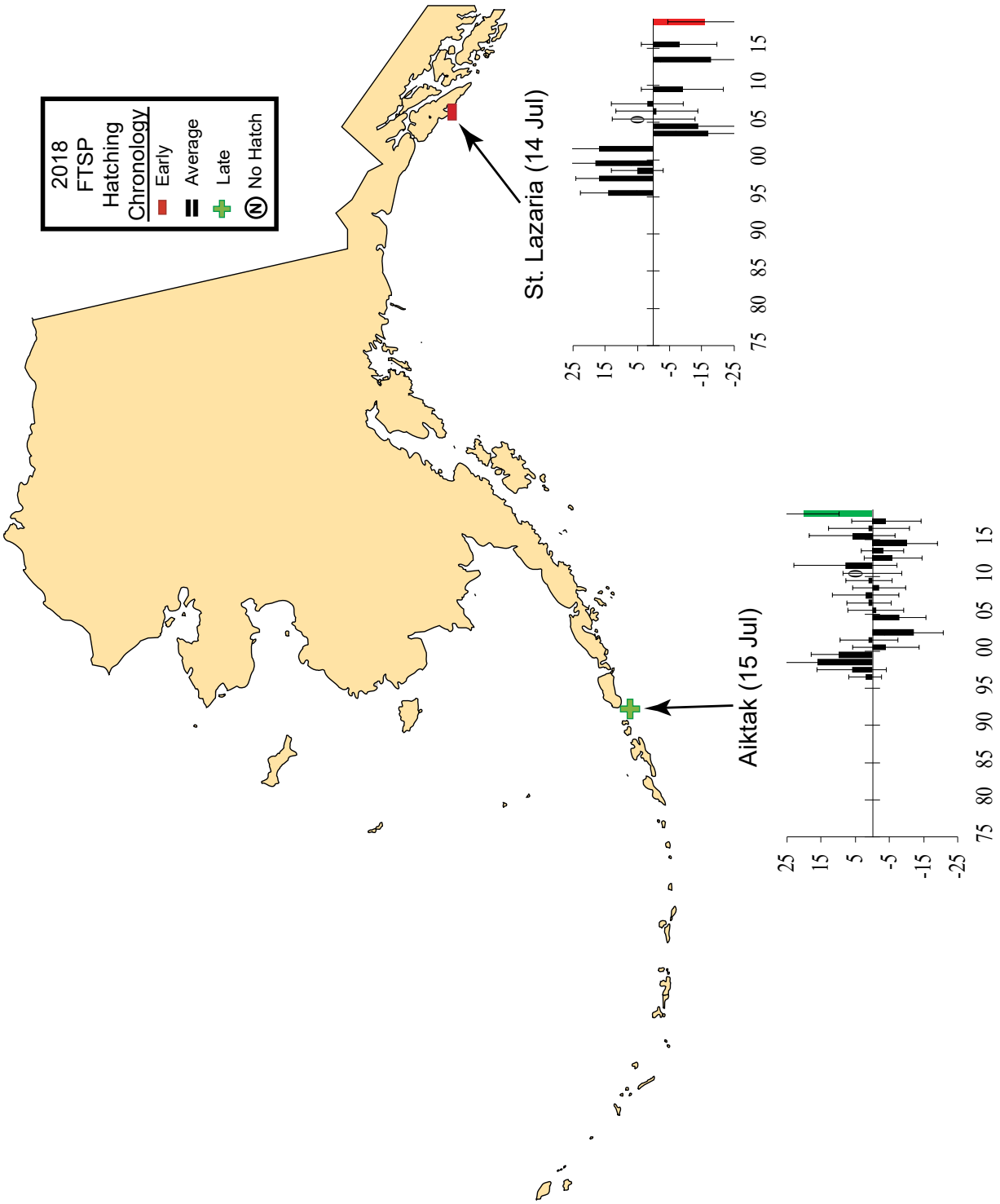



Figure 30. Hatching chronology of fork-tailed storm-petrels at Alaskan sites. Graphs indicate the departure in days (if any) from the site mean (value in parentheses; current year not included). Lack of bars indicates that no data were gathered in those years. Color of graph bar and map symbol indicates how current year's success compared to the site mean (red is >3 days early, black is within 3 days and green is >3 days later than the site mean). Error bars represent ± 1 standard deviation.

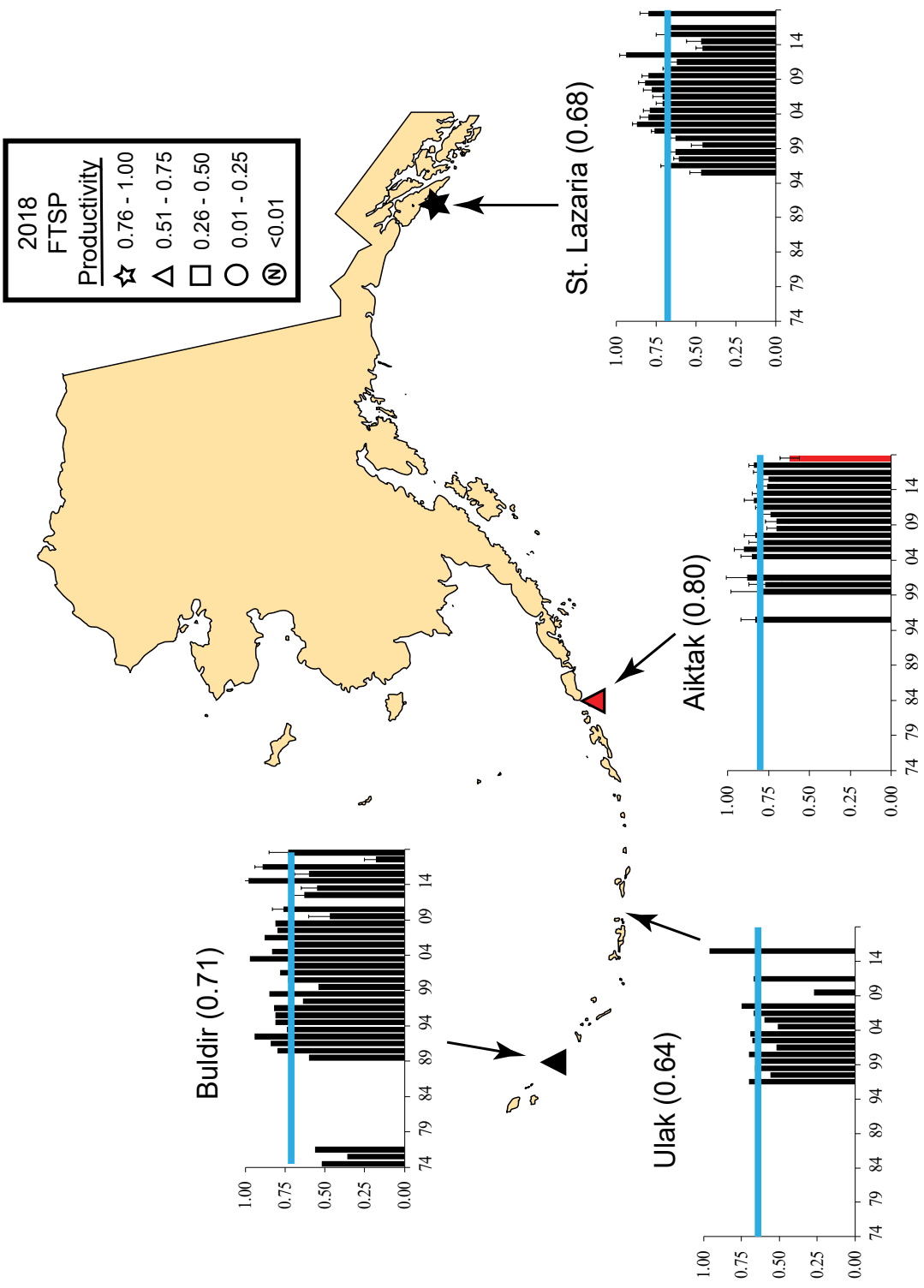



Figure 31. Productivity of fork-tailed storm-petrels (chicks fledged/egg) at Alaskan sites. Lack of bars indicates that no data were gathered in those years. Blue line is the mean productivity at the site (value in parentheses; current year not included). Color of graph bar and map symbol indicates how current year's success compared to the site mean (red is >20% below, black is within 20% and green is >20% above site mean). Error bars represent ± 1 standard deviation.

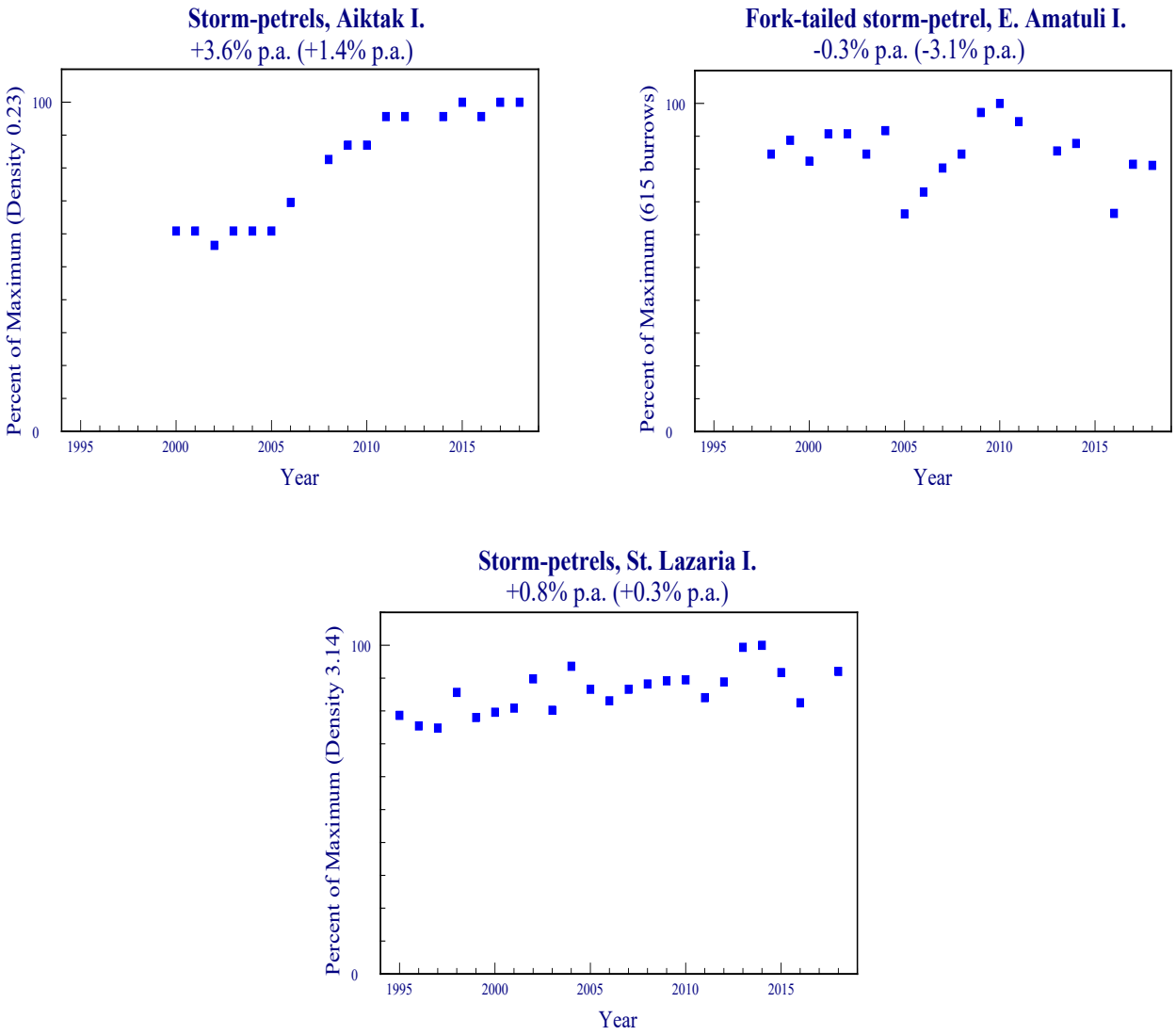



Figure 32. Trends in populations of storm-petrels at Alaskan sites. Percent per annum (p.a.) changes are indicated for all years and for just the last decade (2009-2018, in parentheses).

**Leach's storm-petrel (*Oceanodroma leucorhoa*)**

Table 29. Hatching chronology of Leach's storm-petrels at Alaskan sites monitored in 2018.

| Site | Mean Hatch Date | Long-term Average | Reference |
|---|---|---|---|
| Buldir I. | 14 Aug (19)[a] | 31 Jul (2)[a] | Pietrzak et al. 2018 |
| Aiktak I. | 9 Aug (40) | 30 Jul (21) | Youngren et al. 2019 |
| St. Lazaria I. | 27 Jul (25) | 30 Jul (21) | Evans et al. 2018 |

[a]Sample size in parentheses represents the number of nest sites used to calculate the mean hatch date and the number of years used to calculate the long-term average. Current year not included in long-term average.

Table 30. Reproductive performance of Leach's storm-petrels at Alaskan sites monitored in 2018.

| Site | Chicks Fledged[a]/Egg | No. of Plots | Long-term Average | Reference |
|---|---|---|---|---|
| Buldir I. | 0.89 | 5 (28)[b] | 0.75 (31)[b] | Pietrzak et al. 2018 |
| Aiktak I. | 0.92 | 12 (106) | 0.85 (18) | Youngren et al. 2019 |
| St. Lazaria I. | 0.68 | 7 (80) | 0.71 (22) | Evans et al. 2018 |

[a]Fledged chick defined as being alive at last check in August or September.

[b]Sample size in parentheses represents the number of eggs used to calculate productivity and the number of years used to calculate the long-term average. Current year not used in long-term average.

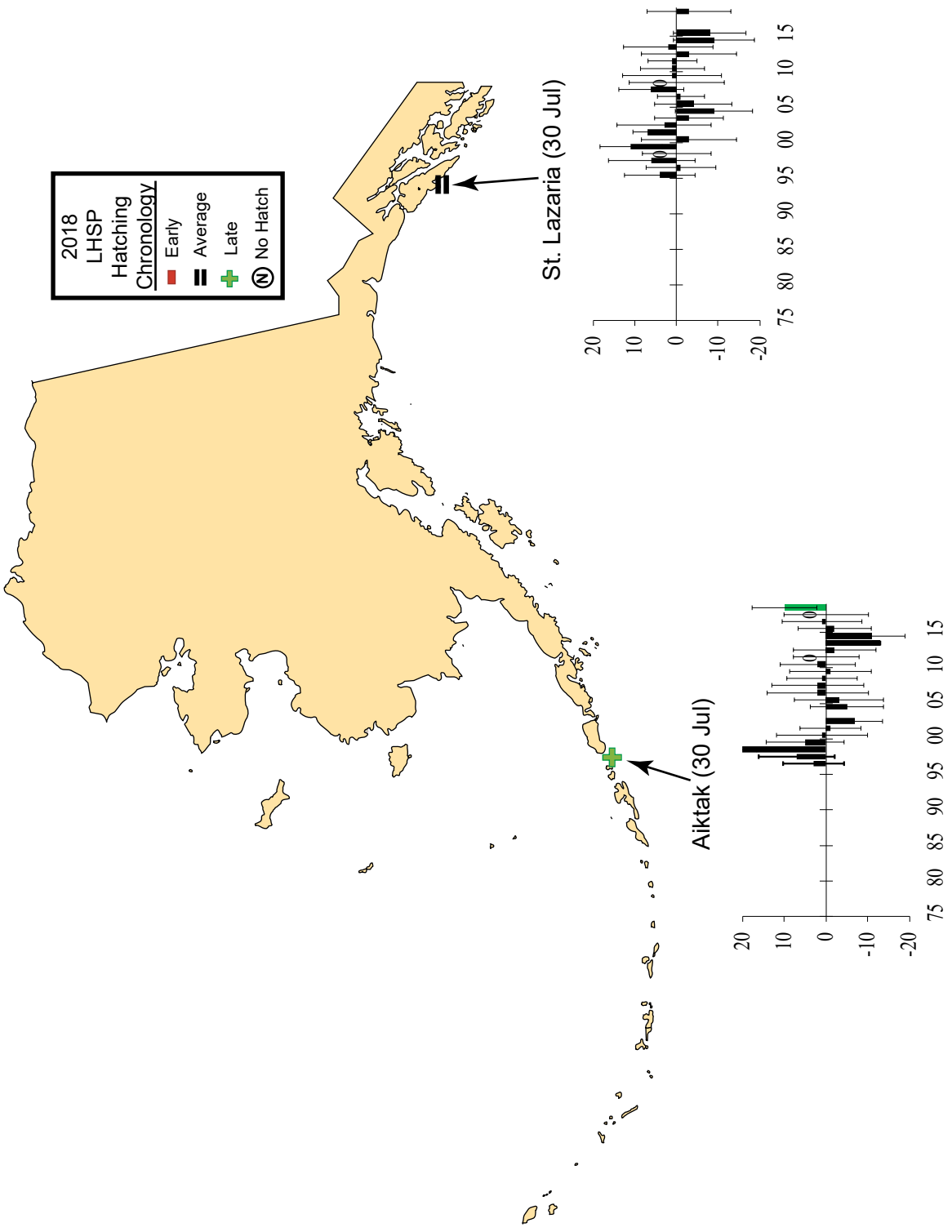



Figure 33. Hatching chronology of Leach's storm-petrels at Alaskan sites. Graphs indicate the departure in days (if any) from the site mean (value in parentheses; current year not included). Lack of bars indicates that no data were gathered in those years. Color of graph bar and map symbol indicates how current year's success compared to the site mean (red is >3 days early, black is within 3 days and green is >3 days later than the site mean). Error bars represent ± 1 standard deviation.

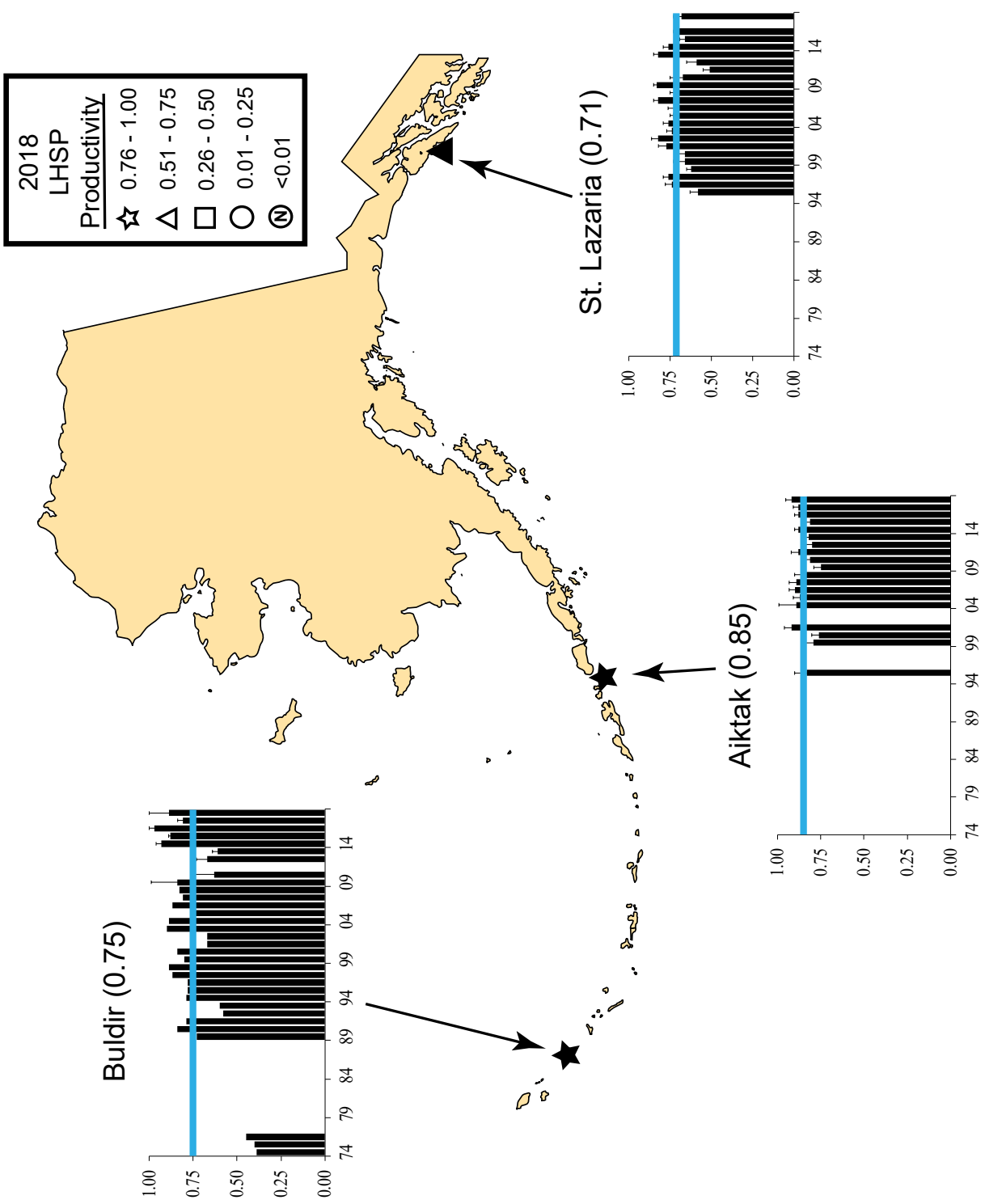



Figure 34. Productivity of Leach's storm-petrels (chicks fledged/egg) at Alaskan sites. Lack of bars indicates that no data were gathered in those years. Blue line is the mean productivity at the site (value in parentheses; current year not included). Color of graph bar and map symbol indicates how current year's success compared to the site mean (red is >20% below, black is within 20% and green is >20% above site mean). Error bars represent ± 1 standard deviation.

**Red-faced cormorant (*Phalacrocorax urile*)**

Table 31. Hatching chronology of red-faced cormorants at Alaskan sites monitored in 2018.

| Site | Mean Hatch Date | Long-term Average | Reference |
|---|---|---|---|
| St. Paul I. | 30 Jun (3)[a] | 29 Jun (28)[a] | Mong et al. 2019 |

[a]Sample size in parentheses represents the number of nest sites used to calculate the mean hatch date and the number of years used to calculate the long-term average. Current year not included in long-term average.

Table 32. Reproductive performance of red-faced cormorants at Alaskan sites monitored in 2018.

| Site | Chicks Fledged/Nest | No. of Plots | Long-term Average | Reference |
|---|---|---|---|---|
| St. Paul I. | 0.15 | 3 (39)[a] | 1.31 (33)[a] | Mong et al. 2019 |
| St. George I. | 0.98 | 5 (42) | 1.13 (18) | Guitart et al. 2018 |
| Chowiet I. | 0.90 | 2 (61) | 0.17 (6) | Higgins et al. 2018 |

[a]Sample size in parentheses represents the number of nests used to calculate productivity and the number of years used to calculate the long-term average. Current year not used in long-term average.

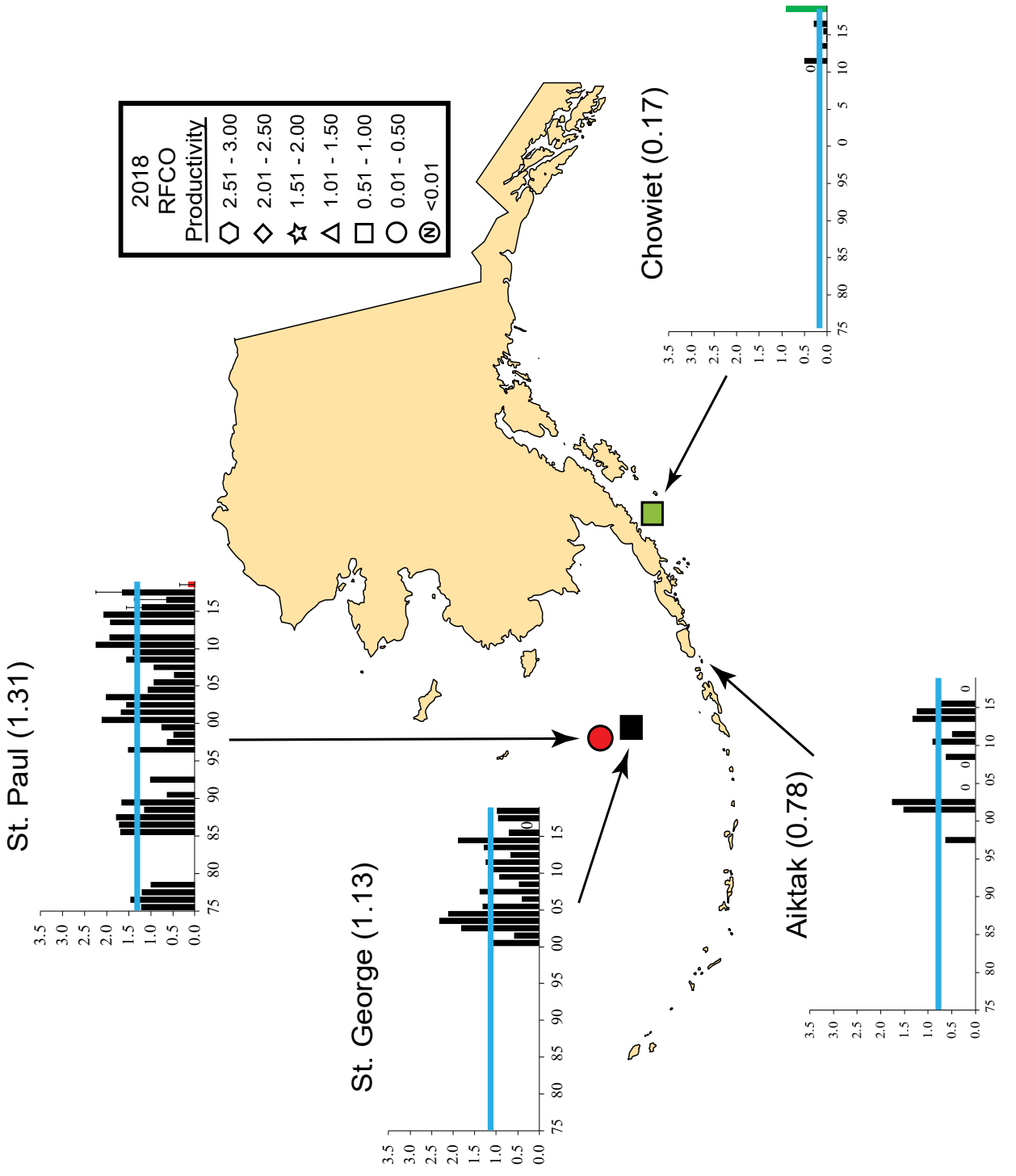



Figure 35. Productivity of red-faced cormorants (chicks fledged/nest) at Alaskan sites. Lack of bars indicates that no data were gathered in those years. Zeros indicate complete breeding failure. Blue line is the mean productivity at the site (value in parentheses; current year not included). Color of graph bar and map symbol indicates how current year's success compared to the site mean (red is >20% below, black is within 20% and green is >20% above site mean). Error bars represent ± 1 standard deviation.

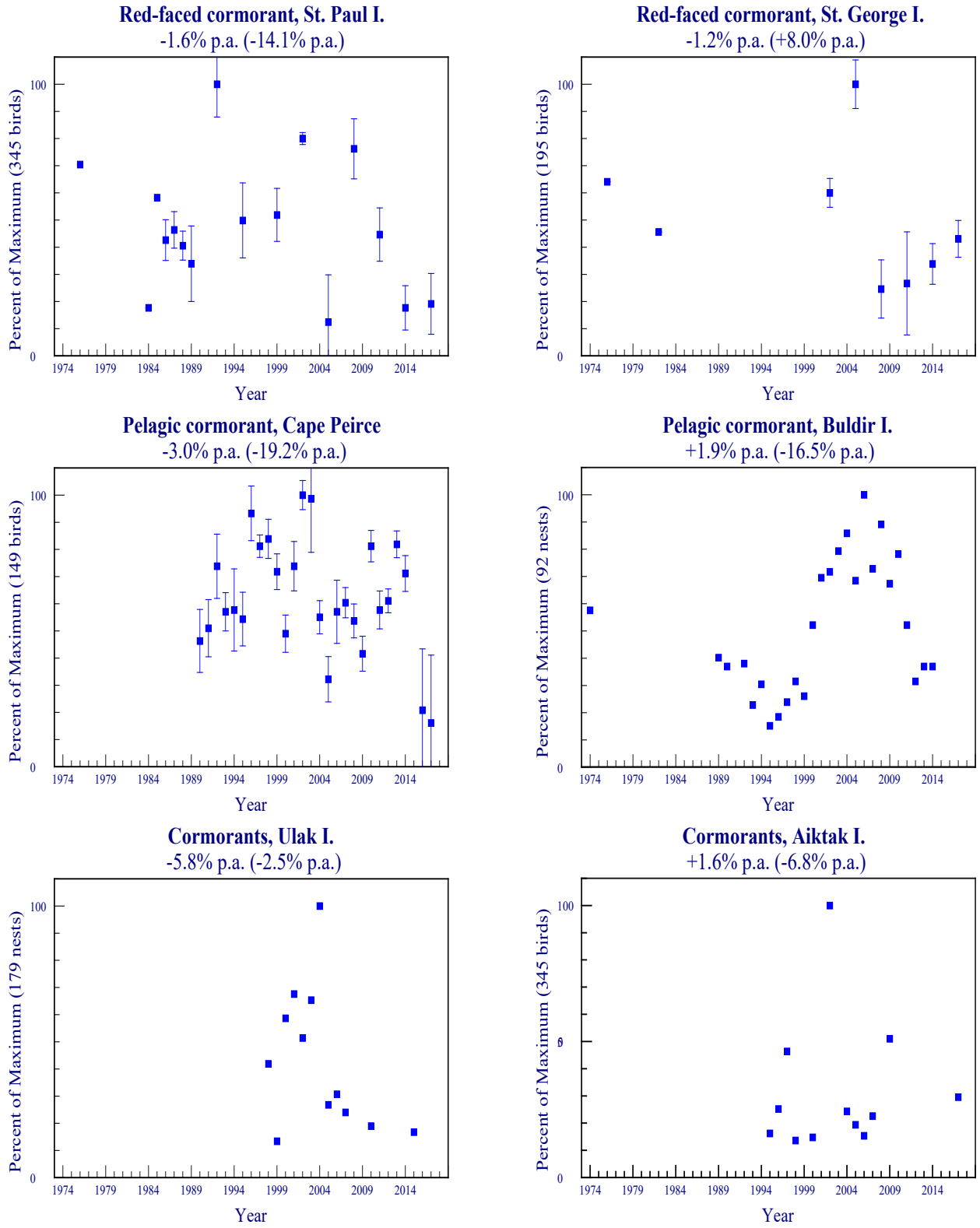



Figure 36. Trends in populations of cormorants at Alaskan sites. Error bars (90% confidence intervals) are shown for years with multiple counts. Percent per annum (p.a.) changes are indicated for all years and for just the last decade (2009-2018, in parentheses).

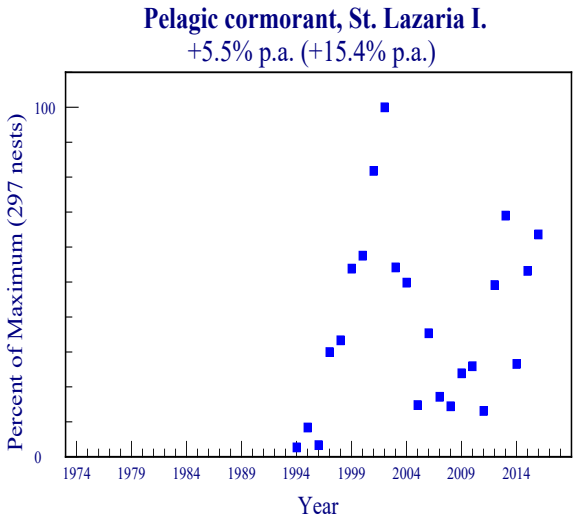



Figure 36 (continued). Trends in populations of cormorants at Alaskan sites. Error bars (90% confidence intervals) are shown for years with multiple counts. Percent per annum (p.a.) changes are indicated for all years and for just the last decade (2009-2018, in parentheses).

**Pelagic cormorant (*Phalacrocorax pelagicus*)**

Table 33. Reproductive performance of pelagic cormorants at Alaskan sites monitored in 2018.

| Site | Chicks Fledged/Nest | No. of Plots | Long-term Average | Reference |
|---|---|---|---|---|
| C. Peirce | 0.00 | 2 (18)[a] | 1.12 (30)[a] | K. Hilwig Unpubl. Data |
| Round I. | 0.20 | 4 (25) | 1.22 (17) | E. Weiss Unpubl. Data |
| Chowiet I. | 0.72 | 3 (25) | 0.64 (6) | Higgins et al. 2018 |
| Middleton I. | 0.80 | NA[b] (84) | 0.86 (35) | ISRC 2018 |

[a]Sample size in parentheses represents the number of nests used to calculate productivity and the number of years used to calculate the long-term average. Current year not used in long-term average.

[b]Not applicable or not reported.

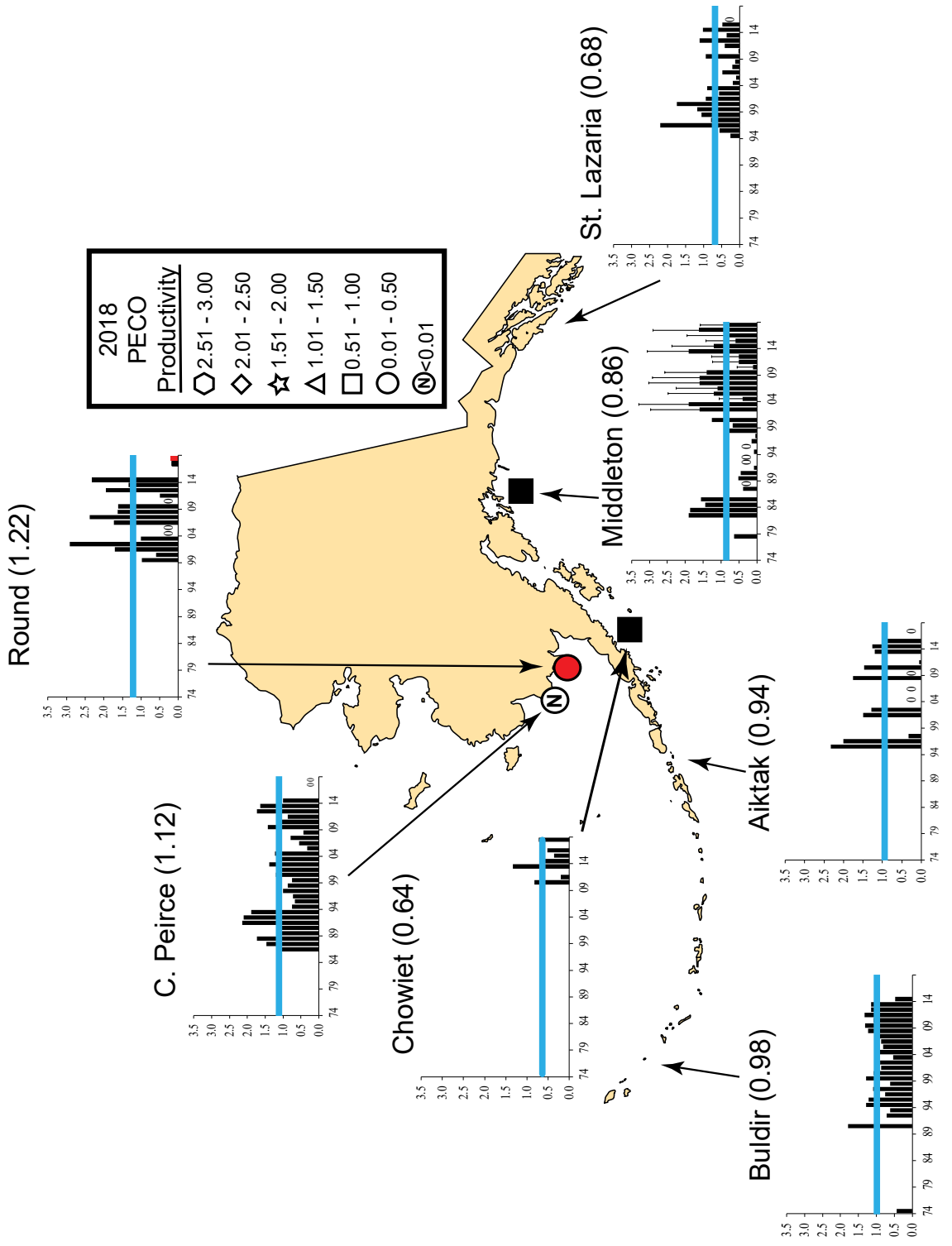



Figure 37. Productivity of pelagic cormorants (chicks fledged/nest) at Alaskan sites. Lack of bars indicates that no data were gathered in those years. Zeros indicate complete breeding failure. Blue line is the mean productivity at the site (value in parentheses; current year not included). Color of graph bar and map symbol indicates how current year's success compared to the site mean (red is >20% below, black is within 20% and green is >20% above site mean).

Table 34. Seabird relative breeding chronology[a] compared to averages for past years. Only sites for which there were data from 2018 are included.

| Region | Site | COMU[b] | TBMU | ANMU | PAAU | LEAU | WHAU | CRAU | HOPU | TUPU | BLKI | RLKI | GWGU | FTSP | LHSP | RFCO |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SE Bering | St. Paul I. | L | L | | | | | | | | L | | | | | A |
| | St. George I. | L | L | | | E | | | | | | | | | | |
| | Aiktak I. | | | E | | | | | A | E | | | A | L | L | |
| SW Bering | Buldir I. | | L | | L | A | A | L | L | | L | L | L | L | L | |
| N Gulf of AK | Chowiet I. | A | A | | L | | | | E | E | A | | A | | | |
| Southeast | St. Lazaria I. | L | L | | | | | | | | | | L | E | A | |

[a]Codes:
"E" and red cell color indicate hatching chronology was > 3 days earlier than the average for sites in this region.
"A" and yellow cell color indicate hatching chronology was within 3 days of average.
"L" and green cell color indicate hatching chronology was > 3 days later than the average for sites in this region.

[b]COMU=common murre, TBMU=thick-billed murre, ANMU=ancient murrelet, PAAU=parakeet auklet, LEAU=least auklet, WHAU=whiskered auklet, CRAU=crested auklet, HOPU=horned puffin, TUPU=tufted puffin, BLKI=black-legged kittiwake, RLKI=red-legged kittiwake, GWGU=glaucous-winged gull, FTSP=fork-tailed storm-petrel, LHSP=Leach's storm-petrel, RFCO=red-faced cormorant.

Table 35. Seabird relative productivity levels[a] compared to averages for past years. Only sites for which there were data from 2018 are included.

| Region | Site | COMU[b] | TBMU | ANMU | PAAU | LEAU | WHAU | CRAU | RHAU | HOPU | TUPU | BLKI | RLKI | GWGU | FTSP | LHSP | RFCO | PECO |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SE Bering | St. Paul I. | A | L | | | | | | | | | L | L | | | | L | |
| | St. George I. | A | A | | | L | | | | | | L | L | | | | A | |
| | C. Peirce | | | | | | | | | | | L | | | | | | L |
| | Round I. | L | | | | | | | | | | L | | | | | | L |
| | Aiktak I. | L | L | A | | | | | | L | H | | | L | L | A | | |
| SW Bering | Buldir I. | L | L | | H | A | A | A | | A | L | A | A | A | A | A | | |
| N. Gulf of Alaska | Chowiet I. | H | H | | L | | | | | H | H | H | | A | | | H | A |
| | Gull I. | L | | | | | | | | | | L | | | | | | |
| | Chisik I. | L | | | | | | | | | | L | | | | | | |
| | Inner PWS[c] | | | | | | | | | | | L | | | | | | |
| | Outer PWS[c] | | | | | | | | | | | L | | | | | | |
| | Middleton I. | | | | | | | | L | | A | A | | | | | | A |
| Southeast | St. Lazaria I. | A | H | | | | | | A | | | | | L | A | A | | |

[a]Codes:
"L" and red cell color indicate productivity was > 20% below the average for the region.
"A" and yellow cell color indicate productivity was within 20% of average.
"H" and green cell color indicate productivity was > 20% above the average for the region.

[b]COMU=common murre, TBMU=thick-billed murre, ANMU=ancient murrelet, PAAU=parakeet auklet, LEAU=least auklet, WHAU=whiskered auklet, CRAU=crested auklet, RHAU=rhinoceros auklet, HOPU=horned puffin, TUPU=tufted puffin, BLKI=black-legged kittiwake, RLKI=red-legged kittiwake, GWGU=glaucous-winged gull, FTSP=fork-tailed storm-petrel, LHSP=Leach's storm-petrel, RFCO=red-faced cormorant, PECO=pelagic cormorant.

[c]Prince William Sound.

Table 36. Seabird population trends[a] for all available years ("A" columns), and the past decade (2009-2018, "D" columns).

| | | COMU[b] | | TBMU | | UNMU | | PIGU | | LEAU | | RHAU | | TUPU | | BLKI | | RLKI | | GWGU | | NOFU | | FTSP | | STPE | | RFCO | | PECO | | UNCO | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Region | Site | A | D | A | D | A | D | A | D | A | D | A | D | A | D | A | D | A | D | A | D | A | D | A | D | A | D | A | D | A | D | A | D |
| Chukchi | C. Lisburne | | | | | ↑ | ↑ | | | | | | | | | ↑ | ↑ | | | | | | | | | | | | | | | | |
| | C. Thompson | | | | | ↔ | N/A | | | | | | | | | ↔ | N/A | | | | | | | | | | | | | | | | |
| SE Bering | St. Paul I. | ↓ | ↓ | ↔ | ↓ | | | | | | | | | | | ↔ | ↓ | ↓ | ↔ | | | ↔ | ↔ | | | | | ↔ | ↓ | | | | |
| | St. George I. | ↔ | ↓ | ↔ | ↔ | | | | | ↔ | ↓ | | | | | ↔ | ↔ | ↔ | ↓ | | | ↔ | ↑ | | | | | ↔ | ↑ | | | | |
| | C. Peirce | ↓ | ↓ | | | | | | | | | | | | | ↓ | ↓ | | | | | | | | | | | | | ↓ | ↓ | | |
| | Round I. | ↓ | ↓ | | | | | | | | | | | | | ↓ | ↓ | | | | | | | | | | | | | | | | |
| | Aiktak I. | | | | | ↓ | ↓ | | | | | | | ↔ | ↔ | | | | | ↔ | ↓ | | | | | ↑ | ↔ | | | | | ↔ | ↓ |
| SW Bering | Buldir I. | | | | | ↑ | ↑ | | | | | | | | | ↑ | ↑ | ↔ | ↑ | | | | | | | | | | | ↔ | ↓ | | |
| | Ulak I. | | | | | ↔ | ↓ | | | | | | | | | | | | | | | | | | | | | | | | | ↓ | ↔ |
| N Gulf of Alaska | Chowiet I. | | | | | ↔ | ↓ | | | | | ↔ | ↔ | | | ↔ | ↔ | | | ↔ | ↔ | ↔ | ↓ | | | | | | | | | | |
| | Puale Bay | | | | | ↔ | ↓ | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | E. Amatuli I. | | | | | | | | | | | | | ↓ | ↓ | | | | | | | | | ↔ | ↓ | | | | | | | | |
| | Gull I. | ↔ | ↓ | | | | | | | | | | | | | ↔ | ↑ | | | | | | | | | | | | | | | | |
| | Chisik I. | ↓ | ↑ | | | | | | | | | | | | | ↓ | ↑ | | | | | | | | | | | | | | | | |
| | Inner PWS[c] | | | | | | | ↓ | ↑ | | | | | | | ↔ | ↓ | | | | | | | | | | | | | | | | |
| | Outer PWS[c] | | | | | | | ↓ | ↑ | | | | | | | ↓ | ↓ | | | | | | | | | | | | | | | | |
| Southeast | St. Lazaria I. | | | | | ↔ | ↔ | ↔ | ↔ | | | ↑ | ↑ | | | | | | | ↑ | ↑ | | | | | ↔ | ↔ | | | ↑ | ↑ | | |

[a]Codes:
↓ and red cell color indicate a negative population trend of ≥3% per annum for this site or region.
↔ and yellow cell color indicate no population trend.
↑ and green cell color indicate a positive population trend of ≥3% per annum for this site or region.
"N/A" indicates that there were insufficient data to determine a trend.

[b]COMU=common murre, TBMU=thick-billed murre, UNMU=unspecified murre, PIGU=pigeon guillemot, LEAU=least auklet, RHAU=rhinoceros auklet, TUPU=tufted puffin, BLKI=black-legged kittiwake, RLKI=red-legged kittiwake, GWGU=glaucous-winged gull, NOFU=northern fulmar, FTSP=fork-tailed storm-petrel, STPE=unspecified storm-petrel, RFCO=red-faced cormorant, PECO=pelagic cormorant, UNCO=unspecified cormorant.

[c]Prince William Sound. PIGU counts are for the entirety of PWS.

**Acknowledgments**

The data summarized in this report were gathered by many people, most of whom are cited in the references section. We appreciate their efforts. We thank Kara Hilwig (Togiak NWR), David Irons (USFWS Migr. Birds, Ret.), Arthur Kettle (Alaska Maritime NWR), Sarah Schoen (USGS), and Ed Weiss (Alaska Dept. Fish and Game) for the unpublished data they kindly provided. We would like to extend our thanks to the staff of the Alaska Maritime NWR for their assistance during both the data collection and writing phases of this project.

All photographs used in this report are Fish and Wildlife Service pictures except those of the fork-tailed storm-petrel, parakeet auklet, least auklet, tufted puffin, and horned puffin which were taken by Ian Jones, and the ancient murrelet taken by Fiona Hunter; all used with permission. Cover art by Susan Steinacher.

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# Enclosure 4

Polar Biology
https://doi.org/10.1007/s00300-018-2279-4

ORIGINAL PAPER

# Geographic and seasonal patterns of seabird subsistence harvest in Alaska

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Received: 14 July 2017 / Revised: 27 January 2018 / Accepted: 2 February 2018


**Abstract**
Assessing seabird harvest sustainability is difficult because of limited information on harvest and on harvest impacts on seabird populations. This study quantified seasonal harvest of seabirds and their eggs in all Alaska regions, addressed management and conservation questions, and identified topics where collaboration among stakeholders can support sustainable harvest opportunities and promote seabird conservation. In 2002–2015, the estimated subsistence harvest of seabirds was 24,315 birds/year. Murres (33%), auklets (28%), gulls (16%), and cormorants (14%) represented most of the harvest. Alaska-wide harvest patterns largely reflected harvest at the St. Lawrence–Diomede Islands, which represented 78% of the total seabird harvest. The Alaska-wide seasonal distribution of harvest was 56% in spring, 20% summer, and 24% fall-winter. The estimated egg harvest was 150,781 eggs/year and was largely composed of murres (51%) and gulls (45%) eggs. Harvest of most species, including species of conservation concern, was low relative to population sizes. However, harvest of eggs of terns may be significant compared to coastal egg productivity. A better understanding of threats to populations of terns is needed to clarify conservation priorities and to engage subsistence users in conservation efforts. Despite indications of reduced subsistence uses, harvesting of seabirds and their eggs remains culturally important and is a food security component in remote communities in Alaska.

**Keywords** Seabird harvest · Seabird egg harvest · Subsistence · Harvest surveys · Harvest management · Seabird conservation

## Introduction

Seabirds and their eggs are harvested throughout the Arctic and Subarctic. Harvest traditions include indigenous and non-indigenous subsistence, sport (recreational), and commercial harvest. Providing opportunities for subsistence harvest is a seabird management goal in Alaska, and harvest sustainability is a circumpolar conservation priority (Delinger and Wohl 2001; Merkel and Barry 2008; U.S. Fish and Wildlife Service 2009). Seabird population declines have been occurring due to competition for food with commercial fisheries, mortality from fishing gear, environmental and food web changes, pollution, and invasive predators. Consequently, reduced harvest sustainability can have further negative impacts on both seabird populations and the harvesting communities (Croxall et al. 2012; Egevan et al. 2018). Mortality and indirect effects of harvest imply survival and reproductive losses, but harvest impacts on healthy seabird populations may be partially offset by density-dependent processes (Moller 2006). Ultimately, assessing harvest sustainability is challenging because of limited information on harvest and on its impacts on seabird populations.

Alaska Native (indigenous) peoples have used seabirds and their eggs as subsistence and cultural resources for thousands of years. Until the mid-1900s, seabirds provided skins for clothing, bones for tools, and food for people and sled dogs (Hughes 1984; Pratt 1990; Moss 2007; Corbett 2016). Currently, Alaska indigenous peoples use seabirds mostly as human food and cultural resources and these uses do not involve commercial trade. There are no sport and

**Electronic supplementary material** The online version of this article (https://doi.org/10.1007/s00300-018-2279-4) contains supplementary material, which is available to authorized users.

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Published online: 09 February 2018

commercial harvest of seabirds in Alaska. In recent decades, subsistence bird harvest has been done primarily with shotguns, but other harvest methods are still used on small scale. Although some subsistence bird hunts are specialized, bird hunting often takes place opportunistically in conjunction with pursuits such as marine mammal hunting and berry picking (Little and Robbins 1984; Wolfe et al. 1990).

Alaska subsistence communities have a mixed economy relying on cash and harvest of wild resources for food and socio-cultural structure. The total subsistence harvest in Alaska is about 38 million edible pounds/year composed of fish (53%), land and marine mammals (23 and 14%), plants (4%), shellfish (3%), and birds and eggs (3%) (Fall 2016). Although birds represent a small proportion of the total harvest, bird harvest occurs when other resources are scarce, contributes to diet diversity, and is also socio-culturally important. Seabirds are harvested in low numbers compared to other birds, but seabird eggs represent a large proportion of the total egg harvest (Paige and Wolfe 1998; Hunn et al. 2002).

Previous seabird harvest studies in Alaska documented subsistence uses, gauged variation in amount and species composition, highlighted the need for harvest surveys, and allowed refinement of data collection and analysis (Wohl et al. 1995, 2008; Paige and Wolfe 1997, 1998). However, it has been difficult to characterize seabird harvest based on previous studies because available datasets were limited and some studies did not extrapolate data to represent non-surveyed communities. Previous studies have not depicted seasonal seabird harvest patterns in Alaska, which elucidate their role as subsistence resources. Also, proportions of adult and immature birds that are potentially subject to harvest vary seasonally and relate to harvest effects on bird populations because adults have more survival and reproductive value for populations than immatures (Martin 1995; Juillet et al. 2012; Lyver et al. 2015).

Utilizing a large dataset collected in the last two decades, the objectives of this study were to quantify current harvest of seabirds and their eggs in Alaska with better accounting for local harvest patterns and to describe seasonal harvest patterns for all regions. Although seabirds are a small proportion of subsistence harvests in Alaska, some species potentially harvested are of conservation concern (Red-throated Loon *Gavia stellata*, Yellow-billed Loon *G.adamsii*, Red-faced Cormorant *Phalacrocorax urile*, Pelagic Cormorant *P. pelagicus*, Red-legged Kittiwake *Rissa brevirostris*, Arctic Tern *Sterna paradisea*, Aleutian Tern *Onychoprion aleutica*, Cassin's Auklet *Ptychoramphus aleuticus*, and Whiskered Auklet *Aethia pygmaea*) (U.S. Fish and Wildlife Service 2009, 2014). Results of this study will help to (1) put subsistence harvest in perspective with other factors potentially affecting seabird populations; (2) facilitate engagement of subsistence users in seabird conservation; (3) support sustainable harvest opportunities; and (4) inform management and conservation actions.

## Materials and methods

### Data sources

Alaska's vast and diverse geographic areas include pelagic, coastal, and inland ecosystems in the Arctic and Subarctic domains of western North America and marine regions of the Gulf of Alaska and Bering, Chukchi, and Beaufort seas. For regulatory purposes related to subsistence harvest of migratory birds, including seabirds, this expanse is divided into 12 management regions (U.S. National Archives and Records Administration 2018) (Fig. 1). For this study, the Bering Strait–Norton Sound management region was divided into St. Lawrence–Diomede Islands and Bering Strait Mainland because of their distinct harvest patterns, and the Gulf of Alaska and Cook Inlet regions were combined. Within regions, 202 communities are eligible for the subsistence harvest of migratory birds and only a few of them have road access. Communities vary in size from a few dozen people to several thousands, with a total population of about 87,000 people, 68% of which are indigenous representing five large ethnic groups (Table 1) (U.S. Census Bureau 2011).

This study summarized seabird subsistence harvest data to portray an annual harvest in 2002–2015. Sampling effort was defined as "community-year," which refers to a harvest survey conducted in a specific community and year. The dataset used was composed of data from the Harvest Assessment Program of the Alaska Migratory Bird Co-Management Council (2018) (AMBCC-HAP) (410 community-years), the Community Subsistence Information System (2018) (117 community-years), Reedy-Maschner and Maschner (2012) (3 community-years), Bacon et al. (2011) (5 community-years), and Kawerak (2004) (10 community-years). Despite possible measurement errors, there are no indications that these surveys suffer from chronic issues that could consistently result in underestimated or overestimated harvest numbers (Usher and Wenzel 1987). Data collection in all sources was based on interview surveys conducted by partnerships among resource management agencies, indigenous organizations, and academia including local research assistants. In all sources, the household was the basic sampling unit. Participation in the surveys was voluntary at the community and household levels. Household participation in these surveys is typically higher than 80%. Of 545 community-years used in analysis, 523 referred to 2002–2015 and a small proportion of 1982–2000 data were used to represent communities insufficiently surveyed in more recent years (Table 1). Among the 202 communities eligible for the

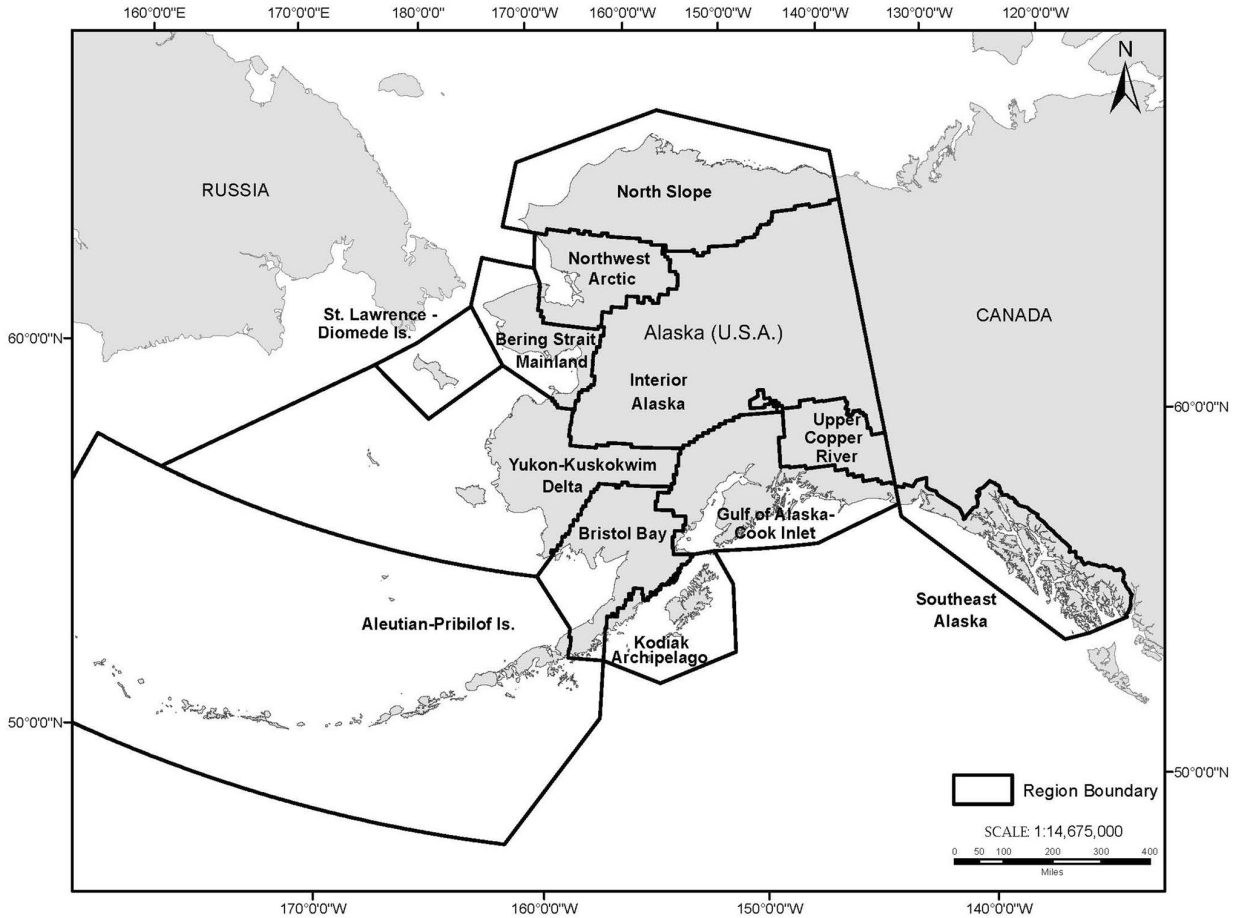


**Fig. 1** Alaska regions, based on management regions for the Alaska subsistence harvest of migratory birds

subsistence harvest of migratory birds, only 14 communities across five regions were not represented in the dataset.

## Data treatment

Harvest surveys differ on data collection and reporting methods and not all data available were used because of compatibility issues (species categories used, availability of seasonal estimates, and missing data issues). In AMBCC-HAP annual reports, mean replacement has been used to address missing data (Naves 2012). In this study, because diverse data sources were used, analytical steps to implement such mean replacement were impractical and 65 community-years affected by missing data were not included in analysis. For instance, harvest of Red-legged Kittiwake eggs was reported in 2005 in the Aleutian-Pribilof Islands and harvest of eggs and birds was reported in 2006 in the Kodiak Archipelago (Naves 2018). However, the 2005 survey did not include Pribilof Islands communities where Red-legged Kittiwakes are known to breed and breeding colonies have not been documented on the Kodiak Archipelago. These egg harvest reports may involve species misidentification and their absence in this study did not affect characterization of harvest. Also, 10 community-years surveyed in 1991–1997 in the Gulf of Alaska–Cook Inlet and Kodiak Archipelago were not included in analysis because surveys immediately following the 1989 Exxon Valdez Oil spill may not represent usual harvest patterns (Fall 1999).

Harvest surveys in Alaska have used multi-species categories because of challenges in species identification, limited understanding of local ethnotaxonomies, and the need for conciseness in surveys including many subsistence resources. Multi-species categories used in this study were loons (*Gavia* spp.), grebes (*Podiceps auritus* and *P. grisegena*), cormorants (*Phalacrocorax* spp.), Bonaparte's–Sabine's gulls (*Larus philadelphia* and *Xema sabini*), large gulls (*Larus* spp.), terns (*Sterna paradisea* and *Onychoprion aleutica*), murres (*Uria aalge* and *U. lomvia*), guillemots (*Cepphus grille* and *C. columba*), auklets (*Aethia* spp., *Ptychoramphus aleuticus*, and *Cerorhinca*

**Table 1** Dataset used to estimate seabird subsistence harvest in Alaska, representing the 2002–2015 period. Unless otherwise noted, values are number of community-years (a community-year refers to a household harvest survey conducted in an individual community in a specific year)

| Year | North Slope | Northwest Arctic | St. Lawrence–Diomede Islands | Bering Strait Mainland | Yukon–Kuskokwim Delta | Interior Alaska | Upper Copper River | Bristol Bay | Aleutian-Pribilof Islands | Kodiak Archipelago | Gulf of Alaska–Cook Inlet | Southeast Alaska | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1982 | – | – | – | – | – | 1 | – | – | – | – | – | – | 1 |
| 1987 | – | – | – | – | – | 2 | – | 1 | – | – | – | – | 3 |
| 1992 | – | – | – | – | – | – | – | – | 1 | – | – | – | 1 |
| 1993 | – | – | – | – | – | – | – | – | – | – | – | – | 2 |
| 1994 | – | 1 | – | – | – | – | – | – | 2 | – | – | – | 3 |
| 1996 | – | 2 | – | – | – | – | – | – | 1 | – | – | – | 3 |
| 1997 | – | 3 | – | – | – | – | – | – | – | – | – | 2 | 5 |
| 2000 | – | – | – | – | – | 2 | 2 | – | – | – | 1 | 1 | 6 |
| 2002 | – | 1 | 2 | 8 | – | 2 | – | – | – | – | – | – | 13 |
| 2003 | 4 | – | – | – | – | – | – | 3 | – | 4 | 3 | – | 14 |
| 2004 | 1 | – | 2 | 9 | 16 | 18 | 6 | 17 | – | – | 4 | – | 73 |
| 2005 | 7 | – | 2 | 7 | 24 | 9 | – | 19 | 3 | – | 1 | – | 72 |
| 2006 | – | 5 | – | – | 24 | 19 | – | 1 | – | 4 | 3 | – | 56 |
| 2007 | 4 | 2 | 2 | 9 | 20 | 8 | 5 | 15 | 1 | – | – | – | 66 |
| 2008 | 4 | – | – | – | 15 | 2 | – | 11 | 4 | – | – | – | 36 |
| 2009 | 3 | – | 2 | – | 26 | – | 1 | 1 | 3 | – | – | – | 36 |
| 2010 | – | – | 2 | 5 | 17 | 20 | 2 | 1 | – | 5 | 2 | – | 54 |
| 2011 | 1 | 1 | 2 | – | 12 | 14 | – | 6 | – | – | – | – | 36 |
| 2012 | 1 | 5 | 2 | 1 | 1 | 3 | 1 | – | – | – | – | 2 | 16 |
| 2013 | – | 1 | 1 | 1 | 20 | – | – | – | – | – | – | | 23 |
| 2014 | – | – | – | – | – | 6 | – | – | – | – | 3 | – | 9 |
| 2015 | – | – | – | – | 18 | – | – | – | – | – | – | 1 | 19 |
| Total | 25 | 21 | 17 | 40 | 193 | 106 | 17 | 75 | 15 | 13 | 17 | 6 | 545 |
| Number of communities[a] | 8 | 11 | 3 | 13 | 47 | 47 | 8 | 31 | 12 | 12 | 6 | 4 | 202 |
| Number of households | 2002 | 1908 | 368 | 2376 | 6372 | 3010 | 594 | 2503 | 1762 | 4630 | 1193 | 1173 | 27,911 |
| Human population[c] | 6766 | 7109 | 1467 | 7633 | 24,070 | 7538 | 1512 | 7283 | 4428 | 13,259 | 2987 | 2968 | 87,020 |

Source for human population and number of households: U.S. Census Bureau (2011)

A small proportion of 1982–2000 data were used to represent communities insufficiently surveyed in 2002–2015

[a]Communities eligible for the subsistence harvest of migratory birds in Alaska

[b]Human population does not include people living in group quarters (5221 people total), most of which are non-permanent residents and thus non-eligible for the subsistence harvest of migratory birds in Alaska

*monocerata*), and puffins (*Fratercula corniculata* and *F. cirrhata*) (Table 2). However, local ethnotaxonomies can differ from western taxonomy (Hunn and Thornton 2010; Naves and Zeller 2017). Indigenous names in St. Lawrence Island Yupik, Aleut (Aleutian-Pribilof Islands), and Central Yup'ik (Yukon–Kuskokwim Delta and Bristol Bay regions) languages were presented with the intent of making this study more meaningful for subsistence users (Table 2). To be concise, not all of their dialects were represented and the likely inaccuracies reflect the limited knowledge of ethnotaxonomies. These languages were selected to represent a large proportion of indigenous peoples in Alaska. Based on species distribution ranges, (1) all cormorants harvested in the St. Lawrence–Diomede Islands and Bering Strait Mainland regions were considered as Pelagic Cormorant; (2) shearwaters harvested in the St. Lawrence–Diomede Islands were considered as Short-tailed Shearwaters *Puffinus tenuirostris*; and (3) unidentified kittiwakes harvested in areas outside the Red-legged Kittiwake breeding range were considered as Black-legged Kittiwake *Rissa tridactyla* (Delinger 2006). Data on unidentified seabirds were excluded from analysis with negligible effect on harvest estimates (5 community-years included harvest of 137 unidentified seabirds and 76 unidentified seabird eggs).

Following methods of the AMBCC-HAP survey (the main data source used in this study), the annual harvest was divided into spring (April–June), summer (July–August), and fall-winter (September–March). This division reflects subsistence harvest practices, which follow seasonal cycles of availability of biological resources and relate to seabird phenology: arrival at colonies and egg-laying in April–June, chick-rearing and beginning of dispersal in July–August, and offshore dispersal and migration starting in September. Some other surveys used slightly different set of months to define seasons, and although it was impossible to adjust these data, this mismatch affected a small proportion of the whole dataset and was unlikely to affect characterization of seasonal harvests in this study. Moreover, a rigid definition of seasons was unnecessary in this study because seabird phenology and harvest timing are flexible depending on latitude and annual climate variation. Egg harvest estimates were presented for the entire year because eggs are available for only about a month in any given location during spring or spring–summer.

### Data analysis

Community-level harvest estimates were calculated using AMBCC-HAP raw data at the household level (Online Resource 1, Eq. 1). Egg harvest reported as volume (e.g., 5-gallon bucket) was converted into number of eggs using standard equations (Naves and Fall 2017). The complete dataset was composed of these estimates as well as those from other data sources reporting at community level. The arithmetic mean of harvest estimates was used to represent communities surveyed more than once. For each region, estimates for individual communities (or mean for communities surveyed more than once) were summed and extrapolated to account for the few communities not represented in the dataset (Eq. 2). Region estimates were summed into Alaska-wide estimates.

Harvest estimates did not account for crippling (birds struck but not retrieved). Similar to sea ducks, seabird crippling may be higher than in waterfowl because some are large birds, their plumage is difficult to penetrate, and as strong divers they may be more likely to escape retrieval (Rothe et al. 2015). Crippling in eider subsistence harvest varied 3–20% depending on hunting conditions (Byers and Dickson 2001). The harvest estimates provided portray cultural importance and food productivity in subsistence economies, but they may not fully represent seabird hunting mortality.

For AMBCC-HAP data, variances for harvest estimates at the community level were calculated based on raw data (Online Resource 1, Eqs. 3a and 3b). For other data sources, community variances were retro-calculated based on reported confidence intervals assuming that all surveys used simple random sampling (Eq. 3c). Arithmetic means (variance, total households in communities, sampled households) were used to represent communities surveyed more than once. Variances for harvest estimates at the region level were calculated using formulas for two-stage sampling: communities were primary sampling units and households were secondary sampling units (Cochran 1977; Online Resource 1, Eqs. 4a–c). Region variances were summed into Alaska-wide variances. Confidence intervals were presented as percentages of harvest estimates (Online Resource 1 Eqs. 5a and 5b; Online Resources 2 and 3).

Arithmetic means of reported (non-extrapolated) harvest were also provided as indicators of minimum harvest (Online Resources 4 and 5). Species of conservation concern are typically harvested infrequently and in relatively low numbers, thus their harvest estimates (extrapolated data) are less accurate than estimates for species harvested frequently and in larger numbers (Copp and Roy 1986; George et al. 2015). Non-extrapolated numbers are relevant ancillary data to inform harvest management (U.S. Fish and Wildlife Service 2014).

## Results

### Seabird harvest

The estimated Alaska-wide harvest of seabirds was 24,315 birds/year and it was primarily composed of murres (33%),

**Table 2** Alaska-wide seabird estimated subsistence harvest (number of birds/year) and seabird population sizes

| Species categories<br>Species that may be harvested[a] | Population in Alaska[b] (breeding birds) | Harvest estimate (number of birds/year) | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | 1985[g] | 1980s–1990s[h] | 1995 | 1996 | 1995–2000[h] | 2001–2005[h] | 2002–2015 |
| Loons, Yuwayu(aaghaq)[S], Qigux̂[A] | | – | [h] | [i] | 1520 | 891 | 1688 | 980 |
| Red-throated Loon, Eghqaaq[S] *Gavia stellata*[e] | 15,360 | | | | | | | |
| Arctic Loon, Melqupak[S] *G. arctica* | 200 | | | | | | | |
| Pacific Loon, Melqupak[S] *G. pacifica* | 69,498 | | | | | | | |
| Common Loon, Nangqwalek[S] *G. immer* | 8886 | | | | | | | |
| Yellow-billed Loon, Nangqwalek[S] *G. adamsii*[e, f] | 3500 | | | | | | | |
| Grebes, Aqfasuk[S], Chamdaaya-x̂[A] | | – | [h] | – | 2 | 4 | 0 | 13 |
| Horned Grebe, Qaleqcuuk[Y] *Podiceps auritus*[e] | 100,000 | | | | | | | |
| Red-necked Grebe, Aarayuli[Y] *P. grisegena* | 12,000 | | | | | | | |
| Short-tailed Shearwater, Kaputaghaq[S], Aduya-x̂[A] *Puffinus tenuirostris*[f] | | – | 1 | – | 0 | 0 | 0 | 9 |
| Cormorants | | | | | | | | |
| Double-crested Cormorant, Txax[A] *Phalacrocorax auritus* | 6100 | | | | | | | |
| Red-faced Cormorant, Ingatux̂[A] *P. urile*[e,f] | 20,000 | | | | | | | |
| Pelagic Cormorant, Ngelqaq[S], Agayuuĝim Kanuliisigix̂[A] *P. pelagicus*[e] | 44,000 | – | 992 | – | 2416 | 1671 | 3916 | 3412 |
| Cormorants (unidentified), Agayuux̂[A], Agayuuq[Y] | | – | – | – | 158 | 82 | 32 | 71 |
| Bonaparte's–Sabine's gulls | | – | 24 | – | 0 | 58 | 28 | 32 |
| Bonaparte's Gull *Larus philadelphia* | Tens of thousands | | | | | | | |
| Sabine's Gull, Nasallenguq[S] *Xema sabini* | Tens of thousands | | | | | | | |
| Mew Gull, Naruyak[Y] *Larus canus* | 14,400[c] | – | 11 | – | – | 145 | 352 | 564 |
| Large gulls, Sluka-x̂[A], Narusvak[Y] | | – | 460 | – | – | 899 | 2754 | 1618 |
| Herring Gull, Ugraaq[S] *Larus argentatus* | 1600[c] | | | | | | | |
| Glaucous-winged Gull *L. glaucescens* | 250,000 | | | | | | | |
| Glaucous Gull, Naghuyapik[S] *L. hyperboreus* | 100,000 | | | | | | | |
| Gulls (unidentified) | | – | 46 | – | 1571 | 12 | 0 | 0 |
| Black-legged Kittiwake, Qaqsungiq[S], Gidaax̂[A], Tiigilgaax̂[A], Narayuacuaq[Y] *Rissa tridactyla* | 1,300,000 | – | 25 | – | 476 | 423 | 1636 | 1032 |
| Red-legged Kittiwake, Qaĝaya-x̂[A] *R. brevirostris*[e] | 210,000 | – | 0 | – | 688[j] | 657[k] | 0 | 657[k] |
| Terns, Tekeyiighaq[S], Qitiqda-x̂[A] | | – | 13 | – | 21 | 80 | 457 | 66 |

**Table 2** (continued)

| Species categories<br>Species that may be harvested[a] | Population in Alaska[b] (breeding birds) | Harvest estimate (number of birds/year) | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | 1985[g] | 1980s–1990s[h] | 1995 | 1996 | 1995–2000[h] | 2001–2005[h] | 2002–2015 |
| Arctic Tern, Teqiyaar[Y] *S. paradisaea*[e] | hundreds of thousands?[c,m] | | | | | | | |
| Aleutian Tern, Civtulgaq[Y] *Onychoprion aleutica*[e] | 5500[n] | | | | | | | |
| Murres, Alpa[S], Sakita-x̂[A], Ulux̂ txa-x̂[A], Alpaq[Y] | | – | 2704 | – | 10,357 | 7261 | 8957 | 8138 |
| Common Murre, Kuwaaq[S] *Uria aalge* | 2,800,000 | | | | | | | |
| Thick-billed Murre, Aqevgaghnak[S] *U. lomvia* | 2,200,000 | | | | | | | |
| Guillemots, Samseghhaghaq[S], Sipelaaghhaq[S], Siihmlu-x̂[A], Qayagpagayuli[Y] | | – | 12 | – | 0 | 6 | 261 | 770 |
| Black Guillemot *Cepphus grille* | 700 | | | | | | | |
| Pigeon Guillemot *C. columba* | 49,000 | | | | | | | |
| Murrelets, Tagitugiiq[S], Qizangix̂[A], Qidangax̂[A], Cigur[Y] | | – | 0 | – | 30 | 28 | 0 | 0 |
| Marbled Murrelet *Brachyramphus marmoratus*[e,f] | 859,000[d] | | | | | | | |
| Kittlitz's Murrelet *B. brevirostris*[e, f] | 9000–25,000[d] | | | | | | | |
| Ancient Murrelet *Synthliboramphus antiquus*[e, f] | 300,000 | | | | | | | |
| Auklets | | – | 2502 | – | 17,704 | 9196 | 8890 | 6705 |
| Cassin's Auklet, Alugˆaaya-x̂[A], Hmaxchiida-x̂[A] *Ptychoramphus aleuticus*[e] | 473,000 | | | | | | | |
| Parakeet Auklet, Suklugraq[S], Agaluuya-x̂[A], Qihmuugda-x̂[A] *Aethia psittacula* | 1,000,000[d] | | | | | | | |
| Least Auklet, Akmaliighaq[S], Chuuchiix̂[A] *A. pusilla* | 5,500,000–9,000,000[d] | | | | | | | |
| Whiskered Auklet, Kdiix[A], Tuhmu-x̂[A] *A. pygmaea*[e] | 116,000[d] | | | | | | | |
| Crested Auklet, Sukilpaq[S], Kunugyu-x̂[A] *A. cristatella* | 3,000,000 | | | | | | | |
| Rhinoceros Auklet *Cerorhinca monocerata* | 180,000 | | | | | | | |
| Puffins | | – | 285 | – | 228 | 226 | 1419 | 248 |
| Horned Puffin, Quprughaq[S], Qagida-x̂[A], Quengacuar[Y] *Fratercula corniculata* | 900,000 | | | | | | | |
| Tufted Puffin, Pagrugaq[S], Uxchu-x̂[A], Qilangaq[Y] *F. cirrhata* | 2,300,000 | | | | | | | |
| Seabirds (unidentified) | | 4962 | 147 | 19,382[i] | 1247 | 61 | 0 | 0 |
| Total seabirds | | 4962 | 7222 | 19,382[i] | 36,418 | 21,700 | 30,381 | 24,315 |
| Total birds | | 307,242 | – | 360,28[i] | 371,223 | – | – | 369,881 |

**Table 2** (continued)

Sources of seabird harvest data: 1985 (Wolfe et al. 1990), 1980s–1990s (Wohl et al. 1995), 1995 (Paige and Wolfe 1997), 1996 (Paige and Wolfe 1998), 1995–2000 and 2001–2005 (Wohl et al. 2008), 2002–2015 (this study)

Sources of populations size data: Groves et al. (1996), Delinger (2006), U.S. Fish and Wildlife Service (2009, 2014), Wetlands International (2018), Renner et al. (2015)

Indigenous names in St. Lawrence Island Yupik (S), Aleut (A), and Central Yup'ik (Y) languages were presented with the intent of making this study more meaningful for subsistence users. However, to favor conciseness not all of their dialects were represented and the likely inaccuracies reflect the limited knowledge of ethnotaxonomies. These languages were selected to represent a large proportion of indigenous peoples in Alaska

[a]Species with occasional occurrence and limited geographic distribution in Alaska were not included because they are unlikely to be harvested

[b]Population size refers to number of birds breeding in Alaska, unless otherwise noted

[c]Coastal colonies only; data unavailable for inland colonies

[d]Total population occurring in Alaska, not only breeding birds

[e]Species of conservation concern (U.S. Fish and Wildlife Service 2009, 2014)

[f]Subsistence harvest not legally authorized in Alaska (U.S. National Archives and Records Administration 2018)

[g]Estimates depicted minimum harvest because data were unavailable for the St. Lawrence–Diomede and Aleutian-Pribilof islands, which represent most seabird harvest in Alaska. The category "other birds" included seabirds, loons, and shorebirds

[h]Estimates depicted minimum harvest because data were not extrapolated to account for non-surveyed communities. Also, loons and grebes were not included

[i]The large category *seabirds* included loons

[j]Reported harvest was extrapolated to communities outside the Red-legged Kittiwake breeding range

[k]Reported harvest was not extrapolated to communities outside the Red-legged Kittiwake breeding range

[l]Unpublished data (L. C. Naves; Alaska Department of Fish and Game, Division of Subsistence)

[m]Coastal colonies host about 11,000 breeding Arctic Terns and undocumented inland colonies may add to several hundred thousand birds

[n]Total breeding population occurs in coastal colonies, this species does not breed inland

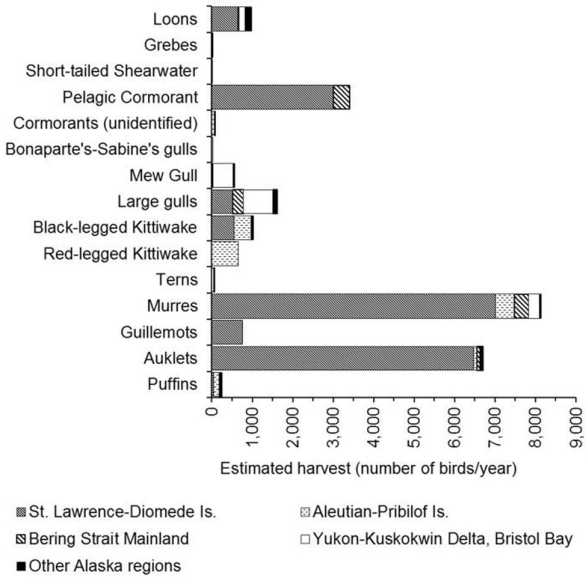


**Fig. 2** Species (or species category) composition of the subsistence seabird harvest in Alaska

auklets (28%), gulls (16%, including kittiwakes), and cormorants (14%) (Table 2, Fig. 2). Harvest of loons, Mew Gull (*Larus canus*), Black- and Red-legged kittiwakes, guillemots, and puffins was in the order of hundreds of birds/year each. Harvest of Sabine's–Bonaparte's gulls, terns, and Short-tailed Shearwater was dozens of birds/year each. The dataset used included no reported harvest of albatrosses (*Phoebastria* spp.), Northern Fulmar (*Fulmarus glacialis*), jaegers (*Stercorarius* spp.), or murrelets (*Brachyramphus marmoratus*, *B. Brevirostris*, and *Synthliboramphus antiquus*). The seasonal distribution of harvest was 56% in spring, 20% in summer, and 24% in fall-winter (Table 3, Fig. 3). Spring represented 83% of the harvest of murres and 64% of the harvest of auklets. Fall-winter represented a large proportion of harvest of Pelagic (75%) and unidentified cormorants (84%), Black-legged Kittiwake (61%), guillemots (69%), and loons (50%). Species with a noteworthy summer harvest (> 20% of the annual total) were puffins, auklets, guillemots, and loons (Table 3).

Harvest in the St. Lawrence–Diomede Islands (19,073 birds/year) represented 78% of the Alaska-wide seabird harvest (Fig. 4). Harvest in this region had a strong spring component (54%), which was largely composed of auklets and murres, while summer (22%) and fall-winter harvest (24%) were composed of a diversity of species.

The Aleutian-Pribilof Islands ranked a distant second in seabirds' harvest (1830 birds/year) (Fig. 4). Spring represented 53% of the annual regional harvest and fall-winter harvest (33%) was higher than in other regions. Red-legged Kittiwakes (657 birds/year) were harvested in spring (35%), summer (14%), and fall-winter (51%). Harvest of auklets in this region where Cassin's and Whiskered auklets occur along with three species of *Aethia* auklets was 88 birds/year. Harvest of unidentified cormorants was low (62 birds/year) and included unknown proportions of Pelagic, Red-faced, and Double-crested (*Phalacrocorax auritus*) cormorants (Table 3).

The largest numbers of Mew Gulls were harvested in the Bristol Bay (32% of the regional seabird harvest) and Yukon–Kuskokwim Delta (24%) regions (Table 3). Large gulls were harvested mostly in the St. Lawrence–Diomede Islands (3% of the regional seabird harvest) and Bristol Bay (47%) regions. Mew Gulls were harvested mostly in spring (90% of the Alaska-wide total) and harvest of large gulls were distributed among seasons (48% in spring, 18% in summer, and 34% in fall-winter) (Table 3).

The Alaska-wide harvest of loons (980 birds/year) had three main components: fall-winter harvest in the St. Lawrence–Diomede Islands, spring harvest in the Yukon–Kuskokwim Delta, and summer harvest in the North Slope (Table 3). The harvest of terns was low (66 birds/year), occurred in spring, and was divided among the Yukon–Kuskokwim Delta (71%), North Slope (17%), and Bering Strait Mainland (12%) regions (Table 3).

## Seabird egg harvest

The Alaska-wide estimated egg harvest (150,781 eggs/year) was largely composed of eggs of murres (51%), large gulls (17%), Mew Gull (13%), and unidentified gulls (12%) (Table 4, Fig. 5). Eggs of terns and Black-legged Kittiwake were harvested in the order of a few thousand eggs/year. Eggs of puffins, auklets, and loons were harvested in the order of a few hundred eggs/year.

The St. Lawrence–Diomede Islands (61,232 eggs/year) represented 41% of the total egg harvest and 78% of the harvest of murres eggs (Table 5). Regions harvesting the largest amounts of gulls' eggs were Bristol Bay (41% of the Alaska-wide total), Northwest Arctic (13%), and Bering Strait Mainland (12%). Eggs of terns (4862 eggs/year) were reported as harvested by all coastal regions except St. Lawrence–Diomede Islands and most harvest occurred in the Yukon–Kuskokwim Delta (22%), Gulf of Alaska–Cook Inlet (22%), Bristol Bay (20%), and Southeast Alaska (14%). Eggs of loons (441 eggs/year) were harvested in the largest numbers in the Bering Strait Mainland (62%) and Yukon–Kuskokwim Delta (20%) regions (Table 5).

**Table 3** Estimated subsistence harvest of seabirds in Alaska (number of birds/year) by region and season, 2002–2015

| Species or species categories (bird harvest) | North Slope | North-west Arctic | St. Lawrence–Diomede Islands | Bering Strait Mainland | Yukon–Kuskokwim Delta | Interior Alaska | Upper Copper River | Bristol Bay | Aleutian-Pribilof Islands | Kodiak Archi-pelago | Gulf of Alaska–Cook Inlet | South-east Alaska | Alaska total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Loons | 74 | 36 | 658 | 23 | 141 | 26 | 0 | 9 | 0 | 0 | 13 | 0 | 980 |
| Spring | 5 | 25 | 113 | 23 | 97 | 15 | 0 | 6 | 0 | 0 | 1 | 0 | 285 |
| Summer | 69 | 2 | 109 | 0 | 22 | 4 | 0 | 1 | 0 | 0 | 0 | 0 | 207 |
| Fall-winter | [b] | 9 | 436 | 0 | 22 | 7 | 0 | 2 | 0 | 0 | 12 | 0 | 488 |
| Grebes | 0 | 0 | 3 | 0 | 9 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 13 |
| Spring | 0 | 0 | 1 | 0 | 7 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 9 |
| Summer | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Fall-winter | [b] | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Short-tailed Shear-water | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 |
| Spring | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Summer | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Fall-winter | [b] | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 |
| Pelagic Cormorant | [a] | [a] | 3006 | 406 | [a] | [a] | [a] | [a] | [a] | [a] | [a] | [a] | 3412 |
| Spring | [a] | [a] | 265 | 5 | [a] | [a] | [a] | [a] | [a] | [a] | [a] | [a] | 270 |
| Summer | [a] | [a] | 585 | 0 | [a] | [a] | [a] | [a] | [a] | [a] | [a] | [a] | 585 |
| Fall-winter | [b] | | 2156 | 401 | [a] | [a] | [a] | [a] | [a] | [a] | [a] | [a] | 2557 |
| Cormorants (unidentified) | 0 | 0 | [a] | [a] | 6 | 0 | 0 | 1 | 62 | 0 | 2 | 0 | 71 |
| Spring | 0 | 0 | [a] | [a] | 2 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 10 |
| Summer | 0 | 0 | [a] | [a] | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 |
| Fall-winter | [b] | 0 | [a] | [a] | 4 | 0 | 0 | 1 | 54 | 0 | 0 | 0 | 59 |
| Bonaparte's–Sabine's gulls | 0 | 0 | 2 | 2 | 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 32 |
| Spring | 0 | 0 | 2 | 0 | 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 30 |
| Summer | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Fall-winter | [b] | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Mew Gull | 0 | 20 | 7 | 30 | 172 | 0 | 0 | 335 | 0 | 0 | 0 | 0 | 564 |
| Spring | 0 | 0 | 5 | 30 | 140 | 0 | 0 | 334 | 0 | 0 | 0 | 0 | 509 |
| Summer | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 3 |
| Fall-winter | [b] | 20 | 0 | 0 | 32 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 52 |
| Large gulls | 58 | 0 | 516 | 271 | 248 | 0 | 0 | 492 | 0 | 0 | 33 | 0 | 1618 |
| Spring | 8 | 0 | 24 | 72 | 232 | 0 | 0 | 412 | 0 | 0 | 23 | 0 | 771 |
| Summer | 50 | 0 | 35 | 196 | 5 | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 296 |
| Fall-winter | [b] | 0 | 457 | 3 | 11 | 0 | 0 | 70 | 0 | 0 | 10 | 0 | 551 |

**Table 3** (continued)

| Species or species categories (bird harvest) | North Slope | North-west Arctic | St. Lawrence–Diomede Islands | Bering Strait Mainland | Yukon–Kuskokwim Delta | Interior Alaska | Upper Copper River | Bristol Bay | Aleutian-Pribilof Islands | Kodiak Archi-pelago | Gulf of Alaska–Cook Inlet | South-east Alaska | Alaska total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Black-legged Kittiwake | 0 | 2 | 559 | 3 | 6 | 0 | 0 | 1 | 420 | 1 | 40 | 0 | 1032 |
| Spring | 0 | 2 | 35 | 3 | 6 | 0 | 0 | 1 | 158 | 0 | 40 | 0 | 245 |
| Summer | 0 | 0 | 101 | 0 | 0 | 0 | 0 | 0 | 61 | 0 | 0 | 0 | 162 |
| Fall-winter | [b] | 0 | 423 | 0 | 0 | 0 | 0 | 0 | 201 | 1 | 0 | 0 | 625 |
| Red-legged Kittiwake | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 657 | 0 | 0 | 0 | 657 |
| Spring | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 231 | 0 | 0 | 0 | 231 |
| Summer | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 91 | 0 | 0 | 0 | 91 |
| Fall-winter | [b] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 335 | 0 | 0 | 0 | 335 |
| Terns | 11 | 0 | 0 | 8 | 47 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 66 |
| Spring | 11 | 0 | 0 | 8 | 47 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 66 |
| Summer | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Fall-winter | [b] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Murres | 12 | 18 | 7014 | 360 | 57 | 0 | 0 | 210 | 467 | 0 | 0 | 0 | 8138 |
| Spring | 12 | 8 | 5686 | 360 | 9 | 0 | 0 | 210 | 446 | 0 | 0 | 0 | 6731 |
| Summer | 0 | 1 | 992 | 0 | 25 | 0 | 0 | 0 | 12 | 0 | 0 | 0 | 1030 |
| Fall-winter | [b] | 9 | 336 | 0 | 23 | 0 | 0 | 0 | 9 | 0 | 0 | 0 | 428 |
| Guillemots | 0 | 0 | 770 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 770 |
| Spring | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Summer | 0 | 0 | 240 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 240 |
| Fall-winter | [b] | 0 | 530 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 530 |
| Auklets | 0 | 0 | 6475 | 67 | 0 | 0 | 0 | 0 | 88 | 75 | 0 | 0 | 6705 |
| Spring | 0 | 0 | 4073 | 67 | 0 | 0 | 0 | 0 | 49 | 75 | 0 | 0 | 4264 |
| Summer | 0 | 0 | 2124 | 0 | 0 | 0 | 0 | 0 | 39 | 0 | 0 | 0 | 2163 |
| Fall-winter | [b] | 0 | 278 | 0 | 0 | 0 | 0 | 0 | 0 | 17 | 0 | 0 | 278 |
| Puffins | 3 | 0 | 54 | 34 | 2 | 0 | 0 | 0 | 136 | 0 | 19 | 0 | 248 |
| Spring | 0 | 0 | 5 | 34 | 2 | 0 | 0 | 0 | 79 | 0 | 9 | 0 | 129 |
| Summer | 3 | 0 | 25 | 0 | 0 | 0 | 0 | 0 | 57 | 0 | 10 | 0 | 95 |
| Fall-winter | [b] | 0 | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 24 |
| Total seabirds | 158 | 76 | 19,073 | 1204 | 716 | 27 | 0 | 1048 | 1830 | 76 | 107 | 0 | 24,315 |
| Spring | 36 | 35 | 10,209 | 602 | 570 | 16 | 0 | 963 | 971 | 75 | 73 | 0 | 13,550 |
| Summer | 122 | 3 | 4213 | 196 | 53 | 4 | 0 | 12 | 260 | 0 | 12 | 0 | 4875 |
| Fall-winter | [b] | 38 | 4651 | 406 | 93 | 7 | 0 | 73 | 599 | 1 | 22 | 0 | 5890 |

[a]Cormorants harvested in the St. Lawrence–Diomede islands and Bering Strait Mainland regions were assumed to be Pelagic Cormorant based on species distribution

[b]Alaska Migratory Bird Co-Management Council survey not conducted in North Slope in fall because birds migrate out of this region in late summer

## Discussion

### Geographic harvest patterns

Seabird harvest in Alaska (24,315 birds/year) was small compared to other harvest traditions across the Arctic, which may harvest hundreds of thousands birds/year and collectively may amount to 1,000,000 birds/year (Merkel and Barry 2008; Merkel 2010). In general, harvest represented a minor proportion of seabird numbers occurring in Alaska. For most species and categories, the annual subsistence bird harvest was less than 0.5% of the number of birds breeding in Alaska (Groves et al. 1996; Delinger 2006; U.S. Fish and Wildlife Service 2009, 2014; Renner et al. 2015; Wetlands International 2018). Harvest represented higher proportions of populations of loons (1.0%), guillemots (1.5%), Mew Gull (3.9% of coastal populations), and Pelagic Cormorant (7.8%) (Table 2). Yet, for most species, the population data refer to numbers of seabirds breeding in Alaska, excluding non-breeding immatures and adults. For species that nest in small and dispersed groups, population data represent only portions of breeding populations (Pigeon Guillemot, Mew Gull, Arctic Tern) (Delinger 2006). Also, birds breeding in other areas can be available for harvest in Alaska. For example, Yellow-billed Loons that breed in northern Canada migrate west and across the Bering Sea and the St. Lawrence–Diomede Islands and Short-tailed Shearwaters breed in the southern hemisphere and winter in the North Pacific (Gibson and Byrd 2007; U.S. Fish and Wildlife Service 2014).

Seabirds were only 7% of the total Alaska-wide subsistence bird harvest (about 370,000 birds/year, of which 54% are ducks, 33% geese, 3% swans, 2% cranes, and < 1% shorebirds) (L.C. Naves, Alaska Department of Fish and Game, Division of Subsistence unpublished data). Regionally, the importance of seabirds as subsistence resources was highest in the St. Lawrence–Diomede (81% of total bird harvest) and Aleutian-Pribilof (15% of total bird harvest) islands (Naves 2018). Reasons for why the St. Lawrence–Diomede Islands, and to a lesser extent the Aleutian-Pribilof Islands, dominate the Alaska seabird harvest, despite their small human population (Table 1), are likely related to ecological and cultural factors. The islands' geographic position is extremely pelagic and high productivity in adjacent waters relates to high numbers of seabirds breeding, migrating, and over-wintering including some of the largest seabird colonies in the world and nine of the 12 largest colonies in Alaska (Stephensen and Irons 2003; Gibson and Byrd 2007). Habitat favorable to waterfowl is limited in these marine environments and islands. Thus, ducks and geese occur in lower abundance than in other Alaska regions, where they rank first and second in number of birds harvested (Wolfe et al. 1990; Stehn et al. 2013; Platte and Stehn 2015). The islands' geographic and ecological setting has favored the evolution of hunter–gatherer cultures based almost entirely on marine resources (Hughes 1984; Corbett 2016). The St. Lawrence–Diomede Islands seabird harvest tradition is shared with cultural groups in the Russian Far East (Gavrilo 2008).

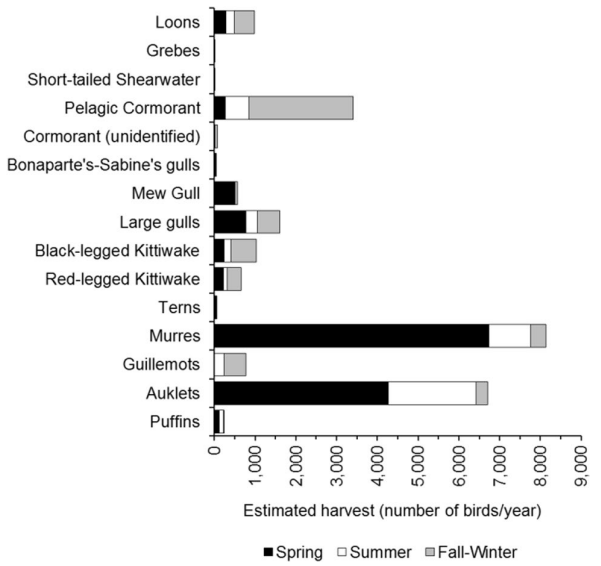


**Fig. 3** Seasonal distribution of the subsistence harvest of seabirds in Alaska

Available data are insufficient for an overview of subsistence egg harvest in Alaska, but seabirds still represent the majority of egg harvest. In 1995, seabird eggs represented 80% of all egg harvest (Paige and Wolfe 1997). Geese egg harvest in the Yukon–Kuskokwim Delta (about 18,000 eggs/year) is another main component of all egg harvest (Naves 2018). It is difficult to assess the impact of egg harvest on bird productivity because harvest may refer to incomplete clutches, birds may lay replacement clutches, and harvest affects other causes of egg and chick loss (see below discussion of terns' egg harvest).

### Seasonal harvest patterns

The subsistence harvest of birds including seabirds in Alaska has significant spring and fall components. In spring, migratory birds arriving in northern latitudes are the first subsistence resources available. Spring bird hunting often alleviated hunger and starvation when food stored in the previous summer-fall had been depleted. Spring birds were also the first fresh food after a winter diet based on preserved foods (Wolfe et al. 1990). Currently, although modern socio-economic conditions in remote Alaska communities

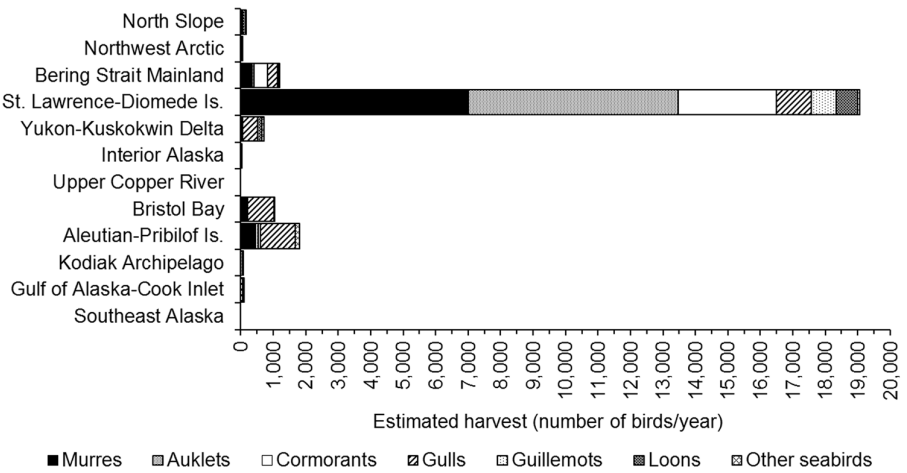


**Fig. 4** Distribution of the subsistence seabird harvest by regions in Alaska

**Table 4** Alaska-wide estimated subsistence harvest of seabird eggs (number of eggs/year)

| Species or species categories | 1985[a] | 1980s–1990 s[b] | 1995[c] | 1995–2000[b] | 2001–2005[b] | 2002–2015 |
|---|---|---|---|---|---|---|
| Loons | – | [b] | [c] | 478 | 655 | 441 |
| Grebes | – | [b] | – | 0 | 0 | 2 |
| Pelagic Cormorant | – | 0 | – | 0 | 27 | 15 |
| Cormorants (unidentified) | – | 0 | – | 22 | 4 | 11 |
| Parasitic Jaeger | – | 0 | – | 0 | 0 | 1 |
| Bonaparte's–Sabine's gulls | – | 262 | – | 3306 | 703 | 365 |
| Mew Gull | – | 2813 | – | 6689 | 13,801 | 19,542 |
| Large gulls | – | 1416 | – | 27,353 | 38,128 | 25,830 |
| Gulls (unidentified) | 33,184 | 22,415 | – | 17,325 | 0 | 18,724 |
| Black-legged Kittiwake | – | 178 | – | 39 | 1215 | 2753 |
| Red-legged Kittiwake | – | 0 | – | 0 | 0 | 0 |
| Terns | – | 3008 | – | 2577 | 2408 | 4862 |
| Murres | – | 13,902 | – | 37,771 | 87,109 | 77,401 |
| Guillemots | – | 0 | – | 118 | 11 | 44 |
| Murrelets | – | 0 | – | 84 | 0 | 0 |
| Auklets | – | 15 | – | 189 | 922 | 338 |
| Puffins | – | 63 | – | 148 | 431 | 452 |
| Seabirds (unidentified) | 7670 | 3530 | 115,344 | 2213 | 0 | 0 |
| Total seabird eggs | 40,854 | 45,071 | 115,344 | 98,312 | 145,414 | 150,781 |
| Total eggs | 83,603 | – | 145,054 | – | – | – |

Sources of harvest data: 1985 (Wolfe et al. 1990), 1980s–1990s (Wohl et al. 1995), 1995 (Paige and Wolfe 1997), 1995–2000 and 2001–2005 (Wohl et al. 2008), 2002–2015 (this study)

1996 Egg harvest estimates were not provided in Paige and Wolfe (1998)

[a]Estimates depicted minimum harvest because data were unavailable for the St. Lawrence–Diomede and Aleutian-Pribilof islands, which represent most seabird harvest in Alaska. The category "other birds" included seabirds, loons, and shorebirds

[b]Estimates depicted minimum harvest because data were not extrapolated to account for non-surveyed communities. Also, loons and grebes were not included

[c]The large category "seabirds" included loons

prevent famines, the spring bird harvest retains cultural and nutritional values. Egg harvesting occurs in spring, but it may be delayed in the northernmost regions of Alaska with longer winters.

Murres and auklets are the most abundant birds breeding on St. Lawrence–Diomede Islands, and are found in dense colonies in spring and summer (Stephensen et al. 1998). High harvest of murres and auklets in spring is likely related

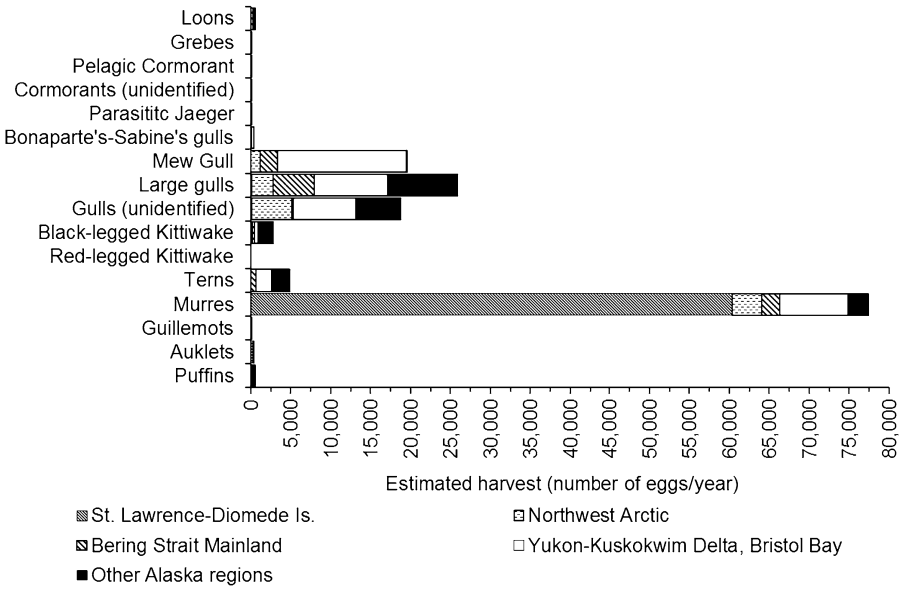


**Fig. 5** Species (or species category) composition of the subsistence seabird egg harvest in Alaska

to the spatial concentration of these birds in colonies at this time of the year. Bird harvesting in general stops or is much reduced in summer when subsistence users focus on fishing and other harvest pursuits, which can yield higher harvest productivity. Also, after egg incubation starts, indigenous subsistence users to some extent curtail bird harvesting to allow birds to nest and raise young (Little and Robbins 1984; Wolfe et al. 1990). Summer bird harvest, defined in this study as July–August, may sometimes refer to late spring or early fall depending on latitude and annual climate variation. In northern Alaska, especially the North Slope region, the breeding season is compressed in time and birds outmigrate in late summer. Late fall and winter bird harvest occurs in southern regions, which are wintering grounds for seabirds and waterfowl (Aleutian-Pribilof Islands, Kodiak Archipelago, and Gulf of Alaska–Cook Inlet) (Wolfe et al. 1990). The high diversity of seabird species in fall harvest at these regions and also St. Lawrence–Diomede Islands likely reflects the diversity of marine birds that migrate past or visit the area that time of year, when many bird colonies disperse (Suryan et al. 2015).

Harvest seasonality has implications for harvest sustainability. Spring bird harvest largely affects adult breeding birds, which have lower natural mortality and higher reproductive value for populations than immature birds (Martin 1995; Lyver et al. 2015). Spring harvest may also negatively affect breeding productivity because of hunting-related disturbance and by delaying or preventing breeding if repairing is costly to widowed birds (Juillet et al. 2012). In Alaska, seabird categories harvested mostly in spring were murres, auklets, and gulls and categories harvested mostly in fall-winter were cormorants, guillemots, and loons. Some summer and fall harvest may be chicks harvested just before they leave the nest, especially for cliff-nesting species, but the harvest of nestlings has not been quantified (Little and Robbins 1984). In the St. Lawrence Island communities, current harvest of nestlings is reduced and fall seabird harvest happens by boat in conjunction with seal hunting. Local hunters explained that they prefer to harvest cormorants, kittiwakes, large gulls, guillemots, and loons in fall-winter because young birds are tender and fatter than adults (Naves and Zeller 2017). Hatch-year birds likely compose a significant proportion of fall-winter and possibly summer harvest, what likely lessens harvest effects on bird populations.

## Long-term harvest trends

Marked changes in Alaska's hunter–gatherer cultures happened after contact with western cultures in the last 200 years and affected harvest patterns, including a reduced use of seabirds. Current seabird harvest occurs from land and by boat together with subsistence fishing and marine mammal hunting and maybe also with commercial fishing. Although modern boating equipment can facilitate access to pelagic resources, archeological and ethnographic information support higher harvest of pelagic seabirds such as albatrosses, shearwaters, fulmars, murrelets, and storm petrels in the past (Causey et al. 2005; Moss 2007; Casperson 2012; Corbett 2016). Until the early 1900s, a strong seabird harvest tradition existed on Nunivak Island (Yukon–Kuskokwim Delta region), where large numbers of birds and eggs were taken for materials, food, and trade (Pratt 1990). Nowadays, the Yukon–Kuskokwim Delta has low harvest of seabirds

**Table 5** Estimated subsistence harvest of seabird eggs in Alaska (number of eggs/year) by region, 2002–2015

| Species or es categories (egg harvest) | North Slope | Northwest Arctic | St. Lawrence–Diomede Islands | Bering Strait Mainland | Yukon–Kuskokwim Delta | Interior Alaska | Upper Copper River | Bristol Bay | Aleutian-Pribilof Islands | Kodiak Archipelago | Gulf of Alaska–Cook Inlet | Southeast Alaska | Alaska total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Loons | 18 | 12 | 27 | 274 | 89 | 0 | 0 | 21 | 0 | 0 | 0 | 0 | 441 |
| Grebes | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Pelagic Cormorant | [a] | [a] | 4 | 11 | [a] | [a] | [a] | [a] | [a] | [a] | [a] | [a] | 15 |
| Cormorants (unidentified) | 0 | 2 | [a] | [a] | 3 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 11 |
| Parasitic Jaeger | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Bonaparte's–Sabine's gulls | 0 | 42 | 0 | 7 | 171 | 0 | 0 | 145 | 0 | 0 | 0 | 0 | 365 |
| Mew Gull | 0 | 1123 | 40 | 2169 | 2338 | 37 | 0 | 13,831 | 0 | 4 | 0 | 0 | 19,542 |
| Large gulls | 68 | 2704 | 93 | 5123 | 2372 | 16 | 0 | 6868 | 1132 | 3177 | 749 | 3528 | 25,830 |
| Gulls (unidentified) | 132 | 5061 | 104 | 135 | 1087 | 8 | 0 | 6736 | 2191 | 620 | 660 | 1990 | 18,724 |
| Black-legged Kittiwake | 0 | 35 | 134 | 282 | 283 | 0 | 0 | 195 | 0 | 1809 | 15 | 0 | 2753 |
| Terns | 70 | 21 | 0 | 565 | 1069 | 3 | 0 | 980 | 38 | 359 | 1062 | 695 | 4862 |
| Murres | 1803 | 3718 | 60,362 | 2266 | 3107 | 0 | 0 | 5379 | 717 | 0 | 42 | 7 | 77,401 |
| Guillemots | 0 | 41 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 44 |
| Auklets | 0 | 19 | 277 | 0 | 0 | 0 | 0 | 0 | 42 | 0 | 0 | 0 | 338 |
| Puffins | 0 | 173 | 191 | 70 | 0 | 0 | 0 | 0 | 0 | 0 | 18 | 0 | 452 |
| Total seabird eggs | 2091 | 12,951 | 61,232 | 10,903 | 10,524 | 64 | 0 | 34,161 | 4120 | 5969 | 2546 | 6220 | 150,781 |

[a]Cormorants harvested in the St. Lawrence–Diomede islands and Bering Strait Mainland regions were assumed to be Pelagic Cormorant based on species distribution

and their eggs (this study). Also, human populations are much reduced at several islands where seabirds were important subsistence resources (e.g., Little Diomede and King Island in the Bering Sea; Attu, Kiska, and Nikolski in the Aleutian Islands; Belkofski in the lower Alaska Peninsula; and Kiniklik in Prince William Sound) (Laughlin 1980).

Data are limited to assess long-term trends in Alaska seabird harvest in the last decades (Tables 2, 4). The 1985 harvest estimates (Wolfe et al. 1990) used extrapolation to represent non-surveyed communities, but these numbers underestimated harvest because data were unavailable for the St. Lawrence–Diomede and Aleutian-Pribilof islands, which account for most seabird harvest. The 1980s–1990s, 1995–2000, and 2001–2005 estimates (Wohl et al. 1995, 2008) did not use extrapolation to represent non-surveyed communities and thus are an incomplete representation of the total harvest. These later estimates cannot support temporal comparison of harvest amounts, although they have been used for this purpose (Petersen et al. 2015). The 1995 (Paige and Wolfe 1997) and 1996 (Paige and Wolfe 1998) estimates used extrapolation to represent non-surveyed communities. The 1995 estimates represented all seabird species together. The 1996 estimates defined seabird categories and species and did not include egg harvest estimates.

Thus, the 1996 and 2002–2015 (this study) estimates are the most compatible ones to assess seabird harvest patterns in the last decades. It is unclear whether some differences between these estimates were due to changes in harvest or to a larger 2002–2015 dataset, which represented local harvest patterns related to seabird coloniality. However, the 2002–2015 estimates provided indicators of a continued reduction in the amount and diversity of seabird harvest. First, the substantially smaller 2002–2015 harvest estimate for auklets, a category taken in relatively large numbers, suggests an overall reduction of seabird harvest in the St. Lawrence–Diomede Islands and Bering Strait Mainland. Second, there was no documentation in the last two decades of harvest of Northern Fulmar and murrelets (birds or eggs). Also, other ethnographic studies have documented that subsistence users perceive a reduction in the use of seabirds and other birds in Alaska in recent decades (Fay and Cade 1959; Young et al. 2014).

Across the Arctic, current seabird harvest appears lower than historic levels because of harvest regulations, decreased seabird abundance, and socio-economic and cultural changes such as increased availability of industrialized foods, shifts in food preference, high cost of fuel and harvest gear, and time constraints related to employment and formal education (Nelson et al. 2005; Merkel 2010; Natcher et al. 2012; Fall et al. 2013). Nonetheless, harvesting of seabirds and their eggs remains culturally important and is one component of complex food security systems in remote communities.

## Harvest of species of conservation concern

Red-faced and Pelagic cormorants' numbers have declined in some colonies in Alaska (Byrd and Williams 2004; Dragoo et al. 2015). Cormorants' harvest was small at the Aleutian-Pribilof Islands, Kodiak Archipelago, and Gulf of Alaska–Cook Inlet, where Red-faced Cormorants occur. Most harvest occurred in fall-winter and likely included a large proportion of hatch-year birds, what lessens effects of harvest on populations. In western Aleutian Islands, the largest Red-faced Cormorant colonies in decline are not subject to harvest because there are no nearby communities and these birds are not harvested elsewhere because they are largely resident (Causey 2002).

Yellow-billed Loons are a conservation priority because populations are naturally small and sensitive to changes in habitat and adult mortality (U.S. Fish and Wildlife Service 2014). Pacific Loons represent a large proportion of all loons harvested and few Yellow-billed Loons are harvested annually in Alaska (Naves and Zeller 2017). Bycatch in gillnet fisheries represented a large proportion of loons harvested in the North Slope, where loons are not usually hunted. In contrast, bycatch represented a small proportion of loons harvested in the St. Lawrence Island, where loons are hunted for food (U.S. Fish and Wildlife Service 2014). In this region, most loons are harvested in fall, likely including a high proportion of hatch-year birds.

Cassin's and Whiskered auklets are of conservation concern because they have small populations (Table 2). Declines and extirpations of auklet colonies in Alaska were caused by introduced foxes and rats (Bailey 1993). Most harvest of auklets occurred at the St. Lawrence–Diomede Islands. Based on the regional species composition, this harvest is largely composed of Crested and Least auklets, although Parakeet Auklets are also harvested (Little and Robbins 1984; Stephensen et al. 1998; Community Subsistence Information System 2018). The harvest of auklets was low at the Aleutian-Pribilof Islands region where Cassin's and Whiskered auklets occur, what also suggested low harvest-related disturbance.

The largest Red-legged Kittiwake colonies on the Pribilof Islands decreased by 50% in the 1970s–1990s and since then population numbers have stabilized (Byrd et al. 1997; Dragoo et al. 2015). Harvest preference for Red-legged Kittiwake by local subsistence communities has raised interest to evaluate harvest effects on the population (Veltre and Veltre 1981; Young et al. 2014). Based on the limited data available, the annual harvest was 0.31% of Red-legged Kittiwake Alaska breeding population (Mishler et al. 1996a, b; U.S. Fish and Wildlife Service 2009) (Table 2). Considering reduced subsistence activities by the local communities, it is unlikely that harvest of

Red-legged Kittiwake and their eggs increased in recent decades (Fall et al. 2013; Young et al. 2014). Collaboration with the local communities is needed to clarify current harvest amount and the importance of this species as food and cultural resource (e.g., Seabird Youth Network 2018).

Numbers of Arctic and Aleutian terns decreased by 90% in some Alaska colonies (Renner et al. 2015). Reduced numbers of piscivorous birds such as terns in the North Pacific coincided with an oceanographic regime shift in 1976–1977 and changes in the abundance of forage fish (Agler et al. 1999). The harvest of terns was small, but their egg harvest was widespread and may be substantial in relation to egg productivity in coastal colonies. Previous studies have documented widespread subsistence harvest of eggs of terns in Alaska, Greenland, and Canada. Egg harvest contributes to colony destabilization and increased predation and nest abandonment (Hatch 2002). Combining local and traditional knowledge of subsistence users related to terns together with western biological research has great potential to help fulfill information gaps across Alaska, develop collaboration among stakeholders, and devise conservation measures that recognize subsistence uses (Blanchard 1994).

## Recommendations

Ongoing environmental changes in the Arctic including reduced sea ice have affected marine ecosystems and have brought increased shipping traffic and development projects (Grebmeier 2012; Moerlein and Carothers 2012; Huntington et al. 2015). Continuing warming of the Bering and adjacent seas is expected to affect seabird populations potentially reducing their availability as subsistence resources as well as their harvest sustainability (Renner et al. 2016). This study highlighted the importance of seabird harvest at the St. Lawrence–Diomede Islands and of seabird eggs as subsistence resources in coastal Alaska. This study also provided an analytical approach integrating diverse data sources to estimate harvest at large geographic scales. Continued harvest monitoring is needed to assess the resilience of marine resources and human communities to ongoing ecological and socio-economic changes in the Arctic. Harvest data that are reliable and easily accessible to all stakeholders are also a key element to enable advancements in seabird conservation and protection of subsistence uses.

A large dataset is needed to characterize seabird subsistence harvest over large geographic areas, such as Alaska. First, harvest composition and amount show large annual variation related to socio-economic and ecological factors (Wolfe et al. 1990; Fall et al. 2013). Several years of data are needed to depict the range of annual harvest and to detect temporal trends. Second, because seabirds are colonial, harvest patterns may differ at small geographic scales depending on communities' access to seabirds (Natcher et al. 2012). Third, in surveys designed to document diverse subsistence resources, harvest estimates for resources taken infrequently or in relatively small numbers such as seabirds are less accurate than estimates for commonly taken resources (Copp and Roy 1986; George et al. 2015). For rarely taken resources, a large dataset helps to detect and smooth irregularities in harvest numbers, although wide confidence intervals around harvest estimates are still expected. Awareness of these data requirements and limitations can lead to harvest estimates that are comparable across time and geographic locations.

Species identification issues are inherent to bird harvest surveys as well as to seabird population monitoring (Carney 1992; Wilhelm et al. 2008; Dragoo et al. 2015). Harvest surveys often refer to multi-species categories and species identification in studies that named individual species is sometimes unreliable (e.g., Red-faced Cormorant in Mishler et al. 1996a, b). Multi-species categories in indigenous ethnotaxonomies seem to be prevalent and suggest that subsistence users often do not identify individual seabird species (Hunn and Thornton 2010; Naves and Zeller 2017). Providing species-specific harvest estimates for most seabirds is nearly impossible without a species identification system based on biological sampling, such as bird parts or tissue provided by hunters. Nevertheless, a better understanding of local seabird ethnotaxonomies is needed to refine harvest monitoring, especially when dealing with species of conservation concern.

Further efforts are needed to engage subsistence users in seabird research and conservation as partners to collect biological and harvest data and contribute local and traditional knowledge (Blanchard 1994; Moller et al. 2009). This engagement can support traditional connections to seabirds as food and cultural resources and a lifestyle that favors the well-being of the subsistence communities. There is great potential in conservation efforts to reduce disturbance and inefficiencies in subsistence seabird harvest and bycatch in fishing gear. Non-wasteful harvest is a core principle in indigenous cultures and subsistence users may find common goals in such efforts.

**Acknowledgements** I thank the thousands of individuals that provided household harvest information and I hope this study will be useful for their communities. David Otis, Jiaqi Huang, and David Koster helped to devise methods to calculate confidence intervals for harvest estimates. I also thank Kathy Kuletz, David Irons, Jim Fall, and anonymous reviewers for suggesting improvements to manuscript drafts.

**Funding** This study was funded by the U.S. Fish and Wildlife Service (cooperative agreement F12AC00653) and Alaska Department of Fish and Game Division of Wildlife Conservation (RSA-1155353). The findings and conclusions in this study are those of the author and do not necessarily represent the views of the U.S. Fish and Wildlife Service.

## Compliance with Ethical standards

**Conflict of interest** The author declares that she has no conflict of interest.

**Ethical approval** This study re-analyzed and summarized the data from harvest surveys previously published. The original harvest surveys followed ethical principles for social science research (Arctic Research Consortium of the U.S. 1999) comparable to those of the 1964 Helsinki declaration and its later amendments. Community consent to conduct harvest surveys was formalized as tribal council resolutions.

**Informed consent** Informed consent was also obtained from all individual participants of harvest surveys. In this study, re-analyzing and summarizing previously available data did not require further consent.

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**Geographic and Seasonal Patterns of Seabird Subsistence Harvest in Alaska**

Polar Biology

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**Electronic Supplementary Material 1** Formulas used to calculate estimated harvest and confidence interval.

Community estimated harvest, Alaska Migratory Bird Co-Management Council data

(Equation 1) $$\hat{Y}_i = \sum_{i=1}^{i}\left[\sum_{k=1}^{i}\frac{M_{ijk}}{m_{ijk}}\left(\sum_{j=1}^{k} y_{ijk}\right)\right]$$

Region estimated harvest

(Equation 2) $$\hat{Y}_{reg} = \frac{N}{n}\sum^{n}\hat{Y}_i$$

Community variance, Alaska Migratory Bird Co-Management Council data

(Equation 3.a) $$s_i^2 = \sum_{k=1}^{i}\left[\frac{1}{m_{ijk}-1}\sum_{j=1}^{k}\left(y_{ijk}-\bar{y}_{ijk}\right)^2\right]$$

(Equation 3.b) $$\bar{y}_{ijk} = \frac{\sum_{j=1}^{k} y_{ijk}}{m_{ijk}}$$

Community variance, other data sources

(Equation 3.c) $$s_i^2 = \left[\left(\frac{CI_{PUBi}\times\hat{Y}_i}{t_{\alpha/2}}\right)\times\left(\frac{\sqrt{m_{ij}}}{M_{ij}\times\sqrt{1-\frac{1}{M_{ij}}}}\right)\right]^2$$

Region variance

(Equation 4.a) $$v(\hat{Y}_{reg}) = \frac{N^2(1-f_1)}{n}s_u^2 + \frac{N}{n}\sum_{i=1}^{n}\frac{M_i^2(1-f_2)s_i^2}{m_i}$$

(Equation 4.b) $$s_u^2 = \frac{1}{n-1}\sum^{n}\left(\hat{Y}_i - \hat{\bar{Y}}_{reg}\right)^2$$

(Equation 4.c) $$\hat{\bar{Y}}_{reg} = \frac{\sum_{i=1}^{n}\hat{Y}_i}{n}$$

Confidence interval at region and Alaska-wide levels

(Equation 5.a) $$CI(\hat{Y}) = 2\times CV$$

(Equation 5.b) $$CV(\hat{Y}) = \frac{\sqrt{v(\hat{Y})}}{\hat{Y}}$$

$i$ = communities (primary sampling units)

$j$ = households (secondary sampling units)

$k$ = harvest level strata (Alaska Migratory Bird Co-Management Council data)

$reg$ = region

$AK$ = Alaska-wide

$\hat{Y}$ = estimated harvest

$y$ = harvest reported by individual households

$\hat{\bar{Y}}_{reg}$ = average community harvest in a region

$\bar{y}_{ijk}$ = mean household harvest in community $i$ and harvest level strata $k$

$m$ = sampled households

$M$ = total households

$n$ = sampled communities in region

$N$ = total communities in region

$v(\hat{Y})$ = variance of harvest estimate

$t_{1/\alpha}$ = Student's $t$ distribution value with tail area probability α

$f_1$ = sampling fraction in regions ($n/N$)

$f_2$ = sampling fraction in communities ($m_i/M_i$)

$s_i^2$ = variance among households in a community

$s_u^2$ = variance among communities in a region

$CI_{PUBi}$ = confidence interval published for community estimated harvest (data sources other than Alaska Migratory Bird Co-Management Council)

$CI(\hat{Y})$ = confidence interval as a percentage of the harvest estimate

$CV(\hat{Y})$ = coefficient of variation

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**Electronic Supplementary Material 2** Confidence intervals for estimated subsistence harvest of seabirds in Alaska (as percentage of the estimate) by region and season, 2002–2015.

| Species or species categories (Bird harvest) | North Slope | Northwest Arctic | St. Lawrence-Diomede Islands | Bering Strait Mainland | Kuskokwim Delta | Interior Alaska Upper Copper River | | Bristol Bay | Aleutian-Pribilof Islands | Kodiak Archipelago | Gulf of Alaska-Cook Inlet | Southeast Alaska | Alaska total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Loons | 0.47 | 0.74 | 0.53 | 0.37 | 0.16 | 0.55 | – | 0.51 | – | – | 2.35 | – | 0.36 |
| Spring | 0.58 | 0.83 | 0.73 | 0.37 | 0.17 | 0.56 | – | 0.49 | – | – | 2.10 | – | 0.31 |
| Summer | 0.48 | 1.91 | 0.52 | – | 0.35 | 0.63 | – | 1.01 | – | – | – | – | 0.32 |
| Fall-winter | [b] | 1.15 | 0.62 | – | 0.31 | 0.56 | – | 0.83 | – | – | 2.41 | – | 0.56 |
| Grebes | – | – | | – | 3.39 | 2.85 | – | – | – | – | – | – | 2.43 |
| Spring | – | – | | – | 4.20 | 2.85 | – | – | – | – | – | – | 3.32 |
| Summer | – | – | – | – | 0.68 | – | – | – | – | – | – | – | 0.68 |
| Fall-winter | [b] | – | | – | 0.68 | – | – | – | – | – | – | – | 0.69 |
| Short-tailed Shearwater | – | – | 1.03 | – | – | – | – | – | – | – | – | – | 1.03 |
| Spring | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Summer | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Fall-winter | [b] | – | 1.06 | – | – | – | – | – | – | – | – | – | 1.06 |
| Pelagic Cormorant | [a] | [a] | 0.62 | 0.59 | [a] | [a] | [a] | [a] | [a] | [a] | [a] | [a] | 0.55 |
| Spring | [a] | [a] | 0.50 | 1.78 | [a] | [a] | [a] | [a] | [a] | [a] | [a] | [a] | 0.49 |
| Summer | [a] | [a] | 0.82 | – | [a] | [a] | [a] | [a] | [a] | [a] | [a] | [a] | 0.82 |
| Fall-winter | [b] | | 0.60 | 0.59 | [a] | [a] | [a] | [a] | [a] | [a] | [a] | [a] | 0.52 |
| Cormorants (unidentified) | – | – | [a] | [a] | 0.36 | – | – | 0.74 | 0.65 | – | 0.93 | – | 0.57 |
| Spring | – | – | [a] | [a] | 0.79 | – | – | – | 1.11 | – | – | – | 0.91 |
| Summer | – | – | [a] | [a] | – | – | – | – | – | – | 0.93 | – | 0.93 |
| Fall-winter | [b] | – | [a] | [a] | 0.41 | – | – | 0.76 | 0.73 | – | – | – | 0.67 |
| Bonaparte's-Sabine's gulls | – | – | 1.37 | 1.93 | 0.61 | – | – | – | – | – | – | – | 0.55 |
| Spring | – | – | 1.37 | – | 0.62 | – | – | – | – | – | – | – | 0.58 |
| Summer | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Fall-winter | [b] | – | – | 1.93 | – | – | – | – | – | – | – | – | 1.93 |
| Mew Gull | – | 2.67 | 0.86 | 1.57 | 0.46 | – | – | 0.61 | – | – | – | – | 0.41 |
| Spring | – | – | 1.23 | 1.57 | 0.37 | – | – | 0.62 | – | – | – | – | 0.43 |
| Summer | – | – | 1.15 | – | – | – | – | 1.05 | – | – | – | – | 0.79 |
| Fall-winter | [b] | 2.67 | – | – | 1.89 | – | – | – | – | – | – | – | 1.55 |
| Large gulls | 0.70 | – | 0.51 | 0.83 | 0.25 | – | – | 0.64 | – | – | 0.88 | – | 0.29 |

| Species or species categories (Bird harvest) | North Slope | Northwest Arctic | St. Lawrence-Diomede Islands | Bering Strait Mainland | Kuskokwim Delta | Interior Alaska Upper Copper River | | Bristol Bay | Aleutian-Pribilof Islands | Kodiak Archipelago | Gulf of Alaska-Cook Inlet | Southeast Alaska | Alaska total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Spring | 0.77 | – | 0.60 | 0.59 | 0.28 | – | – | 0.77 | – | – | 0.95 | – | 0.42 |
| Summer | 0.71 | – | 0.68 | 1.13 | 0.51 | – | – | 0.77 | – | – | – | – | 0.76 |
| Fall-winter | [b] | – | 0.51 | 0.79 | 0.32 | – | – | 0.78 | – | – | 1.42 | – | 0.44 |
| Black-legged Kittiwake | – | 0.64 | 0.87 | 2.05 | 0.49 | – | – | 1.01 | 0.63 | 1.30 | 0.93 | – | 0.59 |
| Spring | – | 0.64 | 0.87 | 2.05 | 0.49 | – | – | 1.01 | 0.73 | – | 0.93 | – | 0.51 |
| Summer | – | – | 1.02 | – | – | – | – | – | 1.40 | – | – | – | 0.83 |
| Fall-winter | [b] | – | 0.99 | – | – | – | – | – | 0.77 | 1.30 | – | – | 0.72 |
| Red-legged Kittiwake | – | – | – | – | – | – | – | – | 0.56 | – | – | – | 0.58 |
| Spring | – | – | – | – | – | – | – | – | 0.56 | – | – | – | 0.56 |
| Summer | – | – | – | – | – | – | – | – | 1.04 | – | – | – | 1.04 |
| Fall-winter | [b] | – | – | – | – | – | – | – | 0.85 | – | – | – | 0.85 |
| Terns | 4.32 | – | – | 0.97 | 0.40 | – | – | – | – | – | – | – | 0.80 |
| Spring | 5.17 | – | – | 0.97 | 0.40 | – | – | – | – | – | – | – | 0.94 |
| Summer | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Fall-winter | [b] | – | – | – | – | – | – | – | – | – | – | – | – |
| Murres | 0.75 | 1.00 | 0.52 | 0.58 | 0.39 | – | – | 1.42 | 0.61 | – | – | – | 0.45 |
| Spring | 0.76 | 1.06 | 0.56 | 0.58 | 0.33 | – | – | 1.44 | 0.62 | – | – | – | 0.48 |
| Summer | – | 1.11 | 0.88 | – | 0.77 | – | – | – | 0.60 | – | – | – | 0.85 |
| Fall-winter | [b] | 1.29 | 0.57 | – | 0.37 | – | – | – | 1.33 | – | – | – | 0.51 |
| Guillemots | – | – | 0.87 | – | – | – | – | – | – | – | – | – | 0.87 |
| Spring | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Summer | – | – | 0.99 | – | – | – | – | – | – | – | – | – | 0.99 |
| Fall-winter | [b] | – | 0.82 | – | – | – | – | – | – | – | – | – | 0.82 |
| Auklets | – | – | 0.39 | 0.54 | – | – | – | – | 0.91 | 1.27 | – | – | 0.38 |
| Spring | – | – | 0.50 | 0.54 | – | – | – | – | 1.08 | 1.27 | – | – | 0.48 |
| Summer | – | – | 0.52 | – | – | – | – | – | 1.23 | – | – | – | 0.51 |
| Fall-winter | [b] | – | 0.61 | – | – | – | – | – | – | | – | – | 0.61 |
| Puffins | 0.70 | – | 1.17 | 0.54 | 0.84 | – | – | – | 0.66 | – | 1.24 | – | 0.43 |
| Spring | – | – | 1.17 | 0.54 | 0.84 | – | – | – | 0.76 | – | 1.53 | – | 0.50 |
| Summer | 0.70 | – | 1.27 | – | – | – | – | – | 0.71 | – | 1.10 | – | 0.56 |
| Fall-winter | [b] | – | 0.97 | – | – | – | – | – | – | – | – | – | 0.97 |
| Total seabirds | 0.53 | 0.63 | 0.45 | 0.45 | 0.17 | 0.54 | 0.17 | 0.67 | 0.47 | 1.26 | 0.65 | – | 0.30 |
| Spring | 1.64 | 0.63 | 0.45 | 0.45 | 0.18 | 0.56 | 0.18 | 0.74 | 0.44 | 1.27 | 0.65 | – | 0.34 |
| Summer | 0.52 | 1.54 | 0.24 | 1.13 | 0.39 | 0.63 | 0.39 | 0.70 | 0.59 | – | 0.91 | – | 0.21 |
| Fall-winter | [b] | 1.47 | 0.57 | 0.59 | 0.67 | 0.56 | 0.67 | 0.74 | 0.67 | 1.30 | 1.46 | – | 0.46 |

[a] Cormorants harvested in the St. Lawrence-Diomede islands and Bering Strait Mainland regions were assumed to be Pelagic Cormorant based on species distribution.

[b] Alaska Migratory Bird Co-Management Council survey not conducted in North Slope in fall because birds migrate out of this region in late summer.

–: Estimated harvest = 0.

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**Electronic Supplementary Material** 3 Confidence intervals for estimated subsistence harvest of seabird eggs in Alaska (as percentage of the estimate) by region and season, 2002–2015.

| Species or species categories (Egg harvest) | North Slope | Northwest Arctic | St. Lawrence-Diomede Islands | Bering Strait Mainland | Yukon-Kuskokwim Delta | Interior Alaska Upper Copper River | Bristol Bay | Aleutian-Pribilof Islands | Kodiak Archipelago | Gulf of Alaska-Cook Inlet | Southeast Alaska | Alaska total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Loons | 1.03 | 1.40 | 1.28 | 0.34 | 0.22 | – | 1.13 | – | – | – | – | 0.24 |
| Grebes | – | – | – | – | 0.44 | – | – | – | – | – | – | 0.44 |
| Pelagic Cormorant | [a] | [a] | 2.04 | 2.01 | [a] | [a] | [a] | [a] | [a] | [a] | [a] | 1.56 |
| Cormorants (unidentified) | – | 2.67 | [a] | [a] | 0.75 | – | 0.89 | – | – | – | – | 0.70 |
| Parasitic Jaeger | – | – | – | – | 0.54 | – | – | – | – | – | – | 0.54 |
| Bonaparte's-Sabine's gulls | – | 1.40 | – | 1.93 | 0.32 | – | 1.23 | – | – | – | – | 0.54 |
| Mew Gull | – | 0.62 | 0.83 | 0.21 | 0.17 | 0.80 | 0.40 | – | 1.30 | – | – | 0.29 |
| Large gulls | 0.65 | 0.47 | 0.72 | 0.22 | 0.11 | 0.78 | 0.21 | 0.42 | 1.06 | 0.52 | 1.23 | 0.23 |
| Gulls (unidentified) | 0.84 | 0.52 | 1.63 | 1.02 | 1.79 | 2.03 | 0.30 | 0.44 | 0.89 | 0.98 | 0.77 | 0.23 |
| Black-legged Kittiwake | – | 0.42 | 1.07 | 0.37 | 0.27 | – | 0.44 | – | 1.36 | 1.36 | – | 0.89 |
| Terns | 0.74 | 0.69 | – | 0.28 | 0.46 | 1.02 | 0.29 | 1.06 | 1.70 | 2.29 | 1.03 | 0.55 |
| Murres | 0.58 | 0.43 | 0.69 | 0.53 | 0.28 | – | 0.62 | 0.77 | – | 1.20 | 1.91 | 0.54 |

| Species or species categories (Egg harvest) | North Slope | Northwest Arctic | St. Lawrence-Diomede Islands | Bering Strait Mainland | Yukon-Kuskokwim Delta | Interior Alaska | Upper Copper River | Bristol Bay | Aleutian-Pribilof Islands | Kodiak Archipelago | Gulf of Alaska-Cook Inlet | Southeast Alaska | Alaska total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Guillemots | – | 2.67 | – | 1.37 | 0.76 | – | – | – | – | – | – | – | 2.51 |
| Auklets | – | 1.78 | 0.78 | – | – | – | – | – | 0.83 | – | – | – | 0.65 |
| Puffins | – | 0.66 | 1.29 | 0.74 | – | – | – | – | – | | 1.24 | – | 0.61 |
| Total seabird eggs | 0.49 | 0.33 | 0.68 | 0.21 | 0.22 | 0.59 | – | 0.24 | 0.27 | 0.96 | 1.02 | 0.76 | 0.29 |

[a] Cormorants harvested in the St. Lawrence-Diomede islands and Bering Strait Mainland regions were assumed to be Pelagic Cormorant based on species distribution.

–: Estimated harvest = 0.

**Geographic and Seasonal Patterns of Seabird Subsistence Harvest in Alaska**

Polar Biology

Liliana C. Naves

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**Electronic Supplementary Material 4** Reported harvest of seabirds by regions in Alaska (non-extrapolated number of birds/year), 2002–2015.

| Species or species categories (Bird harvest) | North Slope | Northwest Arctic | St. Lawrence-Diomede Islands | Bering Strait Mainland | Yukon-Kuskokwim Delta | Interior Alaska | Upper Copper River | Bristol Bay | Aleutian-Pribilof Islands | Kodiak Archipelago | Gulf of Alaska-Cook Inlet | Southeast Alaska | Alaska total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Loons | 24 | 18 | 229 | 8 | 39 | 18 | 0 | 3 | 0 | 0 | 3 | 0 | 342 |
| Grebes | 0 | 0 | 2 | 0 | 5 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 8 |
| Short-tailed Shearwater | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 |
| Pelagic Cormorant | [a] | [a] | 1,151 | 26 | [a] | [a] | [a] | [a] | [a] | [a] | [a] | [a] | 1,177 |
| Cormorants (unidentified) | 0 | 0 | [a] | [a] | 2 | 0 | 0 | 1 | 33 | 0 | 1 | 0 | 37 |
| Bonaparte's-Sabine's gulls | 0 | 0 | 1 | 1 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13 |
| Mew gull | 0 | 10 | 4 | 19 | 83 | 0 | 0 | 77 | 0 | 0 | 0 | 0 | 193 |
| Large gulls | 14 | 0 | 225 | 116 | 81 | 0 | 0 | 192 | 0 | 0 | 29 | 0 | 657 |
| Black-legged Kittiwake | 0 | 2 | 194 | 1 | 2 | 0 | 0 | 1 | 213 | 1 | 10 | 0 | 424 |
| Red-legged Kittiwake | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 386 | 0 | 0 | 0 | 386 |
| Terns | 10 | 0 | 0 | 4 | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 36 |
| Murres | 10 | 14 | 2,992 | 27 | 17 | 0 | 0 | 83 | 234 | 0 | 0 | 0 | 3,377 |
| Guillemots | 0 | 0 | 287 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 287 |
| Auklets | 0 | 0 | 2,945 | 7 | 0 | 0 | 0 | 0 | 43 | 26 | 0 | 0 | 3,021 |
| Puffins | 1 | 0 | 24 | 3 | 1 | 0 | 0 | 0 | 96 | 0 | 18 | 0 | 143 |
| Total seabirds | 59 | 44 | 7,912 | 210 | 262 | 19 | 0 | 357 | 1,005 | 24 | 61 | 0 | 9,953 |

[a] Cormorants harvested in the St. Lawrence-Diomede islands and Bering Strait Mainland regions were assumed to be Pelagic Cormorant based on species distribution.

**Geographic and Seasonal Patterns of Seabird Subsistence Harvest in Alaska**

Polar Biology

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**Electronic Supplementary Material 5** Reported harvest of seabird eggs by regions in Alaska (non-extrapolated number of eggs/year), 2002–2015.

| Species or species categories (Egg harvest) | North Slope | Northwest Arctic | St. Lawrence-Diomede Islands | Bering Strait Mainland | Yukon-Kuskokwim Delta | Interior Alaska | Upper Copper River | Bristol Bay | Aleutian-Pribilof Islands | Kodiak Archipelago | Gulf of Alaska-Cook Inlet | Southeast Alaska | Alaska total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Loons | 11 | 6 | 9 | 91 | 28 | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 157 |
| Grebes | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Pelagic Cormorant | [a] | [a] | 3 | 3 | [a] | [a] | [a] | [a] | [a] | [a] | [a] | [a] | 6 |
| Cormorants (unidentified) | 0 | 1 | [a] | [a] | 1 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 6 |
| Parasitic Jaeger | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Bonaparte's-Sabine's gulls | 0 | 23 | 0 | 2 | 63 | 0 | 0 | 85 | 0 | 0 | 0 | 0 | 173 |
| Mew Gull | 0 | 523 | 16 | 651 | 903 | 24 | 0 | 3,691 | 0 | 2 | 0 | 0 | 5,810 |
| Large gulls | 51 | 892 | 42 | 1,361 | 997 | 9 | 0 | 2,885 | 640 | 941 | 478 | 2,123 | 10,419 |
| Gulls (unidentified) | 89 | 2,251 | 67 | 83 | 586 | 5 | 0 | 3,994 | 1,327 | 259 | 302 | 830 | 9,793 |
| Black-legged Kittiwake | 0 | 18 | 80 | 60 | 146 | 0 | 0 | 68 | 0 | 528 | 12 | 0 | 912 |
| Terns | 46 | 14 | 0 | 155 | 582 | 2 | 0 | 565 | 22 | 146 | 354 | 380 | 2,266 |
| Murres | 1,225 | 2,052 | 27,777 | 619 | 1,817 | 0 | 0 | 1,917 | 331 | 0 | 36 | 2 | 35,776 |
| Guillemots | 0 | 20 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 22 |
| Auklets | 0 | 16 | 105 | 0 | 0 | 0 | 0 | 0 | 24 | 0 | 0 | 0 | 145 |
| Puffins | 0 | 91 | 144 | 26 | 0 | 0 | 0 | 0 | 0 | 0 | 18 | 0 | 279 |
| Total seabird eggs | 1,422 | 5,907 | 28,243 | 3,052 | 5,127 | 40 | 0 | 13,221 | 2,344 | 1,876 | 1,200 | 3,335 | 65,767 |

[a] Cormorants harvested in the St. Lawrence-Diomede islands and Bering Strait Mainland regions were assumed to be Pelagic Cormorant based on species distribution

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# Enclosure 5

ARCTIC
VOL. 68, NO. 1 (MARCH 2015) P. 107–120
http://dx.doi.org/10.14430/arctic4462

# The Status of Glaucous Gulls *Larus hyperboreus* in the Circumpolar Arctic

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(*Received 21 May 2013; accepted in revised form 28 July 2014*)

ABSTRACT. The entire world population of the Glaucous Gull *Larus hyperboreus* breeds in the circumpolar Arctic. Some local populations appear to be declining significantly. In this paper, we summarize the current state of knowledge on Glaucous Gull populations and trends. The total Arctic population is estimated at 138 600 to 218 600 breeding pairs (277 200 to 437 200 breeding individuals) distributed among at least 2768 colonies (many not documented). Population declines may be attributable to egg harvest, contaminants, or food shortages, but other factors operating outside the breeding season should not be excluded. We recommend collaborative conservation efforts that will include better population estimates in most countries, as well as standardized monitoring programs.

Key words: Glaucous Gull; *Larus hyperboreus*; Arctic; population status; population trends; monitoring; conservation concerns

RÉSUMÉ. Toute la population mondiale de goélands bourgmestres *Larus hyperboreus* se reproduit dans l'Arctique circumpolaire. Certaines populations locales semblent diminuer considérablement. Dans cette communication, nous résumons l'état actuel des connaissances sur les populations et les tendances concernant le goéland bourgmestre. La population arctique totale est estimé de 138 600 à 218 600 couples reproducteurs (de 277 200 à 437 200 individus reproducteurs) répartis dans au moins 2 768 colonies (dont grand nombre n'ont pas été consignées). Les déclins de population peuvent être attribuables à la récolte des œufs, aux contaminants ou aux pénuries de nourriture, bien qu'il ne faille pas exclure d'autres facteurs ne se rapportant pas à la saison de reproduction. Nous recommandons des efforts de conservation communs qui comprendront de meilleures estimations de population dans la plupart des pays de même que des programmes de surveillance normalisés.

Mots clés : goéland bourgmestre; *Larus hyperboreus*; Arctique; état de la population; tendances de la population; surveillance; préoccupations de conservation

Traduit pour la revue *Arctic* par Nicole Giguère.

## INTRODUCTION

The entire global population of the Glaucous Gull *Larus hyperboreus* (Fig. 1) breeds in the Arctic, with a widespread, circumpolar distribution (Burfield and van Bommel 2004; Fig. 2). Although most also winter within the Arctic region, some birds disperse south towards Japan and California in the Pacific or towards northwestern Europe and the Carolinas in the Atlantic (Cramp, 1983; Gilchrist, 2001). During the non-breeding season, birds may disperse in offshore waters, where they are often associated with sea ice or the ice edge, and in association with walrus *Odobenus rosmarus* and seals near open leads and polynyas (K.J. Kuletz, unpubl. data).

Four subspecies of the Glaucous Gull are generally recognized: *hyperboreus* in the European Arctic and western Siberia, *leuceretes* in West Greenland and most of the Canadian Arctic, *barrovianus* in Alaska and east to the Mackenzie River in Canada, and *pallidissimus* from eastern Siberia to the Pribilof Islands (Banks, 1986; Liebers et al., 2004; de Knijff et al., 2005).

Glaucous Gulls breed primarily on or near the coast, sometimes a few kilometers inland. On the Taimyr Peninsula, Russia, they can breed along riverbanks more than

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FIG. 1. Glaucous Gulls on Franz Josef Land, Russian Arctic. Photo: Maria Gavrilo, August 2007.

100 km inland (Rogacheva, 1992; Yudin and Firsova, 2002). Breeding sites may be used by a single pair or up to more than 1000 pairs (Mineev and Mineev, 2000; Gilchrist, 2001; Strøm, 2006a; Zöckler et al., 2009). Glaucous Gull nest locations are highly variable, including grassy slopes, low islands on lakes near the coast, tops of rock stacks, and ledges on steep, inaccessible cliffs, where the gulls often nest together with other seabirds (Gudmundsson, 1955; Gilchrist, 2001). Level ground is also used on the mainland where mammalian predators are uncommon, for example, in Alaska, Arctic Canada, and Franz Josef Land, Russia.

The Glaucous Gull is a species of international responsibility for the Arctic countries, some of which (United States, Canada, Greenland, Iceland, Norway, Russia) harbour the entire world breeding population. Evidence of recent declines prompted biologists in these countries to review available published and unpublished information on this species, to examine the distribution, status, and trends of breeding Glaucous Gulls in the circumpolar Arctic. They have also examined current monitoring activities to see how well changes in the different populations are documented and to evaluate the main concerns for Glaucous Gulls.

## METHODS

The U.S. Fish and Wildlife Service conducts the Aerial Breeding Bird Survey, a population monitoring program that includes Glaucous Gulls, in the Yukon-Kuskokwim Delta coastal region and the Arctic Coastal Plain region. The Survey has indexed the abundance, population trend, and distribution of Glaucous Gulls since 1992. The North Pacific Pelagic Seabird Database (NPPSD, 2014) includes data since 1975 on distribution of Glaucous Gulls at sea. Seasonal and spatial aspects of survey effort, which were largely opportunistic vessel-based surveys, need to be addressed before long-term trends in at-sea distribution can be examined. Pelagic survey effort in Alaska increased in 2006 and continued through 2014.

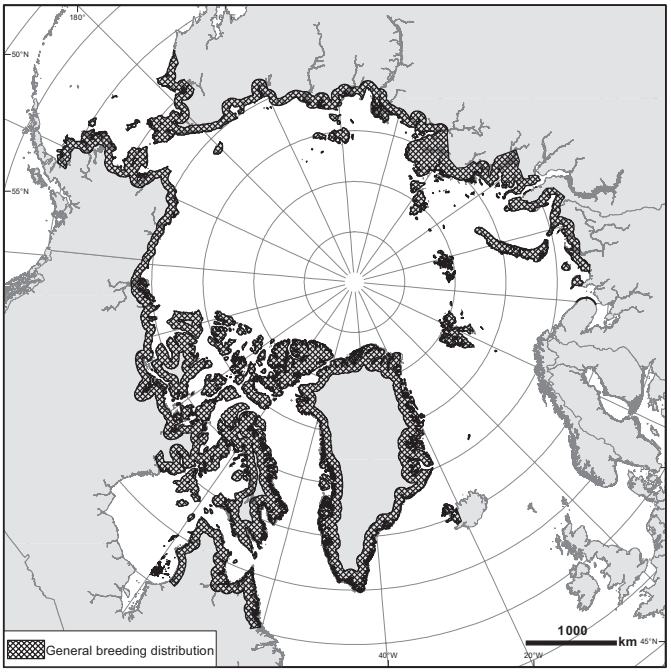


FIG. 2. The Glaucous Gull has a truly circumpolar breeding distribution.

Environment Canada has also monitored Glaucous Gull breeding populations at five locations in the Canadian Arctic. However, this monitoring is typically auxiliary to focal research on other seabirds and is generally not systematic. Although research has been conducted recently on Glaucous Gulls in the Canadian Arctic (Allard et al., 2010; Wayland et al., 2010), reproductive success is monitored only once a year on Coats Island and every 2–3 years on Prince Leopold Island (Gaston et al., 2005, 2009). Distribution of Glaucous Gulls away from the breeding colonies is also recorded during opportunistic at-sea surveys (Fifield et al., 2009; McKinnon et al., 2009).

In Greenland, no monitoring program covers Glaucous Gull colonies, and data on population trends are fragmentary and not systematic. However, Glaucous Gulls are included in programs that monitor contaminants in Greenland taxa (Cleemann et al., 2000; Riget and Dietz, 2000; Riget et al., 2000; AMAP, 2005; Vorkamp et al., 2012).

In Iceland, no organized monitoring program exists for Glaucous Gulls. Individual colonies have been surveyed for numbers at irregular intervals, but until a recent census, coverage for larger areas during the same time period was limited (Petersen et al., 2014). Winter numbers and distribution are monitored annually as part of the Icelandic Christmas Bird Counts (Petersen, 1983), but no other population parameters are monitored.

In Bjørnøya, Svalbard, the number of breeding pairs (from 1986), adult survival, and breeding success are monitored annually by the Norwegian Polar Institute. In 2012 monitoring was started in Kongsfjorden, Spitsbergen (Descamps et al., 2013). Glaucous Gulls are also included in contaminant monitoring programs for Svalbard taxa.

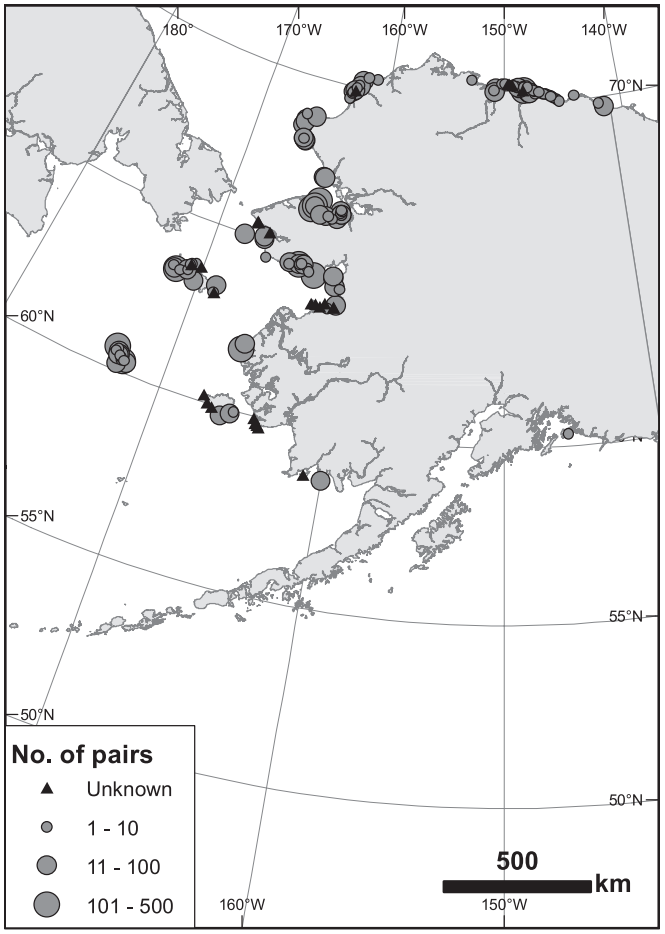


FIG. 3. Distribution of coastal Glaucous Gull colonies in Alaska. Note, however, that the gulls also breed inland.

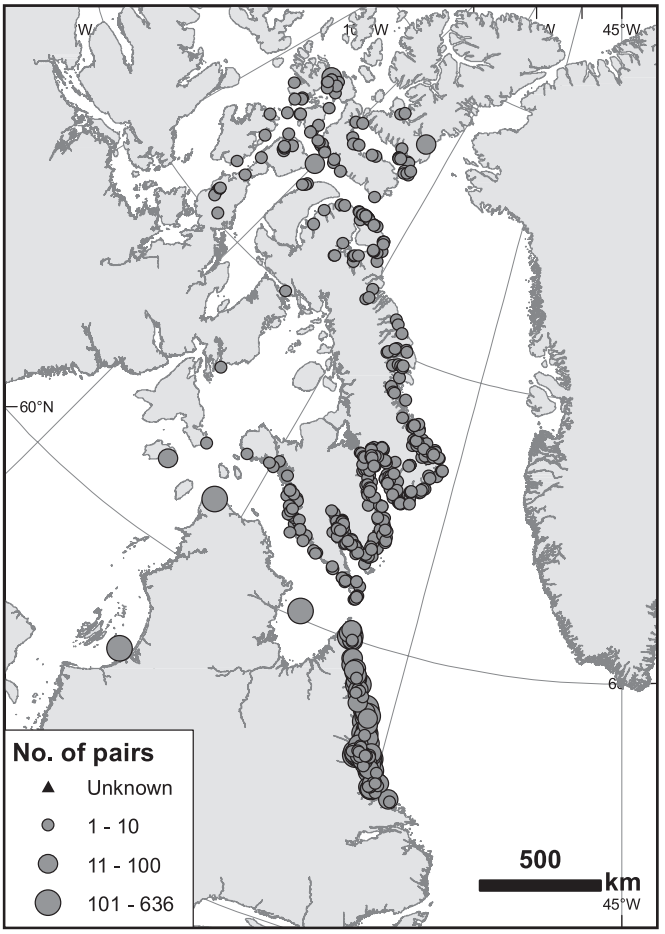


FIG. 4. Map showing Glaucous Gull nesting locations mapped along the marine shorelines in northern Labrador, Quebec, and Nunavut. Glaucous Gulls also nest in pairs or small colonies in the central and western Canadian Arctic, but those breeding locations have not been mapped.

Russia has no specific monitoring programs for Glaucous Gulls, although some repeated surveys of abundance have been undertaken in several locations as parts of general seabird surveys. The recently established Russian Arctic National Park includes Glaucous Gulls on the list of its seabird monitoring network.

## RESULTS

### *Breeding Distribution*

In the United States, the subspecies *L. h. barrovianus* occurs along the coast and inland in northern and western Alaska (Fig. 3). Moving east into Canada, the subspecies *L. h. leucerete*s occurs throughout coastal parts of Yukon, the Northwest Territories, and Nunavut, as well as in Nunavik (northern Quebec) and northern Labrador (Fig. 4). The Glaucous Gull *L. h. leucerete*s is a widespread breeder throughout Greenland (Fig. 5), occurring mainly in small colonies and solitary pairs, often within or close to colonies of other seabird species (Boertmann, 1994). In Iceland, the species currently breeds principally in the northwest (Fig. 6), in the regions of Vestfirðir, Breiðafjörður, and Faxaflói, but the breeding range contracted considerably through the 20th century from its former extent around the country (Ingólfsson, 1982; Petersen, 1998; Petersen et al., 2014). The Norwegian breeding population of Glaucous Gulls is found on the islands of Jan Mayen (*L. h. leucerete*s; Fig. 7) and Svalbard (*L. h. hyperboreus*; Fig. 8). In Russia, the breeding range is not well documented, so only the better-known sites are depicted in Fig. 9. Gulls breed along the mainland coast and throughout the Russian Arctic archipelagoes (Kokhanov, 1981; Yudin and Firsova, 2002). Two subspecies are found in the Russian Arctic: *L. h. hyperboreus*, in the western part towards East Taimyr, and *L. h. pallidissimus* east of the Lena Delta (~ 126˚ E), with an intergrade zone between these areas (Stepanyan, 2003).

### *Wintering Distribution in the Arctic*

During winter, Glaucous Gulls are reported in the pack ice and polynyas of the Bering Sea as well as near the Aleutian and Pribilof Islands (U.S. Fish and Wildlife Service, 2009), along Newfoundland and Labrador (Brown et al., 1975; Allard et al., 2010), and in polynyas of southern

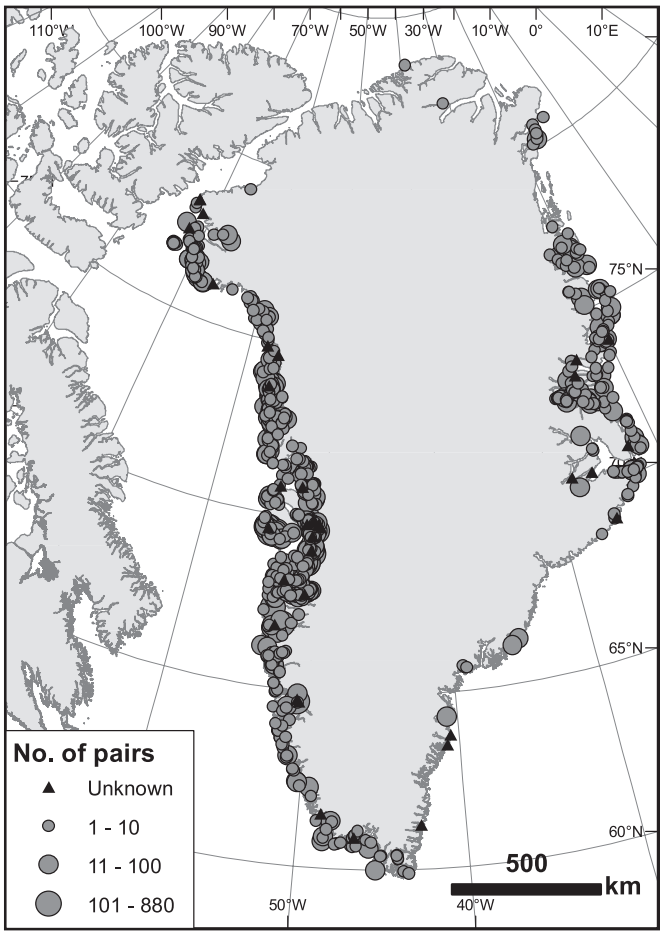


FIG. 5. Distribution of Glaucous Gull breeding sites in Greenland, as recorded in the Greenland Seabird Colony Register (n = 829). Survey effort in North and Southeast Greenland is very low, and the literature indicates that the species is more widespread in those areas than the map shows.

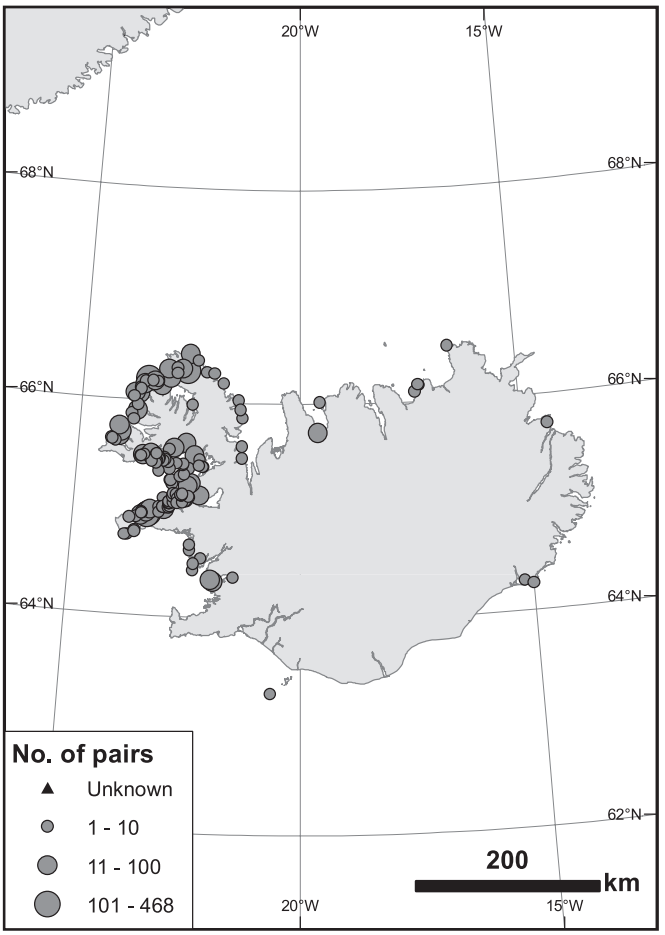


FIG. 6. Distribution and relative numbers of Glaucous Gulls nesting in Iceland. Most of the data are from 2005 to 2011, but older data have been used for areas not surveyed in those years. Birds at breeding sites away from the core regions of western and northwestern Iceland most likely included Glaucous Gull–Herring Gull hybrids.

Hudson Bay, Canada (Gilchrist and Robertson, 2000). Many birds from Canada, Svalbard, and Iceland may winter along the more or less ice-free coasts of West Greenland (Gilchrist, 2001; Lyngs, 2003; Boertmann et al., 2004). In the European Arctic, Glaucous Gulls winter along the coast and offshore in mainland Norway, the Faroes, and Iceland, and in the ice-free parts of the Barents and Greenland Seas (Petersen, 1998; Bakken et al., 2003; Strøm, 2006a).

*Population Estimates*

Population estimates for Glaucous Gulls are difficult because of the large extent and remote nature of the breeding range, and their numbers are poorly known, except for Iceland. The most up-to-date information suggests that there are more than 2768 colonies in the circumpolar Arctic, supporting between 138 600 and 218 600 breeding pairs of gulls (Table 1). Many seabirds skip breeding in some years (Hamer et al., 2002), so the total breeding population could be more than 437 200 breeding individuals, and there are also many immature birds and other non-breeders.

Approximately 100 000 individuals have been reported for Alaska (U.S. Fish and Wildlife Service, 2009), but only 158 colonies have been documented (Seabird Information Network, 2012). Of these, 132 colonies have population estimates that total about 8000 individuals, and only 36 of these colonies have been surveyed since 1992.

Gilchrist (2001) estimated 69 000 individuals distributed in at least 1000 colonies in Canada, but this estimate was based on coarse data from the 1970s and probably included some Iceland Gulls *Larus glaucoides*. Gaston et al. (2012) revised this estimate downward to 25 000 individuals, acknowledging that this number is likely a minimum estimate.

The Greenland Seabird Colony Register includes 830 colonies or breeding sites, totaling approximately 12 000 pairs. However, like the Canadian figure, this is an underestimate, as many solitary breeding pairs and colonies smaller than five pairs are not included. Thus, the population estimate of 20 000–100 000 pairs given by Boertmann et al. (1996) is still the best available for Greenland.

In Iceland, the breeding population was estimated at 3500 pairs in 1955 (Gudmundsson, 1955), and two decades later it was thought that the Breiðafjörður region alone

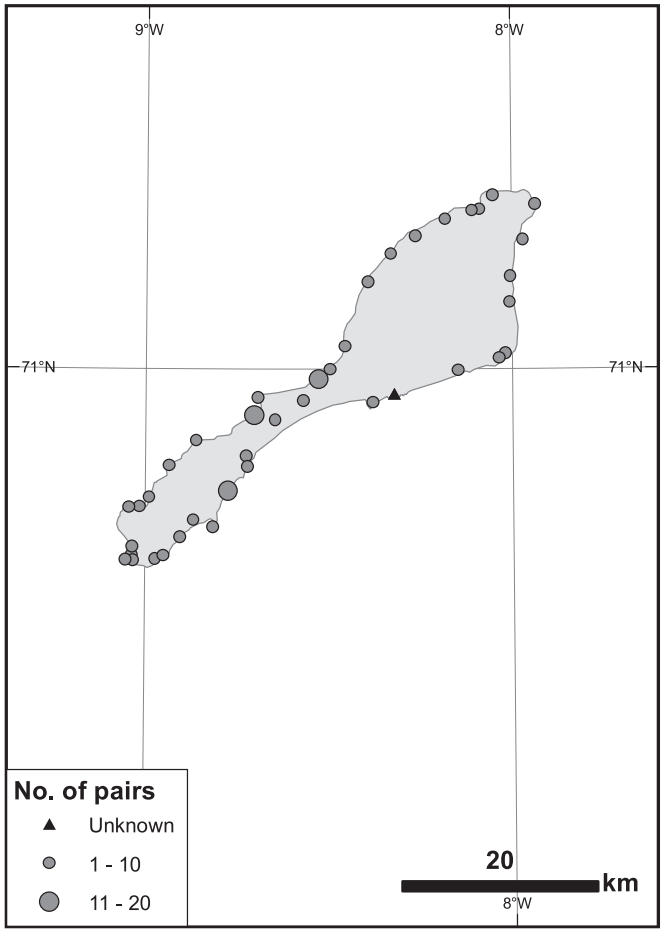


FIG. 7. Distribution of colonies/breeding sites and relative numbers of Glaucous Gulls on Jan Mayen, based on censuses conducted in 2010. Data from the Seabird Colony Registry of the Barents and White Seas (Norwegian Polar Institute/SEAPOP).

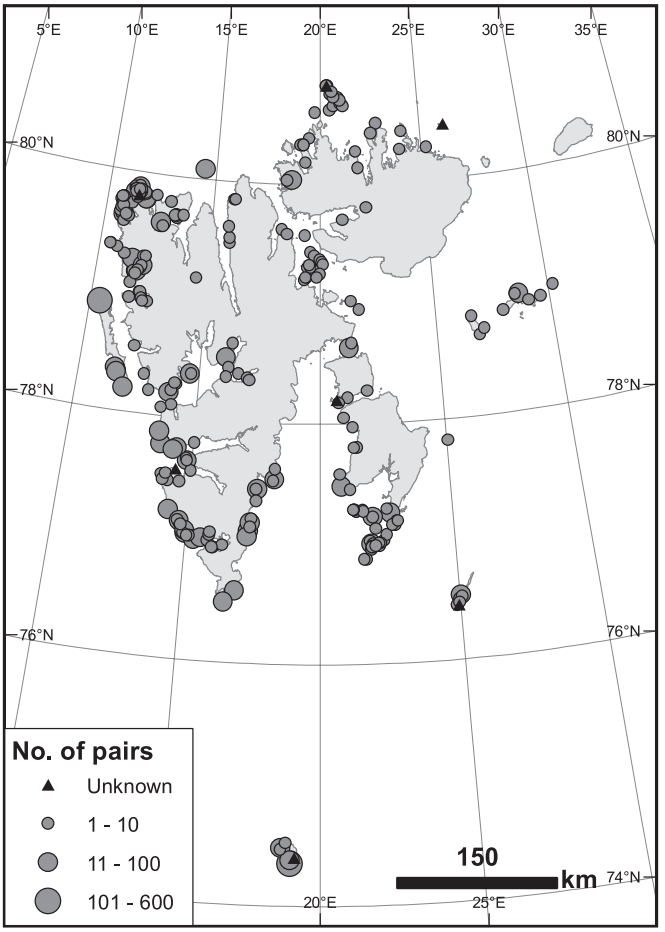


FIG. 8. Distribution of colonies/breeding sites and relative numbers of Glaucous Gulls in Svalbard, based on censuses conducted from 2006 to 2012. Data from the Seabird Colony Registry of the Barents and White Seas (Norwegian Polar Institute/SEAPOP).

supported 3500 breeding pairs (Gardarsson, 1973). The population estimate later increased to 10 000 pairs (Ingólfsson 1982), but by 1995 it was reassessed downwards to 8000 breeding pairs (Asbirk et al., 1997; Petersen, 1998), with the largest colony supporting 1400 pairs. In 2005–09, a new census of Glaucous Gulls in the principal breeding areas in Iceland suggested only 2400 breeding pairs, distributed among 245 breeding locations, which includes sites of single pairs and some of possible hybrid pairs with Herring Gull *Larus argentatus* (Petersen et al., 2014).

In Svalbard, a total 230 colonies are known (SCRIB, 2009), most of which are on the west coast of Spitsbergen and Bjørnøya. Estimates based on the 1980s and 1990s censuses in Svalbard suggest a total breeding population of up to 10 000 pairs (Mehlum and Bakken, 1994; Strøm, 2006a), but new surveys in 2005–12 indicated a population size close to 4000 pairs (Strøm, 2006b; H. Strøm and S. Descamps, unpubl. data). On Jan Mayen, a census in 2010 documented a minimum of 181 breeding pairs in 40 colonies (H. Strøm, unpubl. data).

Only a rough population estimate of approximately 50 000 breeding pairs can be provided for the entire Russian Arctic, with more than 20 000 *hyperboreus* and 30 000 or fewer *pallidissimus*. No overall historical estimates are available, nor have broad-scale surveys been conducted in the western part of the species' range. Most regional population estimates must be considered crude at present (summarized in Table 2). On the basis of data from 1936 to 1994, Bakken and Tertitski (2000) estimated that on Novaya Zemlya, there are at least 55 colonies with at least 1000 breeding pairs, which is undoubtedly an underestimate since many areas were not surveyed. An estimate based on data collected before the 1990s gave more than 100 colonies with ~500 pairs on Franz Josef Land (Bakken and Tertitski, 2000). A recent estimate gave more than 70 colonies with probably 2000–3000 pairs (M. Gavrilo, unpubl. data). The previous estimate for the southeastern Barents Sea was at least 1500 pairs (Bakken and Tertitski, 2000), but a recent update provided data for up to 1900 pairs in two locations (Mineev and Mineev, 2000; Zöckler et al., 2009). Farther east, in the Kara Sea, the limited data suggest more than 75 recorded colonies, most of them in the Severnaya Zemlya archipelago (Gavrilo and Bakken, 2000), and numbers estimated at under 1000 pairs (de Korte et al., 1995).

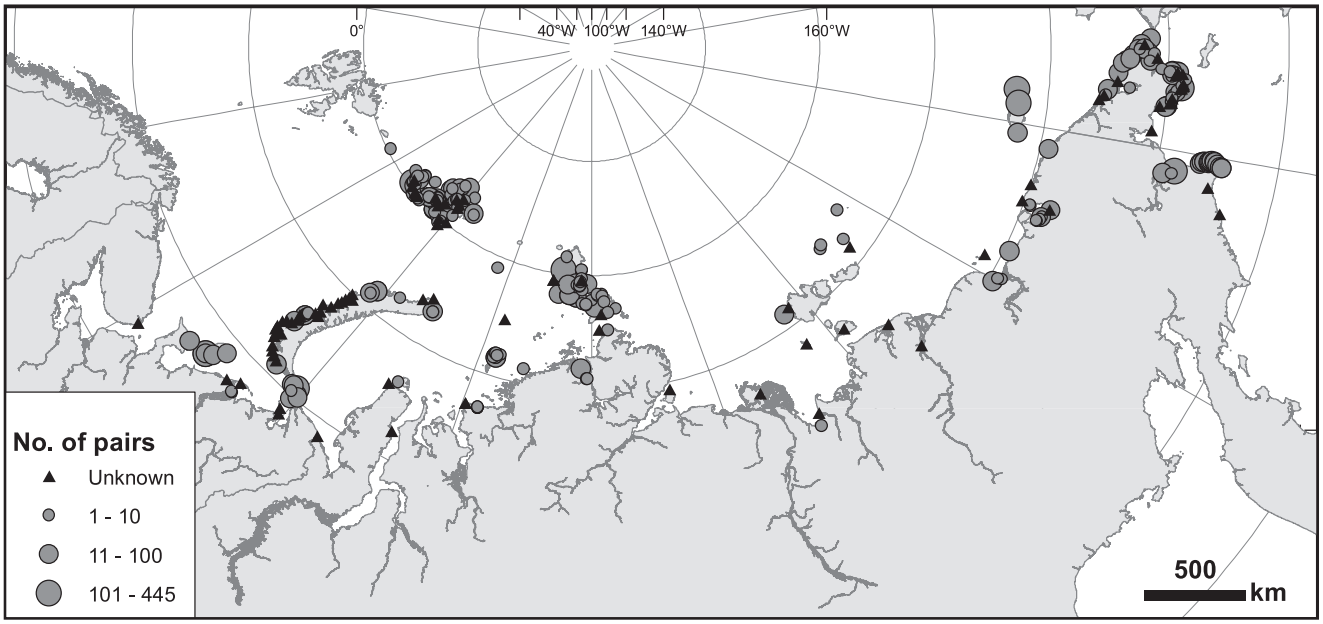


FIG. 9. Breeding colonies of Glaucous Gulls in Russia. Only the better-documented breeding sites are presented because the distribution is poorly mapped, especially on the mainland, where the gulls mostly dispersed on flat tundra or salt marshes.

*Population Trends*

Since 1992, aerial breeding bird surveys of the Arctic Coastal Plain (northwestern Alaska east to the Alaska–Canada border) have documented Glaucous Gull populations, providing indices between 10 000 and 20 000 birds, with a mean population index of about 13 000 that was considered stable from 1992 to 2006, but increased from 2001 to 2010 (Larned et al., 2011). Over this same time period (1992 to 2010) in western Alaska, estimates of the population have fluctuated around a mean of about 38 000 birds (annual range 21 000–67 000; Platte and Stehn, 2009).

Surveys in Canada have not been conducted systematically or annually, as in Alaska, but sporadically and often ancillary to other research. Around the Belcher Islands (56˚ N, 79.5˚ W), Gilchrist and Robertson (1999) found a 50% decline in breeding numbers from 1985 to 1997. At Digges Sound (62.5˚ N, 78˚ W) from 1980 to 2008, A.J. Gaston (unpubl. data) documented a decrease of about 50% from the initial ~55 nests at this colony. On nearby Coats Island (63˚ N, 82˚ W), one of two colonies has remained stable (Gaston et al., 2009) while at the other, Glaucous Gulls disappeared between 1979 and 1995 (Gaston and Ouellet, 1997). At Prince Leopold Island (74˚ N, 90˚ W), monitoring has suggested an 80% decrease in breeders from 1975 to 2008, and only a few tens of pairs remain at present (A.J. Gaston, unpubl. data). Annual Christmas Bird Counts in eastern Canada suggest a 6.6% (± 1.6%) annual decline in Glaucous Gull numbers during the period 1980–2010. While the population had seemed to be increasing through the 1980s and into the 1990s, declines appeared to occur in the mid-1990s. On the other side of the North Atlantic, numbers of wintering birds in the United Kingdom have remained relatively stable over a similar time period (Balmer et al., 2013). In the western Canadian Arctic, anecdotal evidence suggests that numbers have declined, but these estimates are not based on systematic surveys.

In contrast to the declining population trends near Canadian seabird colonies, informal interviews with Inuit hunters in several local communities in Nunavut (Resolute Bay, Grise Fiord, Iqaluit, Arctic Bay) indicate that there are now many more Glaucous Gulls resident through the spring and summer than was the case in the past several decades (M.L. Mallory, unpubl. data). However, neither aerial surveys nor interviews give evidence of new breeding colonies appearing near communities.

In West Greenland, 86 colonies were surveyed more than once in the period 1988–2008, with 45 (52%) colonies unchanged, 17 (20%) increasing, and 24 (28%) declining. Local surveys provide more insights. In Upernavik municipality (72˚–75˚ N), 15 colonies supported 329 pairs in 1965, but this number had increased to 419 pairs by 1994 (Joensen and Preuss, 1972; Boertmann et al., 1996). Surveys of the fjords south of Disko Bay (67˚–69˚ N) between 1954 and 2005 suggested overall increases in gull numbers (Boertmann, 2006). In southwest Greenland (south of 61˚ N), three colonies decreased in numbers since the previous survey, while six new colonies were established, resulting in an overall increase of almost 100% in the number of pairs (Boertmann, 2004). Collectively, the few data available on Glaucous Gulls in West Greenland indicate a slight positive trend, an impression also shared with biologists by people living in Greenland during collaborative research work or informal interviews in communities.

In Iceland, data suggest that a serious decline occurred concurrent with climatic amelioration during the first half

TABLE 1. Available, conservative estimates of number of colonies, population size (breeding pairs), and population trend for Glaucous Gulls breeding in the circumpolar Arctic.

| Country | Number of colonies | Breeding pairs | Population trend |
|---|---|---|---|
| USA (Alaska) | > 158 | 50 000 | Stable or increasing |
| Canada | 1000 | > 12 000 | Declining |
| Greenland | 830 | 20 000 – 100 000 | Stable or increasing |
| Iceland | 245 | 2400 | Declining |
| Norway | | | |
| Jan Mayen | 40 | > 200 | – |
| Svalbard | 230 | 4000 | Declining (on Bjørnøya) |
| Russia | > 265 | 50 000 | Stable or increasing |
| Total | > 2768 | 138 600 – 218 600 | |

TABLE 2. Available regional estimates for Glaucous Gull populations from the Russian Arctic.

| Region | Period | Breeding pairs | Colonies | Source |
|---|---|---|---|---|
| SE Barents Sea | 1960 – 94 | 1500 | | Bakken and Tertitski, 2000 |
| Kolguev Island | 2000s | ≥ 700 | | Zöckler et al., 2009 |
| Kolokolkova Bay area | 2000s | 900 – 1200 | > 10 | Mineev and Mineev, 2000; WWF Russia, unpubl. data |
| Novaya Zemlya | 1936 – 96 | 1000 | 55 | Bakken and Tertitski, 2000 |
| Novaya Zemlya | 1950s | 8500 | | Uspensky, 1984 |
| Franz Josef Land | 2000s | 2000 – 3000 | > 100 | M. Gavrilo, unpubl. |
| Severnaya Zemlya Archipelago | 1990s | < 1000 | | de Korte et al., 1995 |
| Wrangel Island | 1970s – 80s | 250 – 1000 | | Stishov et al., 1991 |
| Chukotka Peninsula | 1983 – 91 | > 1000 | 50 | Konyukhov et al., 1998 |
| Russian Bering Sea | 1980s – 2000s | > 1500 | 70 | Artukhin, 2010a |

of the 20th century (Gudmundsson, 1955). An increase occurred in the latter half of the 20th century until the mid-1990s (Petersen, 1998), after which a decline took place. In 2005 a census was carried out in one of two main breeding regions in Iceland, along the coast of the Breiðafjörður Bay in the west. A major decline had occurred (from 3500 pairs in 1973 to 1210 pairs in 2005), but during part of that period the population increased (Petersen, 1998). In the northwest peninsula, only 1081 pairs were estimated in 2007 – 09, although this area had previously supported an estimated 3500 pairs (Gardarsson, 1973). Around 2007, the total Icelandic Glaucous Gull population was estimated at 2400 breeding pairs, representing a population decline of around 75% since 1995 (cf. Asbirk et al., 1997).

Little is known about trends in the Svalbard population as a whole. The population on Bjørnøya has declined since 1980, when it was estimated at 2000 breeding pairs (Franeker and Luttik, 1981; Bakken and Mehlum, 1988). A survey in 2006 gave approximately 700 pairs, or a 65% reduction (Strøm, 2007). A survey of the island Hopen in 2012 indicated a 75% reduction in the number of breeding pairs, from 1000 pairs in 1985 to 239 in 2012 (S. Descamps, unpubl. data).

In the western Russian Arctic, population changes for Glaucous Gulls can be evaluated in only a few sites because of data deficiency. On Kolguev Island, a small increase has occurred, perhaps in response to increases in numbers of Barnacle Goose *Branta leucopsis*, the eggs and chicks of which constitute the principal prey in summer (Ganter et al., 1999; Zöckler et al., 2009). An increase was also suggested on Vaygach Island, southeastern Barents Sea, for the same reason (Kalyakin, 1993). A few colonies revisited on Franz Josef Land also showed an increase; an example is Rubini Rock, where numbers grew from 12 to 35 – 50 pairs during 1930 – 2013 (Demme, 1934; Belikov and Randla, 1984; Skakuj, 1992; Lunk and Joern, 2007; M. Gavrilo, unpubl. data). The small population in the Sedov Archipelago, Kara Sea, appears to be stable (Gavrilo and Volkov, 2008).

For the *pallidissimus* population in the eastern Russian Arctic, surveys between 1970 and 1991 found increases at Wrangel, Kolyuchin, and Big Diomede Islands, three large colonies in the Chukchi and northern Bering Seas (Tomkovich and Sorokin, 1983; Bogoslovskaya et al., 1988; Stishov et al., 1991; Konyukhov et al., 1998). In northern Chukotka, the population is increasing (Belyaka Spit in Kolyuchiskaya Bay; Tomkovich and Soloviev, 2012) or stable (Chaun Delta; Solovyeva, 2012). In the Chaun Delta, a stable population was observed even under conditions of increasing numbers of the Vegae Gull *Larus vegae* but decreasing numbers of Sabine's Gull *Xema sabini* (Solovyeva and Zelenskaya, 2015).

*Conservation Concerns*

Various conservation concerns exist for this species and differ by location across the circumpolar North.

In Alaska, Glaucous Gulls face few conservation concerns from humans primarily because of their remote breeding locations. The harvest of birds and eggs is the main issue at present, but rural residents can legally harvest Glaucous Gulls for subsistence purposes. Between

1995 and 2005, the total estimated annual harvest of Glaucous Gull eggs increased from 17 700 eggs and 800 birds to 36 700 eggs and 2100 birds (these figures may include Glaucous-winged Gulls *L. glaucescens*). This harvest, which takes place primarily in Bristol Bay and the Aleutian and Pribilof Islands, represents about 25% of the total seabird egg harvest and about 1% of the total seabird harvest in Alaska (Wohl et al., 2008).

Glaucous Gulls are taken incidentally in groundfish fisheries in the Aleutian Islands and Bering Sea regions, although mortality estimates combine all large gull species. Bycatch of these gulls decreased from 2400 birds per year (22% of seabird bycatch) in 1993 to 800 birds per year in 2010 (derived from NOAA, 2006, 2011).

In the Aleutian Islands, increasing vessel traffic through the Great Circle route could increase the risk of shipping accidents and spills. At the northern end of the Bering Sea, longer periods of ice-free conditions, oil and gas exploration, and predicted increases in vessel traffic could increase impacts and risks.

In Canada, changes in numbers, especially the steep decline at Prince Leopold Island, have created concern. Reproductive success at Prince Leopold Island has been low compared to Coats Island, where the population is stable (Gaston et al., 2005, 2009). Among Canadian Arctic marine birds, Glaucous Gulls have relatively high contaminant levels (Braune et al., 2002; Buckman et al., 2004), but not as high as those in Svalbard, where negative effects on physiology and behavior have been found (Bustnes et al., 2003; Bustnes, 2006; Verreault et al., 2007, 2008).

Studies from two Canadian colonies suggest relatively low survival rates for Glaucous Gulls (Gaston et al., 2009; Allard et al., 2010). Some years with high mortality have been reported, perhaps related to gulls' scavenging on carcasses infected with avian cholera (Allard et al., 2010). Some Glaucous Gulls have also been found dead but apparently in good physical condition, with no obvious cause of mortality (Mallory et al., 2009a).

There are no immediate concerns for the Glaucous Gull population in Greenland. Hunting is allowed outside the breeding season, and egg collecting is allowed until 15 June. Commercial egging of gulls (Great Black-backed Gulls *Larus marinus* and Glaucous Gulls) was allowed in spring 2009, which may give reason for some concern, but no information is available on the numbers harvested. In the long run, climate change may negatively affect the population in the southwestern parts of Greenland, where the temperate Herring Gull, and especially Lesser Black-backed gull *L. fuscus*, have established breeding populations in recent decades (Boertmann, 2008).

In Iceland, the large decline in Glaucous Gulls remains unexplained. Adults and eggs are harvested, but this harvest has diminished in recent decades. From 1995 to 2002, on average 3847 birds (range: 2471 – 5496) were killed annually as pest species, but this average declined in 2004 – 11 to 1722 birds (range: 1124 – 2407). This harvest was less than half that in the preceding period and mirrors the observed population decline (Petersen et al., 2014). Better care of community dumps, closure of offal disposals from fish processing plants, and better control of offal and bycatch from fishing vessels may have contributed to the observed decline of gulls in recent decades by reducing food availability. Declines at some colonies are believed to be due to Arctic foxes *Vulpes lagopus*, the population of which has greatly increased in recent decades (Hersteinsson, 2004). However, fox predation of eggs and chicks is not believed to have caused the population decline, but rather to have resulted in re-distribution of breeding pairs. The hybridization of Herring Gulls with Glaucous Gulls (Ingólfsson, 1970; Vigfúsdóttir et al., 2008; Pálsson et al., 2009) and Herring Gulls' continually approaching the core Glaucous Gull breeding regions (Petersen, 1998) are causes for real concern regarding the status of Glaucous Gulls as a separate species.

In Norway, contaminants and food shortages have been suggested as the main causes for concern. Glaucous Gulls on Bjørnøya, especially those specializing on eggs and chicks of other seabirds, accumulate high levels of organic contaminants. Effects on hormone production and the immune system have been documented, as well as reduced reproductive success and adult survival (e.g., Bustnes et al., 2003; Verreault et al., 2010; Erikstad and Strøm, 2012). Significant numbers of dead or dying birds have been found annually near the breeding colonies on Bjørnøya. Autopsies and analyses of environmental contaminants have shown that the birds were emaciated and contained high levels of OCP, PCB, and PBDE in the liver and brain (Sagerup et al., 2009). The high levels of contaminants may contribute to the death of weakened individuals, although it is not known whether the emaciation is triggered by high levels of contaminants or by environmental factors such as food shortage (Sagerup et al., 2009). Changes in food availability and predation or competition by a growing population of Arctic foxes and Great Skua *Stercorarius skua* may also be factors influencing the decline of the Bjørnøya Glaucous Gull population (Strøm, 2007; Erikstad and Strøm, 2012). Nothing is known about trends in the Jan Mayen breeding population.

In western Russia, most gulls breed in remote, uninhabited regions, and thus there have been few concerns for their populations. Much of the population breeds within specially protected areas (strict nature reserves or refuges) such as the Franz Josef Land Refuge, the Great Arctic Reserve, the Lena Delta Reserve, or the Wrangel Island Reserve. However, in recent years several adult Glaucous Gulls found dead on Franz Josef Land had no visible external signs explaining mortality (M. Gavrilo, unpubl. data). It is suspected that toxic contamination may explain these deaths in a situation similar to that on Svalbard.

In eastern Russia, gulls breed in regions of low human activity. Bycatch in long-line fisheries has increased in winter, mainly in the Kamchatka waters (Artukhin, 2010b). Eggs are harvested in seabird colonies in Chukotka near some settlements, but the scale of the Glaucous Gull egg harvest is unknown (Portenko, 1989).

## DISCUSSION

Despite the position of the Glaucous Gull at the top of Arctic marine food webs and its role as a sentinel species for the health of the Arctic marine ecosystem (Braune et al., 2002; Sagerup et al., 2009), we have little knowledge of its population size and breeding distribution in the Arctic countries. The main exceptions are Svalbard and Iceland, where new censuses have led to better knowledge. In Alaska, Russia, and Canada, colonies are widely scattered in remote areas and often consist of single pair or a few pairs, which makes full coverage of distribution and population size difficult, even impossible, to achieve. At present, the total Arctic population is estimated at 138 600 to 218 600 breeding pairs (277 200 to 437 200 individuals); possibly the largest proportion is in Greenland, but significant populations are also found in Russia and Canada.

Although some overriding factors appear to drive consistent, long-term population trends in Arctic marine birds (Irons et al., 2008), shorter term, regional differences in population trends within a species appear typical, as do simultaneous, different trajectories among species. For example, Thick-billed Murre *Uria lomvia* populations are increasing in Canada (Gaston et al., 2012) but declining in Greenland (Merkel et al., 2014), while Lesser Black-backed Gulls are increasing in Greenland (Boertmann, 2008) and Ivory Gulls *Pagophila eburnea* have declined in both Canada (Gilchrist et al., 2008) and Greenland (Gilg et al., 2009). Black-legged Kittiwake *Rissa tridactyla* numbers have declined in Greenland (Labansen et al., 2010), Norway (Krasnov et al., 2007; Cury et al., 2011), and northwestern Russia (Krasnov et al., 2007), but in Arctic Canada they are apparently increasing (Mallory et al., 2009b). Northern Fulmar *Fulmarus glacialis* numbers appear to be in slow decline in Canada (Gaston et al., 2012), and perhaps across the North Atlantic (e.g., JNCC, 2013). Several seabird species have shown serious declines in Iceland in recent years, such as European Shag *Phalacrocorax aristotelis*, Northern Fulmar, Black-legged Kittiwake, Razorbill *Alca torda*, Thick-billed Murre, Common Murre *Uria aalge*, and Black-headed Gull *Chroicocephalus ridibundus* (Petersen and Thorstensen, 2005; Gardarsson, 2006; Gardarsson and Petersen, 2009). Conversely others have increased, such as Northern Gannet *Morus bassanus*, Great Cormorant *Phalacrocorax carbo*, and Mew Gull *Larus canus* (Gardarsson, 2008a, b; Thorstensen and Petersen, 2013).

In the case of the Glaucous Gull, the population has declined drastically in Canada, Iceland, and Svalbard (at least on Bjørnøya) in recent decades, although undocumented redistribution may account for some local changes. Reasons for the Glaucous Gull declines remain largely unexplained, although some possible causal factors have been identified. On Bjørnøya (Svalbard), the population decline has been related to contaminants (Bustnes et al., 2003; Sagerup et al., 2009; Verreault et al., 2010; Erikstad and Strøm, 2012). At some sites in Canada, apparent adult annual survival is 84%, which is somewhat low for a large gull (Gaston et al., 2009; Allard et al., 2010). Moreover, a significant number of adult-plumaged birds have been found dead near colonies without obvious signs of cause (e.g., Mallory et al., 2009a), as was similarly observed in Svalbard. No autopsies have been performed on the Canadian birds, but these mortality events could be related to contaminants. The first analogous cases of potential contaminant mortality were observed in recent years in the Russian part of the northern Barents Sea. In Iceland, both redistribution and declines seem to have occurred; the latter are probably due to reduced food availability resulting from better controls on fish offal and bycatch.

In contrast to examples from the North Atlantic region, the limited information from the North Pacific suggests different trends. The Russian situation remains largely unknown, but there are indications of stability or even local increases in Glaucous Gull numbers. In Alaska, the available information, though limited, indicates a stable breeding population.

Clearly there are changes underway for some breeding regions or subpopulations of this species that may be related to proximate anthropogenic factors (e.g., development of community dumps, changes in fishery discards; Bicknell et al., 2013), local conditions (e.g., increased food base, such as Barnacle Goose) and other factors that may be attributable to broader, regional environmental change (e.g., competition with other gulls due to range shifts with global warming; Boertmann, 2008). The Glaucous Gull is a top predator and scavenger and a species that can play a major role in local ecosystems (e.g., Gilchrist and Gaston, 1997; Gaston and Elliott, 2013); therefore, a better understanding of Glaucous Gull populations and trends will yield greater insights into the status of Arctic marine ecosystems.

We therefore recommend that future research should:

- Undertake more extensive and systematic surveys of Glaucous Gull colonies for better information on distribution, numbers, and trends. This information is needed to establish and improve management (Greenland, Iceland, Russia) and to enhance programs that monitor breeding (Alaska, Canada, Norway).

- Examine Glaucous Gull biology during the non-breeding period to determine the extent to which factors that affect birds during that part of their annual cycle may be responsible for population declines. Such studies could include winter (including at-sea) surveys, tracking studies for population connectivity, and studies of non-breeding ecology, such as food habits and exposure to contaminants. Studies of the non-breeding season may be particularly important as climate change reduces annual sea ice extent and duration in the Arctic.

- Enact research and monitoring programs on two of the poorly studied subspecies of Glaucous Gull, *hyperboreus* (in the European Arctic) and *leuceretes* (in

West Greenland). Both are listed on the Action Plan of the African-Eurasian Waterbird Agreement (AEWA, 2012) as requiring international attention. In particular, delineation between subspecies needs to be revisited.

The Glaucous Gull is one of 22 Arctic seabird species proposed for priority circumpolar monitoring by the Arctic countries as a species of international responsibility (Petersen et al., 2008). Collaborative conservation efforts, especially by the Arctic countries, are needed to obtain a better understanding of the population changes taking place in Glaucous Gull populations and possible causal factors. Given the regional differences in its population trends, the Glaucous Gull should be a suitable species through which to examine the factors affecting these different trends.

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**Federal Subsistence Board**

**1011 East Tudor Road, MS 121**
**Anchorage, Alaska 99503 - 6199**

**FISH and WILDLIFE SERVICE**
**BUREAU of LAND MANAGEMENT**
**NATIONAL PARK SERVICE**
**BUREAU of INDIAN AFFAIRS**

**FOREST SERVICE**

OSM 19058.KW

Alissa Rogers, Chair
Yukon-Kuskokwim Delta
Subsistence Regional Advisory Council
c/o Office of Subsistence Management
1011 East Tudor Road, MS 121
Anchorage, Alaska 99503-6199

Dear Chairwoman Rogers:

This letter responds to the Yukon-Kuskokwim Delta Subsistence Regional Advisory Council's (Council) fiscal year 2018 Annual Report. The Secretaries of the Interior and Agriculture have delegated to the Federal Subsistence Board (Board) the responsibility to respond to these reports. The Board appreciates your effort in developing the Annual Report. Annual Reports allow the Board to become aware of the issues outside of the regulatory process that affect subsistence users in your region. We value this opportunity to review the issues concerning your region.

## 1. Warmer and wet weather effects on the fall moose hunt

*The Council discussed the experience of the fall Unit 18 moose hunt on the Kuskokwim River and relayed feedback from communities that warmer weather in recent years is making it difficult to harvest and protect the meat from spoilage during the early part of the season. Cooler temperatures are needed to adequately dry and preserve the meat for the winter. Local observations indicate that increasingly warm and wet weather in the early fall has made it more difficult to locate moose since they tend to be less active in the heat, and high water covers up normally exposed river banks that moose would otherwise frequent. In warmer weather, moose tend to be far up the tributary rivers in the foothills of the Kilbuck Mountains where it is cooler. These headwater areas are far away and difficult for Federally qualified subsistence users to reach, hindering most from hunting moose there during the current season. Shifting the fall moose hunt opening back by two weeks from the current September 1 opening date would allow for a hunt to occur when the weather conditions may be cooler and more conducive to a successful hunt and safe preservation of the meat.*

*Additionally, the moose population in Unit 19A is growing and expanding into and around the Kalskag area with many cow sightings. Communities in this area of the Kuskokwim have been experiencing very rainy fall weather conditions that make it very difficult to get out and hunt moose. A second moose hunt in November for this area would be beneficial, as the moose population is expanding and weather is more likely to be conducive to a successful hunt.*

*The Council will pursue these matters to change the moose harvest season dates through the Federal subsistence regulatory process. The Council raises these issues in its annual report so that the Board is aware of these widely shared experiences about impacts to subsistence due to changing weather in order to help build flexibility into the subsistence management process.*

**Response:**

The Board appreciates bringing these valuable observations to its attention. As the Council has noted, the best way to address these concerns is to submit one or more proposals to change the Federal subsistence regulation to the Federal Subsistence Board. Given the coordinated nature of Federal and State moose hunts in the Kuskokwim area, the Council may also consider engaging in the Alaska Board of Game's regulatory process, now or in the future. The Alaska Board of Game will consider regulatory proposals for Units 18 and 19 during their 2019/2020 meeting cycle.

**2. <u>Abundance of moose on the lower Yukon River causing habitat decline</u>**

*Council members who live and hunt on the Yukon River in Unit 18 note the abundance of moose increasing in the region and signs of related habitat destruction, such as trampled berry bushes and over-browsed trees. Moose browse is becoming scarce to support such a large population. Even areas where subsistence greens are traditionally harvested have seen a decline in subsistence plants due to concentrated amounts of moose feces and ammonia from moose urine. The Council is interested in exploring management options for Yukon River moose to ensure the population does not continue to increase and risk further habitat destruction, which could result in a population crash.*

**Response:**

Growth of moose populations can often be limited through careful harvest management. Long seasons, liberal harvest limits and few antler/sex restrictions can all be effective in limiting growth. However, these regulatory conditions already exist along the Yukon River in Unit 18, where the Federal season is nine months long and the harvest limit is two moose. Further liberalization of harvest regulations may not have a significant impact on the growth rate of this population, given the number of moose available for harvest and the relatively limited user base.

Shifting the harvest toward females, which is possible within the existing regulatory framework, may be somewhat effective in limiting population growth. Female moose have a disproportionate influence on population growth, due to their contribution of calves to the population. In the most recent three years for which harvest information is available (2015 –

2017), fewer than 25 percent of the moose taken in the Unit 18 general season were cows. Encouraging cow harvest may have an effect on population growth in the lower Yukon area.

**3. <u>Interest in fisheries research focused on important but lesser studied subsistence fish</u>**

*The Council discussed the Fisheries Resource Monitoring Program priorities and made recommendations on a wide range of subsistence research topics for the Yukon and Kuskokwim regions. While it is recognized that there is limited funding for all the broad and varied research needs in the region, the Council would like to emphasize the importance of some research to focus on the lesser studied fish species that are important to subsistence.*

*The Council discussed declines in humpback whitefish and would like to see research on the population, reproduction, and health of spawning habitat for this important subsistence fish. The Council also raised concerns about recent declines in Coho Salmon returns on the Kuskokwim and a need for ongoing monitoring of this increasingly important subsistence fishery. Decline in Coho Salmon numbers raises some alarm, since it has been an important secondary subsistence fish in the fall if subsistence salmon fishing is restricted earlier in the season for Chinook Salmon conservation. The Council requests that surveys be conducted to accurately record the number of Coho Salmon being harvested to compare with Coho Salmon harvest increases after imposing Chinook Salmon restrictions. This will assist with developing run reconstruction statistics. According to the Council's observations, the Coho Salmon run comes later in the year up to freeze up. Therefore, the Council requests that State and Federal governments conduct research at the appropriate time to account for this change.*

*Last, the Council would like to see research focused on Bering Cisco, which has been a historically abundant and important subsistence fish on both the Yukon and Kuskokwim Rivers, but very little is known about its population and spawning habitat.*

**Response:**

In 2008, a strategic plan was initiated for whitefish in the Yukon-Kuskokwim region though Fisheries Resource Monitoring Program (FRMP) project 08-206. The end product of that project was the report *Whitefish Biology, Distribution, and Fisheries in the Yukon and Kuskokwim River Drainages in Alaska: a Synthesis of Available Information*. The report provided information known about these species, and also noted data gaps for future research needs.

Since 2010, the FRMP has funded the following projects related to whitefish and Sheefish in the Yukon and Kuskokwim drainages:

- Project 10-209 – Yukon River Commercial Harvest Genetics of Bering Cisco
- Project 10-205 – Kuskokwim River Sheefish Radio Telemetry
- Project 12-200 – Alatna River Sheefish
- Project 12-312 – Highpower Creek Sheefish
- Project 12-313 – Kuskokwim River Bering Cisco
- Project 14-252 – Lower Yukon Whitefish
- Project 14-301 – Kuskokwim River Broad Whitefish

- Project 16-203 – Yukon Flat Bering Cisco Spawning Abundance
- Project 16-303 – Upper Kuskokwim Sheefish Enumeration and Spawning Characteristics

If you would like to obtain a copy of any of these research reports, please give this request to your Council Coordinator.

The FRMP is a Federal grant program for funding research and monitoring that is needed to sustain subsistence fisheries. The best way for the Council to direct research on these species is to identify them in your Priority Information Needs for the FRMP. For the 2020 FRMP Priority Information Needs on the Yukon, two PINs related to Coho Salmon research, one proposal was submitted and one PIN related to Bering Cisco, no proposals were received. For the Kuskokwim region, seven PINs related to salmon research in general, two proposals were submitted for Coho Salmon and two PINs related to whitefish, two proposals were submitted that addressed these PINs.

**4. <u>Increasing observations of fish with deformities and disease</u>**

*The Council is concerned about increasing observations of fish with deformities or indications of disease in both Yukon and Kuskokwim salmon and other species of subsistence-caught fish. Council members have shared pictures of some of the latest examples with fisheries biologists who concur that they had never seen such strange deformities before. The Council would like to see a systematic way to track these observations and be able to submit pictures or send specimens to a lab for pathology testing.*

**Response:**

The Board shares the Council's concern related to the increase in fish with deformities or indications of disease in Western Alaska salmon stocks. There is a program already in place called the Local Environmental Observer (LEO) Network where individuals report unusual environmental events. This can be found online at www.leonetwork.org. It is searchable, and past events such as the early arrival of trumpeter swans in Anchorage in 2019, or fungal infection of Smelt near Bethel in 2018, are recorded.

Residents in rural communities and elsewhere can send their images and detailed observations of fish kills or fish abnormalities, as well as other unusual observations, to a LEO coordinator who then sends this information to agency experts for comments, including the fish pathology labs if applicable. The State's fish pathology lab can request samples if necessary. Generally, 95 percent of the observations are common problems that do not require processing samples and can be diagnosed by images and descriptions. The State pathology lab also has field guides on fish and shellfish diseases that LEO coordinators can provide to the public. There is a short video provided on the website to learn more about the program and participation.

The State pathology lab also takes direct inquiries from area agency biologists who have received reports of various fish abnormalities. They always request good quality images first and then evaluate whether samples are necessary.

The Board hopes that this information is useful to the Council for future tracking of the uncharacteristic events.

## 5. Increasing observations of sick and injured seals and other marine life

*The Council has concerns about increasing observations of sick and injured seals with blood in the fat and meat as though they had suffered major trauma. Many coastal communities are seeing increasing incidents of seals and other marine creatures washing up on shore, either sick or dead. While the Council recognizes that the marine environment is outside the jurisdiction of the Federal Subsistence Board, marine resources are essential for the life and livelihood of most communities in the region. Seal oil is central to the diet of nearly all communities in the Yukon-Kuskokwim Delta. It is used for dipping dry fish and dry meat, as well as mixing with traditional wild greens and berries for agutak. Seal oil is traded widely for other subsistence foods such as salmon, moose, and caribou. Some coastal communities are seeing a shift in the migration of salmon through marine waters where they have fished for generations. The Council requests support from the Federal Subsistence Management Program to get more information on changes to critical marine resources—what is causing these injuries and illnesses to marine life, and what can be done to mitigate the impacts to subsistence communities.*

**Response:**

The Board appreciates hearing Council observations about all subsistence species and environmental changes effecting subsistence resources and activities. Management of marine mammals is outside the jurisdiction of the Board; however, the Federal Subsistence Management Program can facilitate connections with other agencies that can directly address sick and injured marine mammals. Your Council Coordinator has reached out to marine mammals experts at the National Oceanic and Atmospheric Administration (NOAA) and the National Marine Fisheries Service (NMFS) and they have responded with information and offered to attend your next meeting to hear reports about marine mammal observations and answer questions. NOAA indicated that while they received many reports of sick or dead seals from the North Slope and Bering Strait regions, they have not yet received reports from the Yukon-Kuskokwim Delta region and are very interested to engage with communities in the region on this issue. A more detailed response from the Marine Mammal Stranding biologists and procedures for submitting samples from subsistence caught animals is attached as an enclosure to this letter. NOAA and NMFS are not able to address human health concerns associated with subsistence food consumption but other agencies can. The Alaska Native Tribal Health Consortium (ANTHC) Food Security and Contamination Support Program is one such group that can provide testing of subsistence foods and assist with guidelines and support for continuing to eat healthy traditional foods. More information and contacts for this ANTHC program are also enclosed.

## 6. Elders teachings and the story about famine

*Council member David Bill, Sr. of Toksook Bay shared a story about the teachings of his elders and their observations about the changing environment. The Council shares this story to help*

*convey to the Board and others to be aware of what the changes in the environment and shifting animal populations may foreshadow.*

*During his childhood in Hooper Bay and Nelson Island, David was taught that when a famine is about to begin the fish will swim in areas where they are not normally present and animals will start to go where they do not normally roam. He was told when trees start to appear and moose and caribou become abundant and come into coastal areas (not their normal habitat) that a famine will follow. Then animal numbers will decrease and go underground for a while.*

*Now an elder himself, David has seen a lifetime of changes to the environment and the weather. He shared his observations of changing habitat, shifting animal migrations, and changing weather. Even the stars they rely on for navigation are changing. He further recounted how his grandmother used to say "poor you, you're still alive to see all these changes and even the weather is changing." David concluded; however, that even though the older generations have been gone and so many changes are happening to the land and sea and air, if people care for one another and live within traditional Yup'ik values they will be able to continue to live their subsistence way of life. It is important to remember that according to traditional Yup'ik values, one should respect subsistence resources and "not play with them," otherwise they will be diminished.*

**Response:**

The Board values awareness of changes on the land and how these changes could affect the future. Knowing that Yup'ik cultural traditions are based on thousands of years of observation, and many people have first-hand knowledge of food shortages; the Board is grateful for the knowledge and wisdom shared by each Council member and encourages the Council to continue to educate staff and the public by offering these observations.

**7. <u>Engaging youth in subsistence management</u>**

*The Council has enjoyed working with students, and hearing their reports about internship experiences through the Alaska Native Science and Engineering Program (ANSEP) and the Fisheries Resource Monitoring Program. The Council would like to further engage with local students at the grade school and high school levels to hear their observations and subsistence concerns and then work with them to address them. Young people need to be taught and encouraged to get involved in subsistence management.*

*The Council would like to share with the Board two success stories of the young people being involved with the Council and subsistence management at an early age. Alissa Nadine Rogers, the current Council Chair, was brought as a little girl to many Council meetings by her grandfather John Hanson and was able to learn how to advocate for the moose moratorium when she was as young as 9 years old. Growing up, she continued taking interest in management issues and eventually graduated from the ANSEP. Soon thereafter, the late Greg Roczicka, Yukon Kuskokwim Delta RAC Vice Chairman, became Ms. Rogers' mentor and taught her about the laws and regulation process. Then, Ms. Rogers became an intern with ONC Fisheries and learned about weirs, fishwheels, tagging/recapture, sonars, water quality, ecology, juvenile*

*salmon studies, and science and culture camps with ADF&G and USFWS. Aaron Moses, Subsistence Specialist for the Yukon Delta National Wildlife Refuge, is another example of successful engagement of youth in subsistence management. Mr. Moses was an ANSEP graduate as well and worked as an intern with USFWS, which built a foundation for him to continue his career in subsistence management.*

*The Council requests the assistance of the Federal Subsistence Management Program staff to engage with local schools and help facilitate more in-depth youth involvement with the Regional Advisory Council meetings and Federal subsistence regulatory proposal development process.*

**Response:**

The Board agrees on the value of youth participation in the Federal Subsistence Management Program (FSMP). Several Federal Subsistence Regional Advisory Councils (Councils) have recently involved local high school students in their meetings, and the Board encourages all Councils to continue to do so in the future.

In September 2018, OSM's Tribal Liaison held a video conference with a class in Dillingham High School to introduce OSM staff to students and discuss the Federal Subsistence Management Program. OSM would be happy to set up similar video or teleconferences in the Yukon-Kuskokwim Delta (Y-K Delta) region in the future. Additionally, with the Council's input, OSM staff could reach out to specific Y-K Delta region schools and invite teachers to encourage class participation in the Federal Subsistence Management Program and practice with proposal or comment development in conjunction with the Council meeting. Staff could also send notices to schools announcing the calls for proposals to change Federal Subsistence regulation, or upcoming Council meetings. At the Council's request, the Council Coordinator can make arrangements to add time to future Council meeting agendas to hear from local high school or grade school students. The Council members can also play a role in making those invitations and connections with youth. The Program can help facilitate student engagement with the Council through in person attendance when possible or by teleconference to hear their ideas and answer questions about getting involved in the FSMP.

OSM's Subsistence Outreach Coordinator is available to work with the Y-K Delta Council Coordinator to assist in coordinating specific outreach projects, and can provide outreach materials upon request. The Board also encourage youth to visit the FSMP website (www.doi.gov/subsistence), or follow the FSMP Facebook page (www.facebook.com/subsistencealaska), to learn more about the program.

## 8. <u>Need for full and balanced membership on the Council</u>

*The Council is very concerned about the number of vacancies created due to the lack of sufficient Council appointments in 2017. Most importantly, the Council lost a lifetime of knowledge and experience when four incumbent Council members were not reappointed to serve another term. The Yukon-Kuskokwim Delta Subsistence Regional Advisory Council serves a large and diverse region with over 40 communities and several of the largest rivers and coastal*

*deltas in both size and importance for subsistence fishing. The Council cannot adequately represent the many communities of the region and address resource management on the diverse subsistence hunting and fishing issues from the Yukon to the Kuskokwim, Kenektok, and Goodnews Rivers and Deltas and everything in between without a full membership of the 13-seat Council. The Council desperately needs a balanced membership and representation from throughout the region. The complexity of fisheries management on the Yukon and Kuskokwim Rivers in particular truly requires having representatives who are residents of at least several villages along each river in order to adequately inform the Council's recommendations. The Council wishes to convey to the Board and Secretaries the great loss and importance of having the expertise, knowledge and leadership when so many incumbents were not reappointed last year. The Council requests the Board's support to ensure ample outreach in the region to recruit a balance of applications from the 41 villages and to ensure that the Secretary of the Interior appoints highly qualified applicants in a timely manner.*

**Response:**

The Board acknowledges the Council's concerns regarding its membership and vacancies and wants to remind the Council about the Nominations process. Title VIII of the Alaska National Interest Lands Conservation Act (ANILCA) provides rural residents who have personal knowledge of local conditions and requirements the opportunity to actively participate in subsistence management. Title VIII of ANILCA established the Federal Subsistence Regional Advisory Councils (Councils) to ensure participation. The work of the Councils is guided by the purpose of the statute—specifically to provide a priority for rural subsistence users.

All of the Councils were established under the Federal Advisory Committee Act (FACA), which requires that all Federal committees have a membership that is "fairly balanced in terms of points of view and functions." This means that the residents of each region with knowledge of fish and wildlife resources, subsistence uses, and commercial and sport uses must be fairly represented on the Councils. Therefore, the Board's goal is to seat seventy percent subsistence use representatives and thirty percent commercial or sport use representatives on each Council.

The Office of Subsistence Management (OSM) provides administrative support to the Councils' member selection process. The process is composed of multiple stages and takes about sixteen months to complete. The process begins in the early fall of each year with a public notice that the Board is accepting applications and nominations to serve three-year terms on the Councils. The call for applications and nominations is typically open four to five months and is accompanied by an extensive outreach effort through public newspaper and radio announcements, mass mailing and distribution of the applications, and targeted outreach regarding this opportunity with key contacts in the regions.

The second stage of the process begins upon receipt of the applications by OSM when an independent group of panelists conducts interviews of the applicants and their references and prepares Nomination Panel reports for the Interagency Staff Committee (ISC) recommendations to the Board. The Board considers all the information and ISC recommendations before making its recommendations to the Secretaries of the Department of the Interior and Department of

Agriculture. The Secretary of the Interior's office reviews the nominations packet, which includes each applicant's information, and oversees the vetting process. Upon the completion of the latter, the Secretary of the Interior makes appointments with the concurrence of the Secretary of Agriculture.

The Board wants to assure the Council that when it makes its recommendations, it will take into consideration the Council's request to have a balanced membership and representation from the Yukon and Kuskokwim areas. However, the Board notes that the appointees selection process largely depends on the number and diversity of applications received from the region and on the results of the vetting process by the office of the Secretaries of the Interior and Agriculture. The Board fully supports extensive outreach efforts in the region to get a diverse applicant pool.

In closing, I want to thank you and your Council for your continued involvement and diligence in matters regarding the Federal Subsistence Management Program. I speak for the entire Board in expressing our appreciation for your efforts and am confident that the subsistence users of the Yukon-Kuskokwim Delta Region are well represented through your work.

Sincerely,

Anthony Christianson
Chair

Enclosures

cc: Federal Subsistence Board
Thomas Doolittle, Acting Assistant Regional Director, Office of Subsistence Management
Thomas Whitford, Acting Deputy Assistant Regional Director
Office of Subsistence Management
Jennifer Hardin, PhD, Subsistence Policy Coordinator, Office of Subsistence Management
Steven Fadden, Acting Council Coordination Division Supervisor,
Office of Subsistence Management
Chris McKee, Wildlife Division Supervisor, Office of Subsistence Management
Greg Risdahl, Fisheries Division Supervisor, Office of Subsistence Management
George Pappas, State Subsistence Liaison, Office of Subsistence Management
Eva Patton, Council Coordinator, Office of Subsistence Management
Yukon-Kuskokwim Delta Subsistence Regional Advisory Council
Benjamin Mulligan, Deputy Commissioner, Alaska Department of Fish and Game
Mark Burch, Special Project Coordinator, Alaska Department of Fish and Game
Interagency Staff Committee
Administrative Record

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# Enclosure 1

2018 Email reply from Mandy Migura, Marine Mammal Stranding Coordinator, NOAA.
mandy.migura@noaa.gov

The National Marine Fisheries Service (NMFS) and multiple partners have been monitoring seals in Alaska (primarily the Arctic and Bering Strait regions, but also some seals from the Yukon-Kuskokwim region) for several years that have been observed with similar symptoms as you described. In 2011 there was a large number of seals (mostly ringed) and walrus observed with these and other symptoms, with elevated numbers of dead animals reported. That prompted our agency to declare an official Northern Pinniped Unusual Mortality Event (UME) for ice seals and walrus in December 2011, and a team of experts was convened to investigate the situation. In 2014 it was determined that walrus would be removed from the UME investigation due to a lack of new cases. We are still receiving report of ice seals with patchy fur loss, skin sores on the flippers or face, and some animals exhibiting unusual behavior (such as allowing humans to approach closely). However, we are not receiving reports of the elevated mortality levels like those observed in 2011, and we are now in the process of compiling the data into a report and recommending that the UME event be closed. The information will be submitted to the Working Group on Marine Mammal Unusual Mortality Events, and they will review the data and decide if the UME should be closed or remain open.

NMFS and our partners have developed fliers, fact sheets, and news releases regarding this UME; many of those documents have been posted on our NMFS Alaska Region website. Below I have included links to where those documents can be viewed, as well as a link to our national webpage which explains the UME process and what it means. We would appreciate it if you could help circulate this information (especially the fliers, fact sheets, and news releases) to interested community members in an effort to help answer some of their questions and concerns. I do note that NMFS is not a public health agency, and while we do collect and share information on the health of the marine mammals, our agency does not provide advice regarding human consumption of marine mammals.

What is an Unusual Mortality Event (UME), and other UME program topics: http://www.nmfs.noaa.gov/pr/health/mmume/events.html

Information about the Alaska Ice Seal UME from NMFS and partners (you will need to click the tab labeled "Diseased Ice Seals"): https://alaskafisheries.noaa.gov/pr/ice-seals

https://www.fisheries.noaa.gov/alaska/marine-life-distress/diseased-ice-seals

Thank you and I hope this information is helpful,
Mandy

Mandy Migura
Marine Mammal Stranding Coordinator
Cook Inlet Beluga Whale Recovery Coordinator
NOAA Fisheries, Alaska Region, Protected Resources Division
mandy.migura@noaa.gov
907-271-1332
AK Stranding Hotline: 877-925-7773

# Enclosure 2

Spring 2019 email response from Barbara Mahoney, Marine Mammals Biologist, NOAA. barbara.mahoney@noaa.gov

If you see sick, injured, or beached dead marine mammals:

IF beached marine mammals are sick, alive or dead, then NMFS would like to know. Lots of pictures, especially of the injury and/or sickness, is best.

IF subsistence hunted animals are sick (dead), then NMFS would like to know. Hunters can take lots of pictures, provide tissue samples from the area that hunters are concerned: 1) bloody blubber and/or 2) trauma bones, muscles, organs, etc.

Everyone can call our NMFS stranding hotline at: 877-925-7773.
Everyone can send/text pictures with minimal information to: barbara.mahoney@noaa.gov and/or kate.savage@noaa.gov

Please include your name and contact information, date, location, species, and what is not normal (behavioral or physical difference).

If you wish to provide tissue samples Barbara Mahoney has provided the guidelines for shipping samples to NOAA free of charge and a full detailed instruction and forms can be provided to the Council to help get the information out to communities in the region.

# Enclosure 3

Alaska Native Tribal Health Consortium Food Security and Contamination Support Program. https://anthc.org/what-we-do/community-environment-and-health/brownfield-contaminated-sites/climate-change-food-security/

# Food Security

Studying the connection between changes in our environment and traditional food and water sources

**Food Security**
(907) 729-4008
(907) 729-4043

Many individuals and families in Alaska rely on subsistence activities for food and nutrition. The warming climate is causing changes to our environments, which impact traditional food and water sources. Strong oceanic and atmospheric currents worldwide transport chemicals, pesticides and contaminants that are produced, used and disposed of at lower latitudes to the waters in the Arctic. These contaminants eventually enter the food chain and make their way to wildlife species that are our traditional food sources.

To address these concerns, ANTHC's Community Environment and Health program offers training through the 7 Generations Education Program. It also provides sampling and monitoring of water sources and traditional foods for contaminants and disease causing microorganisms using two different monitoring programs:

**Rural Alaska Monitoring Program (RAMP)**

The Rural Alaska Monitoring Program is an EPA grant funded monitoring program, operated by ANTHC in partnership with Kawerak, Inc. and the communities of the Bering Strait region. RAMP provides training to residents who wish to participate in testing their subsistence-harvested marine and land mammals and traditional water sources for wildlife infections that might be a risk. Communities can elect to participate and submit a resolution requesting to participate in the RAMP study.

**Maternal Organics Monitoring Study (MOMS)**

In response to a concern of the people from the Yukon-Kuskokwim Delta Region, the Maternal Organics Monitoring Study was developed to determine contaminants present in residents that regularly consume traditional foods. It is a monitoring study aimed at Alaska Native mothers and their newborn infants who are most likely to be exposed through a subsistence diet. The results of the MOM Study also show the benefit of the nutrients in the traditional diet and their health benefits to mothers and infants.

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# Federal Subsistence Board

**1011 East Tudor Road, MS 121**
**Anchorage, Alaska 99503 - 6199**

**FISH and WILDLIFE SERVICE**
**BUREAU of LAND MANAGEMENT**
**NATIONAL PARK SERVICE**
**BUREAU of INDIAN AFFAIRS**

**FOREST SERVICE**

OSM 16059.KW

Jack Reakoff, Chair
Western Interior Alaska Subsistence
Regional Advisory Council
c/o Office of Subsistence Management
1101 East Tudor Road, MS 121
Anchorage, Alaska 99503-6199

Dear Chairman Reakoff:

This letter responds to the Western Interior Alaska Subsistence Regional Advisory Council's (Council) fiscal year 2018 Annual Report. The Secretaries of the Interior and Agriculture have delegated to the Federal Subsistence Board (Board) the responsibility to respond to these reports. The Board appreciates your effort in developing the Annual Report. Annual Reports allow the Board to become aware of the issues outside of the regulatory process that affect subsistence users in your region. We value this opportunity to review the issues concerning your region.

## 1. Resource Monitoring and Evaluation

*The Council is very concerned about resource monitoring and evaluation of caribou in the region. The vast majority of research appears to be focused on winter foraging of lichen, while the caribou summer feeding regime is largely overlooked. While lichen provides important carbohydrates, spring and summer vegetation such as cotton grass and high protein flowers provide critical nutrition.*

*Observations in the Arctic National Wildlife Refuge show that the tundra is up to 50 percent devoid of snow cover when caribou are calving. Bare tundra renders essential protein resources from grass flowers, forbs, and shrub leaves. Limitations to the caribou calving range by lichen needs to be reevaluated. Sedge blossom, forbs and shrub leaf drive calving range carrying capacity. Lack of lichen on calving ranges has erroneously led managers to call for herd suppression. Caribou herds are limited not by lichen as much as snow depth, spring phenology, and predation. Caribou winter habitat is predominantly lichen, and typically accessed through*

*migrations. Many lichen rich areas in North Central Alaska that historically were used by caribou have had little use for decades.*

*The Council believes this lack of annual forage evaluation deprives State and Federal managers of the information necessary to effectively manage caribou, particularly with respect to the recruitment and health of the animals as they approach winter months. It also does not allow for informed habitat management during critical summer months when caribou are calving and/or acquiring fat reserves for survival.*

*Recommendation. The Council asks that the Alaska Department of Fish and Game and Bureau of Land Management, along with other Federal agencies, take a more holistic approach to resource monitoring. This could occur by not limiting research to winter periods and lichen consumption, but rather assess the annual intake of vegetation by caribou, and how the overall habitat and seasons contribute to caribou reproduction and survivability.*

**Response:**

The Board is in agreement with the Western Interior Alaska Regional Advisory Council that Alaska's large caribou populations are deserving of a more comprehensive habitat research and management approach. Such an approach would provide valuable information and meaningful perspectives to annual census surveys and telemetry studies typically employed to assess population health. Habitat research can contribute to a more robust understanding of population dynamics in the face of anticipated resource development and climate change, benefiting both the resource and rural subsistence users. The Bureau of Land Management assured the Board that they will continue to support and promote initiatives that will improve our understanding of caribou populations.

**2. Office of Subsistence Management Comments to the Alaska Boards of Fish and Game**

*In alignment with ANILCA, §805(c) this Council notifies the Federal Subsistence Board of the need for the Office of Subsistence Management (OSM) to cite the authority under which the OSM delivers comments on proposals to the Alaska Boards of Fish and Game. The Council appreciates the Board's response to a similar inquiry presented in its 2017 Annual Report to the Board wherein the Board outlined the protocol by which the OSM comments are reviewed and submitted to the State. The Council does not believe, however, the response addressed concerns when OSM comments are in conflict with Council positions on State board proposals. In addition, there are frequent incidences where the OSM fails to comment on proposals impacting subsistence where the Council has taken a position.*

*Recommendation: The Council believes that the OSM is a facilitating organization and therefore should not be submitting comments to the Alaska Boards of Fish or Game outside of the regional advisory councils. As stated earlier, the Council would like the Board to cite the authority and/or policy under which the OSM submits these comments. The Council recognizes that comments to the State boards are critical to ensuring that subsistence resources are available to rural*

*communities. The Council would prefer that OSM staff resources be redirected towards assisting councils with written comments to the State boards from their respective communities, and when possible, represent the Councils at the Board of Game and Board of Fish meetings.*

**Response:**

The OSM, which is housed within the U.S. Fish and Wildlife Service (USFWS), serves as technical and administrative support to the Board, as outlined in 50 CFR 100.10(d)(8). OSM is responsible, among other duties, for reviewing and commenting on proposals before the Alaska Board of Fisheries and Alaska Board of Game on behalf of the Federal Subsistence Management Program.

OSM develops comments on proposals that have the potential to impact Federally qualified subsistence users. However, there are several types of proposals that OSM does not comment on, usually because they involve issues for which the Board does not have regulatory authority. These include issues related to allocation, predator control, most non-resident hunting seasons, and weapons restricted hunts, among others. Councils may have a desire to comment on these types of proposals, and Council positions on other proposals may differ from the programmatic positions of the Federal Subsistence Management Program for any number of reasons. Additionally, comments on the same proposals may differ between affected Councils. Each individual Council should be able to respond as they deem appropriate for their region.

Prior to submission of OSM generated comments to the Board of Fisheries or Board of Game, they are reviewed by the Interagency Staff Committee. Per Board direction, only comments for which there is unanimous support of the ISC are submitted.

Councils are encouraged to submit their own comments on proposals that affect their regions, and OSM staff can certainly assist Councils in terms of process. Additionally, under the Board's 2004 Council Correspondence Policy, each Council has the authority to submit its own individual comments or proposals directly to the Alaska Board of Fisheries or Board of Game.

**3. <u>Regulation Publications Deadline</u>**

*This Council notifies the Board of its concern over the late release of regulations for the 2018-2020 regulatory wildlife cycle. The final rule for the Federal Subsistence Management Regulations for the Taking of Wildlife on Federal public lands and waters in Alaska was published in the Federal Register (83 FR 50758) on October 9, 2018 – one hundred (100) days after previous regulations had expired on June 30, 2018. Printed copies of the regulation books were not available until after the Council conducted its fall meeting cycle on October 10-11, 2018 in Galena. As a result, subsistence users did not know which regulations had been changed at the Board's meeting held April 10-13, 2018. The late delivery of published regulations forced many subsistence users to rely on regulations that were outdated and possibly illegal.*

*<u>Recommendation:</u> The Council would like the Board to inform the Secretary of the Interior that*

*Federal subsistence fish and wildlife regulations are set in Federal statute by ANILCA to implement a priority for subsistence uses on Federal lands. Subsistence uses on Federal lands in Alaska are not under State authority, and the timely publication of Federal regulations is critical to thousands of subsistence users for the legal take of wild foods.*

**Response:**

Federal Subsistence regulations do not expire. They are amended by the Secretaries or the Board, but there is no expiration date. While the cover of the public regulations booklet appears to have the "effective" dates, the previous regulations are in effect until the new regulations are published in the Federal Register. All subsistence rulemaking documents for the year of 2018 were delayed. While OSM and Program staff completed their responsibilities in a timely manner, the process of getting these documents cleared through DOI and USDA took an unusually long time. The reasons provided for these delays were that key positions in the review/clearance process were unfilled and some positions that were filled had new appointees who were not familiar with the responsibilities of these positions.

This year the Federal fish regulations will again be late. This is due to the lapse in funding that closed parts of the Federal government. The Board met to address fish proposals after the start of regulatory fish season (the season starts on April 1 and the Board did not meet until April 15). During its April meeting, the Board approved several temporary special actions that allowed to immediately implement most regulatory revisions adopted during this meeting.

Staff made as many adjustments as possible in areas under OSM control to shorten the review process (e.g. reduced the time allowed for review, from two weeks down to one; combined Leadership Team and Interagency Staff Committee reviews into one event; requested expedited reviews in Washington, DC, and provided justification for the time sensitive nature of the request). However, OSM have no control over who or how long our rulemaking documents are reviewed in Washington, DC.

All OSM and Program staff are aware of the burden placed on subsistence users and continue to strive to have all regulatory changes published according to the specified dates in the regulations (April 1 for fish/shellfish and July 1 for wildlife).

**4. <u>National Wildlife Refuge staffing</u>**

*The Council remains concerned over current National Wildlife Refuge staffing, particularly in the Western Interior Alaska region. The past several years have seen a marked decrease in staffing, including the loss of eleven employees when the McGrath office of the Innoko National Wildlife Refuge closed. The Nowitna, Innoko and Koyukuk National Wildlife Refuge complex in Galena is currently down by four to five staff. Hiring freezes and delayed position approvals have reached critical levels at these refuges, resulting in the loss of both long and short term monitoring of fish and wildlife populations, as well as habitat health. The Kanuti and Yukon Delta refuges have also been negatively impacted. Existing staff at all of these refuges are*

*unable to perform the normal function of properly overseeing these Federal lands on behalf of the local communities that rely on them, and the American public.*

*Recommendation: The Council would appreciate it if the Federal Subsistence Board would continue to stress the need for adequate staffing for National Wildlife Refuges in Alaska, particularly in those field offices where local research plays a critical role in managing subsistence resources for rural communities.*

**Response:**

The Board appreciates the concern expressed by the Council to provide additional staffing for the National Wildlife Refuges in Alaska. Hiring freezes and changes in the position approval processes have affected the speed of filling positions, but, ultimately, budget decreases are a major contributor to decreased staffing. Funding for the entire National Wildlife Refuge System (NWRS) has decreased over the past several years while at the same time NWR's have experienced increased costs for overall operations. The USFWS funding is based on funds appropriated by Congress. With decreased budgets, the USFWS has had to make strategic decisions based on priorities. NWRS continues to meet their required obligations and base all wildlife and habitat management decisions on the best available science. If funding levels are restored in the future, the NWRS is ready to realign their workforce to better meet priorities. As also noted by the Council, changes in hiring practices have caused delays in filling positons. The Department of Interior, which includes the USFWS, recently reorganized their hiring divisions and modified hiring practices. These recent changes should result in more efficient hiring practices in the near future. The USFWS agrees that important positions are currently vacant. As funding permits, the USFWS goal is to efficiently and strategically hire to best meet regional needs.

**5. North Pacific Management Fisheries Council National Standards and Fishery Stocks**

*The Magnuson-Stevens Fishery and Conservation Act mandated that the National Oceanic and Atmospheric Administration (NOAA) Fisheries develop guidelines to ensure that U.S. marine fisheries are scientifically monitored, regionally managed, and legally enforced under a number of requirements, including ten national standards.*

*The Council believes that the North Pacific Fisheries Management Council (NPFMC) management of the Bering Sea/Aleutian Island (BSAI) trawl fleet is in violation of National Standard 8 - Communities requiring the following:*

> *Conservation and management measures shall, consistent with the conservation requirements of this Act (including the prevention of overfishing and rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities by utilizing economic and social data that meet the requirement of paragraph (2) [i.e ., National Standard 2], in order to (a) provide for the sustained participation of such communities, and (b) to the extent practicable,*

*minimize adverse economic impacts on such communities.*

*Chinook Salmon populations on the Yukon River have failed for nearly twenty years. Similar runs on the Kuskokwim River have also failed for multiple prolonged periods of time. This Council believes that both the BSAI and NPFMC have grossly underestimated the socioeconomic impacts on the communities in our region that have endured reduced subsistence and zero commercial harvests for Chinook Salmon. Subsistence is in fact an economy and the continual suffering of our communities is evidence that the NPFMC is not upholding National Standard 8.*

*Recommendation: The Council asks the Federal Subsistence Board to request that the NPFMC take immediate measures to come into compliance with National Standard 8 by recognizing the significant socioeconomic impacts to local communities of poor salmon runs. One way to shift towards compliance is to reduce the allowable bycatch for Chinook Salmon by commercial trawlers.*

*Communities in Interior Alaska and other regions have been seeking relief for poor salmon runs for at least two decades. It is requested that the NPFMC take urgent action to remedy the conditions and provide respite for communities in the Yukon/Kuskokwim drainages that have been suffering due to the poor management structure for salmon in the marine environment.*

**Response:**

Estimated bycatch of Chinook Salmon has averaged 35,309 per year between 1991 and 2016. Bycatch of Chinook Salmon in the Bering Sea decreased dramatically from a high of 121,770 in 2007 to 17,379 in 2018. The current estimate for 2019 is 19,299, with most fish caught during the Pollock A season, which occurs during the winter. It is important to note that not all of these Chinook Salmon were bound for the Yukon River. In 2016, the estimated Chinook Salmon bycatch in the Bering Sea was 21,917 fish. Approximately 33.8 percent (7,147), 1.4 percent (251), and 1.8 percent (529) fish originated from coastal western Alaska, the middle Yukon River, and the upper Yukon River, respectively. The coastal western Alaska stocks are comprised of stocks from the Kuskokwim, Yukon, and Norton Sound. Results indicate that the Adult Equivalency (relative number of salmon caught annually as bycatch that would otherwise be returning to the river system) relative to the region remains low (<2 percent of run size) since the implementation of new management requirements under Amendments 91 and 110 (implemented in 2011 and 2016). Information on the North Pacific Fisheries Management Council is available here: https://www.npfmc.org/salmon-bycatch/.

The Board's authority is limited to providing a subsistence priority for the use of fish and wildlife taken from Federal public lands under Title VIII of the Alaska National Interest Lands Conservation Act (ANILCA). However, the Board does encourage Council members to attend North Pacific Fisheries Management Council (NPFMC) meetings to voice their concerns directly to that council. In addition, if members of the Council are interested in serving on the NPFMC, the information to apply can be forwarded once the application process is open again. Membership information can be found here: https://www.npfmc.org/council-members.

The NPFMC meets five times each year with three of the meetings held in Anchorage, one in a fishing community in Alaska, and another in Seattle or Portland. The meeting typically last 7 days, and is open to the public except for the occasional closed session. There are 11 voting members and 4 non-voting members. The voting members include seven private citizens who are familiar with the fishing industry and/or marine conservation. These members are appointed by the Secretary of Commerce from lists submitted by the Governors of Alaska and Washington. An overview of the full NPFMC process is available through their website: https://www.npfmc.org/wp-content/PDFdocuments/help/Navigating_NPFMC.pdf

The Board understands your concern in this area and requests that the Council provide recommended language for the Board's consideration if the Council would like the Board to further pursue the National Standard 8 discussion with the NPFMC.

**6. <u>Effects of Hatchery Fish on Wild Salmon Stocks</u>**

*The Council is equally concerned over the potential impact of hatchery fish on wild stocks of Alaska salmon, in both the marine and freshwater environments. Hundreds of millions of Chum and Pink Salmon fry are released into the marine environment from Alaska, British Columbia and Washington State. There appear to be no data to understand the impacts of this competing population or the biological carrying capacity of the marine environment to sustain these numbers. Indigenous fish stocks must compete for food with these hatchery fish, which are released into the oceans well fed and vigorous.*

*<u>Recommendation</u>: The Council believes it is critical that the NPFMC and others recognize and manage for the potential impacts of hatchery fish to ensure the conservation and sustainability of wild stocks of salmon in Alaska.*

**Response:**

The Board shares your concerns for artificial propagation and its effects on wild stocks of salmon. There is currently one hatchery in the Yukon River Drainage and none in the Kuskokwim River Drainage. The hatchery on the Yukon River is located in Whitehorse, Yukon Territory, providing mitigation for the hydroelectric dam located there. The annual release target is 150,000 Chinook Salmon fry.

As was noted in the response to the topic #5 in your report, the Board's authority in outlined in the Title VIII of ANILCA and is limited to providing for a subsistence priority on Federal public lands. Again, the Board advises Council members to participate in the NPFMC meetings and apply to serve on this council.

Scientific literature indicates that stocking hatchery fish or eggs may result in negative consequences for wild salmon. Hatchery juveniles compete with wild juveniles for food and prime habitat, potentially decreasing growth and survival for the wild fish. Along with the

higher densities in prime habitat comes predators, potentially causing higher rates of predation for the wild juveniles. Scientific research indicates that introduction of hatchery fish can also bring pathogens and parasites into a system, or cause higher incidence of disease and mortality in wild fish. In addition, straying domestics can compete with wild fish for prime spawning locations, potentially reducing egg-survival of wild fish. Cross breeding may lead to diluted genetics in the wild stocks, reducing fitness and survival.

One of the most thorough literature reviews on interactions of hatchery and wild salmon in the marine environment is still the May 2012 special issue of the journal Environmental Biology of Fishes (Volume 94, Number 1, Ecological Interactions of Hatchery and Wild Salmon). This article published results from numerous studies and reviews presented at a conference organized by the Wild Salmon Center in Portland, Oregon. This publication contains a collection of 22 studies conducted by various university scientists and government agency fisheries researchers that address potential impacts of hatcheries to wild salmon stocks throughout the Pacific Rim in Russia, Japan, Canada and the United States. Most of the articles pertain to hatchery management on other regions but a couple of papers report on investigations of hatchery fish interactions at sea that may be applicable to Western Alaska wild salmon stocks..

The Board would also like to direct the Council to the more recent publication *New Research Quantifies Record-Setting Salmon Abundance in North Pacific Ocean* (https://fisheries.org/2018/04/new-research-quantifies-record-setting-salmon-abundance-in-north-pacific-ocean/). The Board highly encourages the Council to invite subject matter experts to speak about the research findings.

**7. Donlin Mine - Location of Natural Gas Pipeline**

*The Council is currently concerned with the proposed gas pipeline route for the Donlin mine planned for construction along the foothills. This area is prime habitat for fish and wildlife and critical to subsistence hunters in the area. Placing a pipeline in this area would open up every drainage to four-wheelers, camps and outside hunters. A small, but significant herd of caribou come down to these foothills each fall. There is considerable movement of moose that could be impacted. Many of these drainages also support important fish spawning areas.*

*Recommendation: An alternative route for the gas pipeline could pass through areas of black spruce below the foothills that are not prime fish and wildlife habitat and would incur the least impact to habitat. Areas of black spruce should be declassified as wetlands and reclassified as a peat bog environment, which would allow for the placement of a natural gas pipeline to the mining areas with the least adverse impact.*

**Response:**

The Federal permitting process conducted by the Bureau of Land Management and Army Corp of Engineers for the Donlin Mine pipeline corridor has been completed and, therefore, no further comments for re-routing the pipeline are being accepted. The Joint Record of Decision and

Permit Evaluation document is available on line at https://www.donlingold.com/wp-content/uploads/2018/08/Donlin-Gold-Corps-BLM-Joint-Record-of-Decision.pdf That said, the Council could consider submitting a request to reassess the corridor based on information regarding impacts to subsistence or sport hunting, so it would become a part of administrative record. This type of request generally requires new information that was not previously analyzed during the original permitting process.

**8. Climate Change**

*The Council believes that Interior Alaska's rate of warming is uniquely rapid and causing adverse effects for subsistence users in the region, most notably affecting access to subsistence resources and changes in phenology and migration patterns for fish, plants, waterfowl and wildlife.*

*Recommendation: The Council would like the Board to communicate through the Secretary of the Interior to the Secretary of Energy that climate change is threatening subsistence activities in Interior Alaska and that a National energy policy that is more responsive to climate change is needed.*

**Response:**

The Board shares your concern over the disproportionate impact of climate change on vital subsistence species and their environment in the Western Interior region and throughout Alaska. Within the last five years, eight of the ten Regional Advisory Councils have raised the issue of climate change and its effects on subsistence resources and activities in their reports to the Board. Regardless, it is beyond the scope of the Board's authority to advocate directly for a more responsive National energy policy. The most effective approach would be for Council members and their constituents to work as individuals or through tribal, regional, and statewide organizations to submit comments and recommendations directly to the Secretary of Energy.

In closing, I want to thank you and your Council for your continued involvement and diligence in matters regarding the Federal Subsistence Management Program. I speak for the entire Board in expressing our appreciation for your efforts and am confident that the subsistence users of the Western Interior Region are well represented through your work.

Sincerely,

Anthony Christianson
Chair

cc: Federal Subsistence Board

Thomas Doolittle, Acting Assistant Regional Director, Office of Subsistence Management
Thomas Whitford, Acting Deputy Assistant Regional Director
Office of Subsistence Management
Jennifer Hardin, PhD, Subsistence Policy Coordinator, Office of Subsistence Management
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Administrative Record

# Federal Subsistence Board

**1011 East Tudor Road, MS 121**
**Anchorage, Alaska 99503 - 6199**

**FISH and WILDLIFE SERVICE**
**BUREAU of LAND MANAGEMENT**
**NATIONAL PARK SERVICE**
**BUREAU of INDIAN AFFAIRS**

**FOREST SERVICE**

OSM 19061.KW

Louis Green, Chair
Seward Peninsula Subsistence
Regional Advisory Council
c/o Office of Subsistence Management
1101 East Tudor Road, MS 121
Anchorage, Alaska 99503

Dear Chairman Green:

This letter responds to the Seward Peninsula Subsistence Regional Advisory Council's (Council) fiscal year 2018 Annual Report. The Secretaries of the Interior and Agriculture have delegated to the Federal Subsistence Board (Board) the responsibility to respond to these reports. The Board appreciates your effort in developing the Annual Report. Annual Reports allow the Board to become aware of the issues outside of the regulatory process that affect subsistence users in your region. We value this opportunity to review the issues concerning your region.

**1. <u>Chinook and Chum Salmon Bycatch on the Bering Sea</u>**

*The Council continues to be concerned about the bycatch of Chinook and Chum Salmon in the Bering Sea and its impacts on subsistence resources in the Seward Peninsula. The Chinook Salmon stocks have been depressed for years, yet little seems to be done to alleviate the burden on subsistence users. The Chum Salmon are also suffering, likely due to bycatch. In contrast, the Pink Salmon are extremely abundant and may also be impacting Chinook and Chum populations. Pink Salmon need to be managed so that subsistence needs for Chinook and Chum Salmon can be met.*

*<u>Recommendation</u>: The Alaska Department of Fish and Game (ADF&G), and where applicable, Federal agencies, need to manage salmon populations on the high seas so that subsistence needs for Chinook and Chum Salmon are met.*

**Response:**

The North Pacific Fisheries Management Council (NPFMC) is responsible for managing the commercial fisheries off the coast of Alaska including the bycatch of Chinook and Chum Salmon in the Bering Sea. In 2016, the NPFMC took action to reduce salmon bycatch in the Bering Sea by implementing a new management strategy. Since that time the bycatch of Chinook Salmon has decreased from a high of 121,770 in 2007 to 17,379 in 2018. In addition, the bycatch of Chum Salmon has decreased from a high of 505,974 in 2005 to 343, 001 in 2016. It is important to note that the most recent genetic work estimated less than half of the salmon bycatch was bound for coastal western Alaska. Based on genetic work completed in 2016, approximately 34 percent of Chinook Salmon and 19 percent of Chum Salmon caught were from coastal western Alaska. Information on the NPFMC is available here: https://www.npfmc.org/salmon-bycatch/.

The Board's authority is limited to providing a subsistence priority for the use of fish and wildlife taken from the Federal public lands under Title VIII of the Alaska National Interest Lands Conservation Act (ANILCA). However, the Board does encourage Council members to attend the NPFMC meetings to voice their concerns directly to that Council. In addition, if members of the Council are interested in serving on the NPFMC, the information to apply can be forwarded once the application process is open again. Membership information can be found here: https://www.npfmc.org/council-members/.

The NPFMC meets five times each year with three of the meetings held in Anchorage, one in a fishing community in Alaska, and another in Seattle or Portland. The meetings typically last seven days, and are open to the public except for the occasional closed session. There are 11 voting members and 4 non-voting members. The voting members include seven private citizens who are familiar with the fishing industry and/or marine conservation. These members are appointed by the Secretary of Commerce from lists submitted by the Governors of Alaska and Washington. An overview of the full NPFMC process is available through their website: https://www.npfmc.org/wp-content/PDFdocuments/help/Navigating_NPFMC.pdf

**2. <u>Moose Management in Unit 22</u>**

*The Council has had lengthy discussions and has taken different actions in the past on moose issues in Unit 22. The Council is especially concerned about low moose densities in Units 22D remainder and 22E, as well as the potential impacts of guided moose hunting on moose migration into Unit 22A.*

*In Unit 22D remainder, cow moose hunts have been temporarily eliminated via special actions and non-resident hunting on Federal Public lands is prohibited. While the moose population does not appear to be decreasing, it has not improved in response to these changes. Moose in this region have largely been managed via subunit. In 2016, Tony Gorn, former area biologist from ADF&G, reported that moose were likely migrating between subunits 22D remainder and 22E, making it difficult to ascertain what was happening with the individual subunit populations. Management, however, has not responded with appropriate hunting regulations. For example,*

*in Unit 22E, State hunting regulations are still liberal with non-residents taking between 14 and 16 moose annually.*

*In Unit 22A, guided moose hunting could be impacting migration of moose from Units 21E and 18 into Unit 22A. Management needs to find a way to allow these moose to migrate unimpeded into areas where moose are not abundant and where moose are needed for subsistence.*

*Recommendation: The Council would like ADF&G and Bureau of Land Management (BLM) to study moose migration dynamics between Units 22E and 22D remainder, and to consider managing moose in these sub-units as one population. The potential for migration has been observed and articulated, yet managers have failed to respond, and harvest by non-residents in Unit 22E is high despite low moose densities. The Council intends to submit a proposal to permanently eliminate the cow moose hunt in Unit 22D remainder and limit hunting in this unit to Federally qualified subsistence users only. The Council will also continue to propose to the Board of Game that non-resident hunting in Unit 22E be eliminated until moose densities in the area have increased.*

*The Council is also requesting that ADF&G and the BLM consider the impacts of guided moose hunting on moose in Unit 22A.*

**Response:**

There are consistent reports of movement by moose between Units 22E and 22D remainder. However, the timing and magnitude of these migrations have not been quantified through telemetry studies and aerial surveys. Recent trend counts and surveys in the Unit have been constrained by poor weather and visibility. For management purposes, these moose are considered a single population and, as such, special actions to eliminate cow harvest opportunities have been supported by the Board in response to the population's stable status. Harvest management using sub-units can be used to disperse effort to reduce user conflict, target specific segments of a population, and to regulate the pace of harvesting. Because of the mixture of Federal and State managed lands in the sub-units, moose conservation actions taken by the Board are potentially diminished because harvest by non-Federally qualified users can easily shift to State managed lands. As a result, closure of additional Federal lands to non-Federally qualified moose hunters may slightly improve rural hunter's success, but may not result in a conservation benefit for the moose population. The Board agrees that a better understanding of moose movement between the sub-units would benefit management options aimed at both conservation efforts and improved harvest by rural Alaskans.

Moose immigration into Unit 22A, from adjacent Unit 21E and Unit 18 where moose densities are significantly higher, has been inferred from direct observations by locals and guides. While these observations are positive indicators for future improvement in Unit 22A, there is no direct evidence that guided hunting activities in adjacent units are hindering moose movements into Unit 22A. While BLM does permit commercial guided hunts on their lands in Unit 21E, habitat conditions, availability of forage, and reproduction are the primary drivers that result in moose movements from high density areas to adjacent areas with fewer moose.

## 3. Predator Management

*The Council is concerned about the lack of bear population abundance data and possible impacts from increased bear harvests throughout the region. Harvests could be insufficient to reduce populations, or detrimental to the conservation of the resource. It is difficult to manage bear populations in Unit 22 without surveys to estimate density. The Council is also very concerned about the status of wolf populations in Unit 22, as there are increasing reports from villages of wolves coming into the area. There needs to be a proper assessment of wolf populations and a management strategy to deal with predation on important game species.*

*Recommendation: The Council would like to see bear surveys conducted so that the resource can soundly managed. The Council recognizes that wolf control is outside the jurisdiction of the Board and is largely needed on State lands. As a result, the Council will be discussing the possibility of submitting a proposal to the State of Alaska Board of Game.*

**Response:**

Thank you for bringing the Council's concern about bear population and surveys to the attention of the Board. The Board acknowledges that the Council would like to see more research on bear abundance and density in order to inform local management and harvest levels. The Alaska Department of Fish and Game (ADF&G) and Federal land management agencies (USFWS, BLM, NPS, and USFS) are responsible for both brown bear and wolf population research and management in Alaska.

The last time brown/grizzly bear population surveys were conducted for your region was 2015. That research was a joint effort between the National Park Service and the State of Alaska. Results indicated the bear density at 36.5 bears/1000 $km^2$ for Unit 22 (ADF&G 2017), and did not indicate a change in density compared to previous research in the early 1990s (Miller et al. 1993). The National Park Service is planning future brown bear surveys for 2020 in collaboration with ADF&G.

In addition to field studies by biologists, bear harvest data from resource users are vital for informing ADF&G's population estimates over time. Between 1991 and 2015, reported brown bear harvests almost doubled for Unit 22. The submission of accurate and timely harvest data is a very important role the Council can encourage from all users as this data is key to informing bear management.

The Council can write a letter to ADF&G expressing its desire to have additional and ongoing bear survey work given priority in the future. The Council could also request that ADF&G and Federal land management agencies within the region to give a presentation at the next Council meeting about how bear harvest data are used to inform population and density estimates for Unit 22.

*Literature Cited:*

Alaska Department of Fish and Game. 2017. The Status of Brown Bears and Factors Influencing Their Populations. Division of Wildlife Conservation, Annual Performance Report 1 July 2016-30 June 2017, Federal Aid in Wildlife Restoration Project 4.0, Juneau.

Miller, S., & Nelson, R. R. 1993. Brown Bear: A Brown Bear Density and Population Estimate for a Portion of the Seward Peninsula, Alaska. Alaska Department of Fish and Game, Division of Wildlife Conservation.

In closing, I want to thank you and your Council for your continued involvement and diligence in matters regarding the Federal Subsistence Management Program. I speak for the entire Board in expressing our appreciation for your efforts and am confident that the subsistence users of the Seward Peninsula Region are well represented through your work.

Sincerely,

Anthony Christianson
Chair

cc: Federal Subsistence Board
Thomas Doolittle, Acting Assistant Regional Director, Office of Subsistence Management
Thomas Whitford, Acting Deputy Assistant Regional Director
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# Federal Subsistence Board

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**NATIONAL PARK SERVICE**
**BUREAU of INDIAN AFFAIR**

**FOREST SERVICE**

OSM 190061.KW

Michael Chad Kramer, Chair
Northwest Arctic Subsistence Regional Advisory Council
c/o Office of Subsistence Management
1101 East Tudor Road, MS 121
Anchorage, Alaska 99503-6199

Dear Chairman Kramer:

This letter responds to the Northwest Arctic Subsistence Regional Advisory Council's (Council) fiscal year 2018 Annual Report. The Secretaries of the Interior and Agriculture have delegated to the Federal Subsistence Board (Board) the responsibility to respond to these reports. The Board appreciates your effort in developing the Annual Report. Annual Reports allow the Board to become aware of the issues outside of the regulatory process that affect subsistence users in your region. We value this opportunity to review the issues concerning your region.

**1.<u>More research needed to understand wildlife populations and distribution</u>**

*There needs to be more research to better understand changes in wildlife distribution affecting Federally qualified subsistence users in the Northwest Arctic region. Specifically, the Council identifies the need for research to better understand the distribution and abundance of caribou. Federally qualified subsistence users rely on the Western Arctic Caribou Herd (WACH), which provides an important subsistence resource for many families throughout the region. The availability of research data on caribou distribution and abundance could assist decision makers in managing this important subsistence resource.*

*Additionally, local observations note the encroachment of beavers in the Northwest Arctic, specifically in areas where the animals have not previously been seen. Beaver lodge and dam construction has been associated with changes in hydrology. Beavers are also associated with changes to water quality potentially affecting human health associated with the spread of the infectious intestinal parasite <u>Giardia lamblia</u>. The availability of research data on beaver distribution and abundance could assist decision makers in managing this resource.*

**Response:**

*Caribou*

The Board acknowledges the need for more research to better understand and manage wildlife populations in the Northwest Arctic region. However, the WACH is one of the most researched herds in the world. Current and on-going research and monitoring projects are summarized below. (Note: As these are current research projects, no publications are available, yet). Enclosed with this response is a list of research papers (in chronological order) published about the WACH in the last 15 years.

The Alaska Department of Fish and Game (ADF&G) is currently conducting a calf survival study in response to the WACH population decline. The purpose of the study is to establish a baseline for neonate survival and to evaluate specific causes of mortality. The study began in 2017 and will conclude in 2019. Preliminary results indicate predation as a major cause of mortality.

The National Park Service (NPS) is currently studying annual variability of the WACH calving grounds to determine factors causing shifts in calving locations. Preliminary results indicate that caribou select flat areas with no snow and high plant diversity for calving.

The Wilderness Society is conducting research on potential impacts of proposed road corridors on WACH migration. The objectives of the study include determining features selected or avoided by caribou during migration and determining the effects of roads on caribou migration and on subsistence hunters. Preliminary results indicate caribou avoid roads, dense vegetation, and rugged terrain while migrating.

The environmental consulting firm, ABR, Inc., is conducting an analysis on herd interchange (movement to another herd) and overlap between the WACH, Central Arctic, Teshekpuk, and Porcupine caribou herds. The analysis found interchange from the large WACH and Porcupine herds is uncommon whereas interchange from the smaller Teshekpuk and Central Arctic herds is common. These results suggest population and distribution of smaller caribou herds (i.e. Teshekpuk) can be substantially affected by interchange to another herd. However, interchange on a large herd such as the WACH probably does not have a noticeable effect.

The NPS and ADF&G deploy radio-collars every year to monitor WACH abundance and distribution. NPS reports on annual variability of seasonal distribution and migration routes of the WACH are available on their website: https://www.nps.gov/im/arcn/caribou.htm and are titled "Caribou Vital Sign Annual Report for the Artic Network Inventory and Monitoring Program." These reports contain maps depicting seasonal distributions of radio-collared caribou and figures showing migration routes across the Noatak River. Their website also contains information and links to caribou research.

The WACH Working Group's (WACH WG) website is another great resource to learn about and access WACH research: https://westernarcticcaribou.net. The group maintains an annotated bibliography, which cites WACH research papers by topic and includes a brief summary of the research. The group also identifies research priorities for the WACH, and agency personnel consider these priorities when designing new research projects and applying for funding. If the Northwest Arctic Council has additions or modifications to this list, they can consult with the WACH WG by relaying their research priorities to their Council Coordinator, who can notify the WACH WG.

Council members can also express research needs to agency personnel attending the fall and winter Council meetings. Agency personnel have expressed interest and appreciation in hearing from the Northwest Arctic Council on research needs and local observations of the resource.

*Beavers*

Beavers in the Arctic is a relatively new research topic. The Northwest Arctic Council identified beaver research as a priority information need for the Fisheries Resource Monitoring Program (FRMP), specifically the effects of expanding beaver populations and range on subsistence fisheries in the Northwest Arctic, including the effects of dams on fish migration and the effects of changes to water quality on fish health. Researchers with ADF&G and the University of Alaska-Fairbanks (UAF) submitted a proposal to integrate mapping and Traditional Ecological Knowledge of beavers to better understand the changes occurring. The focal communities for this research are Noatak, Kotzebue, Kobuk, and Shungnak. The Northwest Arctic Council will have an opportunity to discuss this proposal at their fall 2019 meeting.

Tape et al. (2018) examined the recent expansion of beavers into the Arctic and considered its effects. Using satellite imagery, they identified 56 new beaver pond complexes in the Wulik-Kivalina River and Lower Noatak River watersheds since 1999. Beaver ponds increase winter water temperatures and contribute to thawing permafrost, although many biological implications of beavers expanding into the Arctic are unknown.

NPS, UAF, and the U.S. Geological Survey recently received funding to study the effects of beaver range expansion in the Arctic on stream water quality, fish, and permafrost. Field work for the study will begin in summer 2019; study sites include Bering Land Bridge National Preserve, Cape Krusenstern National Monument, and Noatak National Preserve.

The Board highly encourages the Council invites subject matter specialists to talk about this research at the public meetings.

Literature Cited

Tape, K.D., B.M. Jones, C.D. Arp, I. Nitze, G. Grosse. 2018. Tundra be dammed: Beaver colonization of the Arctic. Global Change Biology. 24: 4478-4488.

**2. <u>Population data needs for the Western Arctic Caribou Herd</u>**

*There is a critical need for timely Western Arctic Caribou Herd (WACH) population data. This data is essential to effective management of caribou in the region. The WACH provides meat essential to ensuring the food security needs of Federally qualified subsistence users in the Northwest Arctic Region. Over the past three years, during a decline of the WACH population, the Northwest Arctic Subsistence Regional Advisory Council initiated two special actions and a Federal wildlife regulatory proposal. These actions sought to conserve the WACH while promoting Federal subsistence hunting opportunity consistent with Title VIII of ANILCA. The WACH is a primary resource for all users, yet the Alaska Department of Fish and Game was unable to complete the annual population survey of the WACH in 2018 due to weather conditions. The Council is concerned about the status of the WACH and requests updated and timely population data be provided to the Council.*

**Response:**

The Board recognizes the importance of the WACH to Federally qualified subsistence users in the Northwest Arctic Region. The Alaska Department of Fish and Game (ADF&G) conducts photo censuses of the WACH during the summer when caribou are usually tightly aggregated to avoid insects. However, in 2018, a cool front reduced insect harassment. Therefore, the caribou did not form large aggregations and were too scattered and dispersed across the landscape to conduct a reliable photo census. ADF&G plans to attempt another photo census in summer 2019.

Photo census data requires extensive processing, but results are usually available by late fall. ADF&G staff attend Northwest Arctic Council meetings and provide the Council with the most recent population data for the WACH. If photo census data is not available by the Northwest Arctic Council's fall 2019 meeting, population data are always presented to the WACH Working Group at their annual meeting in December. This information can be accessed on their website at https://westernarcticcaribou.net.

Please see the Board's response to the topic 1 in this reply for a more thorough overview of WACH research.

**3. <u>Disturbances to the lead migration of the Western Arctic Caribou Herd</u>**

*Over the years, the Council has heard extensive public testimony describing the adverse effects to Federally qualified subsistence users resulting from disturbing the lead migration of the WACH. This behavior is caused by non-local users, who are not aware of or do not respect the local tradition known as "let the leaders pass." It would be helpful if there were convenient ways for locals out in the field to make timely reports of their observations of behavior that disrupts caribou migration. The Council requests support from both State and Federal law enforcement with addressing this persistent problem.*

**Response:**

Disturbance to the lead migration of the WACH long been of concern in both the Northwest Arctic and the North Slope regions of the state. This issue has been brought to the Board's attention for several years, especially in light of declining caribou population numbers. We recognize the importance of allowing lead cow caribou to establish migratory paths and the Board is committed to working with you, our Federal agencies, and partner organizations to continue to try to address this issue. We are pleased to learn that efforts are underway to coordinate information sharing and law enforcement in the Northwest Arctic.

Law enforcement personnel in the Northwest Arctic region recently formed the Northwest Arctic Conservation Law Enforcement Working Group. This group includes representatives from NANA, Alaska Wildlife Troopers, the National Park Service, U.S. Fish and Wildlife Service, and Bureau of Land Management. The group plans to meet four times per year. Its first meeting was held in December 2018 and its second meeting was held in April 2019. The group plans to meet the day before Northwest Arctic Council meetings whenever possible, so they can include the Council in discussions and updates. Representatives from the group presented at the Council's 2019 winter meeting, engaging Council members in discussion and answering questions.

The group will strive to increase community engagement and unify messaging on how to observe and report violations. One initiative of the group is to establish a centralized phone number for law enforcement issues in the Northwest Arctic. This would reduce confusion regarding who needs to be contacted and what number to call about law enforcement concerns, such as land status and jurisdiction in the region. The group also suggests that the public contact any agency staff to report herd movements. This will help law enforcement staff focus patrols around lead caribou, when possible. Law enforcement representatives also commented that pictures and videos are very helpful in investigations.

The Board encourages the Council to continue engaging with the Northwest Arctic Conservation Law Enforcement Working Group to address regional law enforcement issues, including disturbances to caribou migration. We look forward to reviewing the effectiveness of this group over time and hope that it can begin to alleviate concerns regarding disturbance to lead cow caribou.

**4. <u>Need for updated population data on Dall sheep</u>**

*The Council has noted concern on the record for the decline in Dall sheep throughout the region. Most of the Dall sheep population is found on National Park Service and State lands. As such, the National Park Service and Alaska Department of Fish and Game need to make it a priority to regularly obtain current Dall sheep population census data for the Northwest Arctic region. The Council requests that reports on the population status be provided at its meetings. Management and recovery of sheep in the Northwest Arctic region could benefit from updated sheep population census data.*

**Response:**

The Board thanks the Council for bringing its concern regarding declining Dall sheep population in the Northwest Arctic Region to its attention. The National Park Service (NPS) regularly surveys Dall sheep populations in the Brooks Range as part of its Arctic Inventory and Monitoring Network (Arctic Network). Surveys of smaller sampling areas, such as the western Baird Mountains, central De Long mountains, and areas surrounding Anaktuvuk Pass, are attempted annually in recent years. Other, larger surveys, such as the one that covers all of Gates of the Arctic National Park and Preserve (GAAR), are attempted approximately every five years. The next survey covering all of the GAAR is scheduled for 2020. Please see the enclosed sheep monitoring summary reports of last year for detailed information on the sizes of various sheep populations in the Brooks Range.

Although the sheep/bear biologist position in the Arctic Network is currently vacant, the NPS still plans to conduct surveys during summer 2019 in the same survey areas as last year. A large survey across all of the GAAR is planned for 2020. Also the Arctic Network is in the process of hiring a new biologist and plans to fill this position by the end of fiscal year 2019. NPS will continue to include available sheep population updates as part of their agency report to the Council.

In closing, I want to thank you and your Council for continued involvement and diligence in matters regarding the Federal Subsistence Management Program. I speak for the entire Board in expressing our appreciation for your efforts and am confident that the subsistence users of the Northwest Arctic Region are well represented through your work.

Sincerely,

Anthony Christianson
Chair

Enclosures

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Benjamin Mulligan, Deputy Commissioner, Alaska Department of Fish and Game

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# Enclosure 1

Western Arctic Caribou Herd research papers

Cameron, M. D., K. Joly, G. A. Breed, L. S. Parrett, and K. Kielland. 2018. Movement-based methods to infer parturition events in migratory ungulates. Canadian Journal of Zoology 96: 1187-1195. DOI: 10.1139/cjz-2017-0314.

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# Enclosure 2

Ecosphere

Delayed spring onset drives declines in abundance and recruitment in a mountain ungulate.

Kumi L. Rattenbury, Joshua H. Schmidt, David K. Swanson, Bridget L. Borg, Buck A. Mangipane, and Pam J. Sousanes

Appendix S1: Survey details and population estimates for all unpublished Dall's sheep data used in the manuscript. Also included are the annual CSS metrics used in the manuscript.

Table S1. Survey effort information and estimates of Dall's sheep abundance from aerial distance sampling surveys in Western Arctic National Parklands (WEAR), Gates of the Arctic National Park and Preserve (GAAR), Denali National Park and Preserve (DENA), Nabesna subarea of Wrangell St. Elias National Park and Preserve (WRST), and Lake Clark National Park and Preserve (LACL), 2009-2016. Estimates are also shown for subareas of WEAR, GAAR and LACL including the western Baird Mountains (W Baird), Itkillik, and central LACL, respectively. Estimates are shown with 95% Bayesian Credible Intervals and Coefficient of Variation (CV).

| Park /Subarea | Year | Survey dates | Transects: Number Completed/Total, Length (km), Grid (km) | Buffer area as % of total area | Observed sheep groups | Observed total sheep | Total Sheep | Adult Sheep | Lambs | Ewe-like Sheep | Total Rams | Small Rams (< full-curl) | Large Rams (≥ full-curl) | Lambs:Ewe-like |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WEAR All | 2011 | 7-10 Jul | 260/267, 20, 7.5 | 18% | 100 | 330 | 2,814 (2,326-3,516) CV=11% | 2,226 (1,836-2,823) CV=11% | 588 (445-782) CV=15% | 1,672 (1,363-2,153) CV=12% | 554 (432-739) CV=15% | 490 (377-649) CV=16% | 64 (41-109) CV=27% | 0.35 (0.27-0.46) CV=14% |
| WEAR All | 2014 | 30 Jun-6 Jul | 164/175, 20, 7 | 19% | 30 | 96 | 802 (604-1,104) CV=16% | 784 (583-1,080) CV=16% | 18 (10-35) CV=51% | 623 (457-872) CV=16% | 161 (97-261) CV=25% | 152 (94-250) CV=26% | 9 (5-29) CV=85% | 0.03 (0.01-0.07) CV=49% |
| /W Baird | 2011 | 7-10 Jul | 43/43, 15, 6 | 21% | 17 | 96 | 643 (505-864) CV=14% | 524 (413-716) CV=15% | 119 (81-183) CV=23% | 424 (339-578) CV=15% | 100 (67-158) CV=25% | 90 (57-144) CV=27% | 9 (5-24) CV=60% | 0.28 (0.19-0.42) CV=21% |
| /W Baird | 2014 | 30 Jun-6 Jul | 49/49, 15, 6 | 22% | 15 | 51 | 350 (253-506) CV=19% | 347 (251-500) CV=18% | 3 (0-11) CV>100% | 299 (228-425) CV=17% | 48 (22-100) CV=43% | 46 (18-97) CV=44% | 2 (0-10) CV>100% | 0.01 (0.00-0.05) CV>100% |
| /W Baird | 2015 | 21,22,27 Jun | 62/62, 15, 5.5 | 29% | 8 | 50 | 234 (172-329) CV=18% | 199 (148-279) CV=18% | 35 (24-59) CV=34% | 162 (124-219) CV=18% | 38 (24-73) CV=34% | 36 (24-67) CV=31% | 2 (0-11) CV>100% | 0.22 (0.13-0.39) CV=31% |
| /W Baird | 2016 | 2-3 Jul | 75/75, 15, 5 | 33% | 13 | 33 | 196 (126-309) CV=24% | 148 (95-238) CV=25% | 47 (25-84) CV=36% | 127 (80-207) CV=26% | 21 (9-48) CV=51% | 13 (6-25) CV=58% | 8 (3-26) CV=84% | 0.38 (0.19-0.70) CV=35% |
| GAAR All | 2009 | 23-30 Jun, 22-25 Jul | 308/316, 20, 10 | 12% | 146 | 622 | 8,766 (7,139-10,930) CV=12% | 7,375 (5,968-9,224) CV=12% | 1,391 (1,042-1,846) CV=15% | 4,992 (4,014-6,353) CV=13% | 2,383 (1,859-3,036) CV=13% | 1,687 (1,286-2,196) CV=14% | 695 (501-946) CV=17% | 0.28 (0.22-0.35) CV=12% |
| GAAR All | 2010 | 6-13 Jul | 318/321, 20, 9 | 14% | 214 | 538 | 9,313 (7,653-11,280) CV=10% | 7,531 (6,154-9,152) CV=11% | 1,781 (1,377-2,282) CV=13% | 4,821 (3,887-5,977) CV=12% | 2,710 (2,160-3,350) CV=12% | 1,794 (1,426-2,277) CV=13% | 916 (686-1,204) CV=15% | 0.37 (0.30-0.46) CV=11% |
| GAAR All | 2015 | 9-14 Jul | 392/392, 20, 9 | 15% | 188 | 706 | 6,898 (6,158-7,766) CV=6% | 5,526 (4,910-6,244) CV=6% | 1,372 (1,178-1,564) CV=9% | 3,461 (3,080-3,951) CV=7% | 2,065 (1,760-2,419) CV=8% | 1,646 (1,394-1,914) CV=9% | 419 (322-524) CV=14% | 0.40 (0.34-0.47) CV=8% |
| /Itkillik | 2009 | 23-30 Jun | 26/26, 20, 10 | 13% | 32 | 151 | 1,759 (1,396-2,258) CV=13% | 1,549 (1,238-1,991) CV=13% | 210 (126-303) CV=25% | 1,235 (1,012-1,556) CV=11% | 314 (188-486) CV=25% | 244 (157-370) CV=25% | 70 (24-141) CV=46% | 0.17 (0.11-0.25) CV=22% |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| /Itkillik | 2010 | 6-13 Jul | 32/32, 20, 9 | 14% | 44 | 72 | 1,432 (1,055-1,912) CV=16% | 1,165 (850-1,573) CV=16% | 267 (161-418) CV=25% | 775 (550-1,073) CV=18% | 390 (250-577) CV=22% | 262 (162-408) CV=25% | 128 (66-215) CV=31% | 0.35 (0.21-0.54) CV=41% |
| /Itkillik | 2011 | 3-6 Jul | 39/39, 20, 8 | 19% | 48 | 208 | 1,716 (1,366-2,204) CV=13% | 1,277 (1,013-1,664) CV=14% | 440 (321-606) CV=18% | 929 (735-1,227) CV=15% | 348 (246-506) CV=20% | 310 (215-465) CV=21% | 38 (21-74) CV=38% | 0.48 (0.35-0.65) CV=17% |
| /Itkillik | 2012 | 6-9 Jul | 47/54, 15, 6.5 | 18% | 52 | 162 | 1,577 (1,154-2,181) CV=17% | 1,349 (978-1,880) CV=17% | 228 (149-351) CV=23% | 1,018 (725-1,454) CV=18% | 331 (222-494) CV=22% | 289 (190-446) CV=23% | 43 (19-85) CV=43% | 0.23 (0.15-0.33) CV=20% |
| /Itkillik | 2013 | 11-14 Jul | 40/46, 15, 7.5 | 14% | 31 | 58 | 825 (549-1,273) CV=23% | 823 (549-1,266) CV=23% | 2 (0-15) CV>100% | 488 (307-819) CV=27% | 335 (211-534) CV=25% | 259 (160-450) CV=26% | 76 (37-152) CV=43% | 0.01 (0.00-0.04) CV>100% |
| /Itkillik | 2014 | 10,11,20 Jul | 38/38, 20, 8 | 17% | 18 | 39 | 501 (343-722) CV=20% | 448 (301-651) CV=20% | 53 (25-100) CV=35% | 279 (172-445) CV=26% | 169 (107-254) CV=23% | 163 (106-248) CV=23% | 6 (0-28) CV>100% | 0.20 (0.09-0.38) CV=38% |
| /Itkillik | 2015 | 9-12 Jul | 59/59, 15, 6.5 | 20% | 30 | 82 | 695 (529-912) CV=14% | 590 (453-773) CV=14% | 105 (60-174) CV=29% | 374 (287-495) CV=15% | 216 (145-311) CV=20% | 189 (130-271) CV=19% | 27 (5-60) CV=54% | 0.28 (0.17-0.47) CV=27% |
| /Itkillik | 2016 | 6-8 Jul | 72/73, 15, 6 | 25% | 33 | 126 | 840 (643-1,125) CV=15% | 639 (478-875) CV=16% | 201 (140-298) CV=21% | 447 (326-636) CV=18% | 192 (130-285) CV=21% | 113 (74-177) CV=26% | 80 (47-136) CV=29% | 0.46 (0.30-0.68) CV=23% |
| DENA All | 2011 | 20-21 Jul | 84/84, 15, 7 | 18% | 56 | 276 | 2,288 (1,883-2,839) CV=11% | 1,939 (1,588-2,424) CV=11% | 349 (251-494) CV=19% | 1,140 (925-1,458) CV=12% | 799 (616-1,060) CV=14% | 589 (446-804) CV=16% | 210 (145-313) CV=20% | 0.31 (0.22-0.43) CV=18% |
| DENA All | 2015 | 20-24 Jul, 7 Aug | 97/97, 15, 6 | 21% | 33 | 213 | 1,374 (1,167-1,655) CV=9% | 1,107 (932-1,319) CV=10% | 267 (212-352) CV=13% | 634 (534-788) CV=10% | 473 (375-612) CV=13% | 231 (174-309) CV=16% | 243 (186-324) CV=16% | 0.42 (0.33-0.55) CV=13% |
| WRST | 2010 | 20-28 Jul | 31/31, 20, 9.5 | 12% | 57 | 266 | 2,963 (2,435-3,692) CV=11% | 2,414 (1,976-3,038) CV=12% | 549 (425-724) CV=14% | 1,470 (1,131-1,936) CV=14% | 944 (768-1,184) CV=11% | 672 (526-877) CV=14% | 272 (216-351) CV=13% | 0.38 (0.29-0.49) CV=14% |
| /Nabesna | 2016 | 19, 27 Jul | 66/85, 15, 6 | 18% | 91 | 467 | 3,581 (2,832-4,601) CV=12% | 2,962 (2,344-3,841) CV=13% | 620 (454-869) CV=17% | 1,848 (1,430-2,397) CV=14% | 1,114 (841-1,523) CV=15% | 820 (599-1,138) CV=17% | 293 (192-456) CV=23% | 0.34 (0.24-0.46) CV=16% |
| LACL All | 2012 | 17-20 Jul | 145/148, 20, 7x3.5 | 42% | 64 | 182 | 726 (564-964) CV=14% | 640 (496-857) CV=15% | 86 (59-129) CV=21% | 400 (302-543) CV=16% | 240 (178-348) CV=18% | 195 (141-293) CV=20% | 46 (28-77) CV=27% | 0.22 (0.14-0.31) CV=20% |
| LACL All | 2015 | 30 Jul-5 Aug | 148/148, 20, 4.5 | 42% | 110 | 315 | 1,183 (1,023-1,374) CV=8% | 945 (813-1,104) CV=8% | 238 (193-300) CV=12% | 626 (528-734) CV=9% | 319 (263-389) CV=10% | 224 (180-280) CV=11% | 95 (70-130) CV=16% | 0.38 (0.30-0.48) CV=12% |
| /Central | 2012 | 17-20 Jul | 55/59, 20, 7x3.5 | 40% | 54 | 145 | 589 (469-769) CV=13% | 520 (411-685) CV=14% | 70 (48-105) CV=20% | 333 (261-445) CV=15% | 187 (138-266) CV=17% | 152 (110-226) CV=19% | 35 (21-57) CV=27% | 0.21 (0.14-0.31) CV=20% |
| /Central | 2015 | 31 Jul-5 Aug | 57/57, 20, 5 | 39% | 72 | 197 | 712 (614-840) CV=8% | 569 (485-676) CV=9% | 143 (113-183) CV=13% | 373 (312-456) CV=10% | 196 (160-242) CV=11% | 126 (98-162) CV=13% | 70 (54-91) CV=14% | 0.39 (0.30-0.50) CV=14% |

Table S2. Results from aerial minimum count surveys conducted in July in the western Baird Mountains subarea of Western Arctic National Parklands (WEAR), 2005-2009.

Survey methods and units follow Shults (2004).

| Year | Area Surveyed ($km^2$) | % of total area | Total Sheep | Adult sheep | Lambs | Ewe-like Sheep | Total Rams | Small rams (< full-curl) | Large rams (≥ full-curl) | Unclassified Rams | Unclassified Sheep | Lambs: Ewe-like | Rams: Ewe-like | % full-curl/all rams | % full-curl/all sheep |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2005[a] | 1,585 | 86% | 511 | 456 | 55 | 307 | 149 | 120 | 29 | 0 | 0 | 0.18 | 0.49 | 19.5% | 5.7% |
| 2006[b] | 916 | 50% | 338 | 283 | 55 | 223 | 60 | 47 | 13 | 0 | 0 | 0.25 | 0.27 | 21.7% | 3.8% |
| 2007[c] | 935 | 51% | 480 | 370 | 110 | 306 | 64 | 50 | 14 | 0 | 0 | 0.36 | 0.21 | 21.9% | 2.9% |
| 2009 | 1,842 | 100% | 823 | 656 | 157 | 481 | 175 | 139 | 36 | 4 | 10 | 0.33 | 0.36 | 20.6% | 4.4% |

[a] Units surveyed in 2005 included A, B, C, D, E, F, G, H, I, J, L, M, N, O, and the western and northeastern portions of unit K (88 $km^2$).

[b] Units surveyed in 2006 included A, B, C, D, E, F, I, J, K.

[c] Units surveyed in 2007 included A, C, E, F, H, I, J, L, and the northern portion of unit P (49 $km^2$).

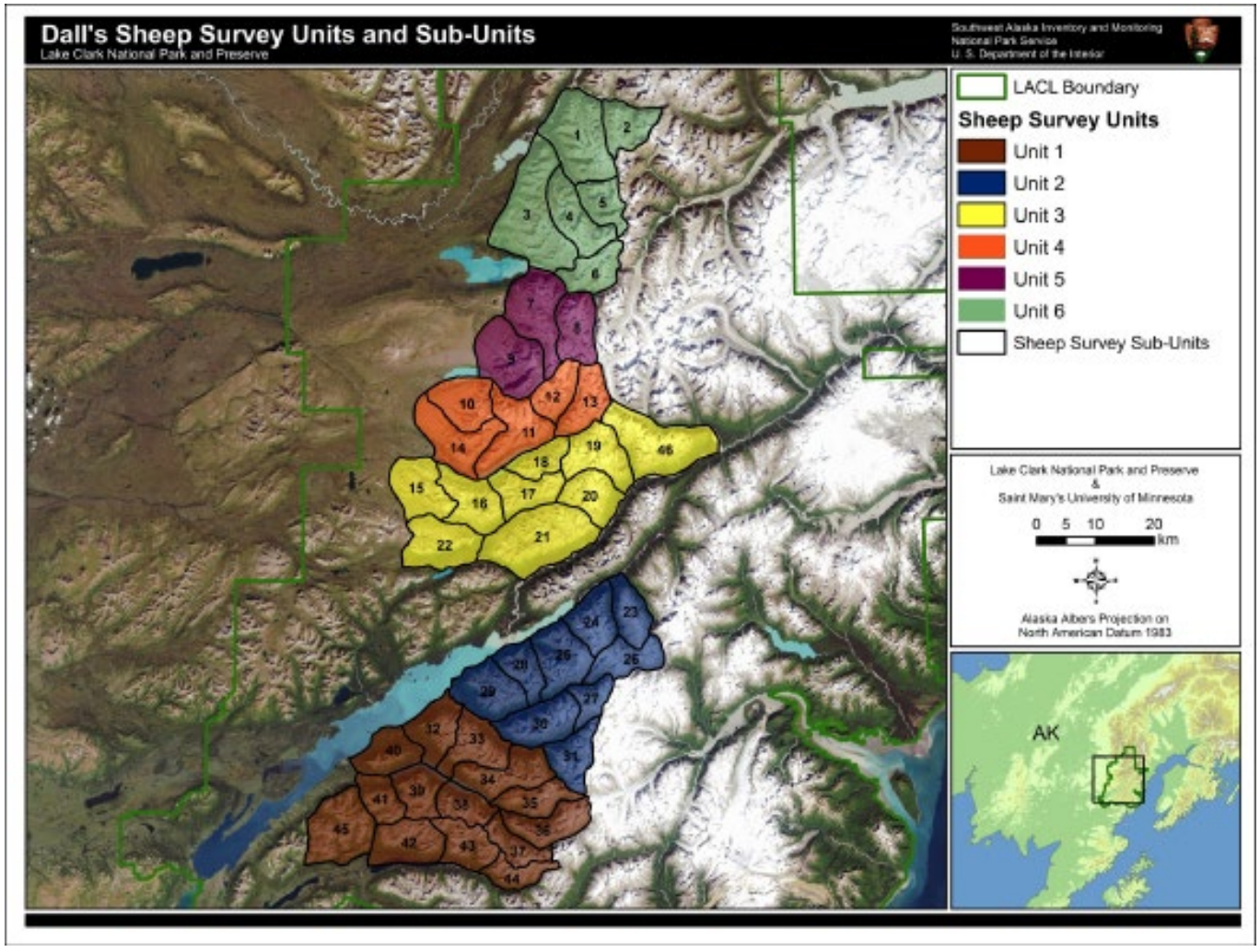
Table S3. Dall's sheep survey data from 12 subunits (24, 25, 28, 29, 32, 33, 34, 39, 40, 41, 42 and 45) in southern Lake Clark National Park and Preserve (LACL), 2003-2013.

| Year | Survey dates | Total Sheep | Adult sheep | Lambs | Yearling | Ewe-Like (not including yearlings) | Total Rams | Legal Rams* (3/4 curl) | Unknown | Lambs: Ewe-Like (not including yearlings) | Lambs: Ewe-like (including yearlings) | Ram: Ewe-Like | % Legal Rams* (3/4 curl) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2003 | 13-20 June | 255 | 208 | 47 | 9 | 132 | 67 | 42 | 0 | .36 | .33 | .51 | 62.7% |
| 2003 | 2-4 August | 214 | 189 | 25 | 10 | 104 | 75 | 38 | 0 | .24 | .25 | .72 | 50.7% |
| 2004 | 23-26 June | 227 | 198 | 28 | 16 | 127 | 55 | 22 | 1 | .22 | .20 | .43 | 40.0% |
| 2013 | 24-31 July | 134 | 112 | 22 | 0 | 75 | 37 | 28 | 0 | .29 | .29 | .49 | 75.7% |

Table S4. End of the continuous snow season (CSS) for the western Baird Mountains (W Baird) in Western Arctic National Parklands (WEAR), Itkillik subarea (Itkillik) in Gates of the Arctic National Park and Preserve (GAAR), Denali National Park and Preserve (DENA), Nabesna subarea of Wrangell St. Elias National Park and Preserve (WRST), and Lake Clark National Park and Preserve (LACL), 2001-2016. Data presented here are the median (1st, 3rd quartile) dates for the end of CSS for each area and year; the median number of days each year deviated from the 2001-2016 median for each area, in italics; and the 2001-2016 median (1st, 3rd quartile) dates for the end of CSS for each area. Ordinal dates are given (e.g., 135 = May 15). The median (1st, 3rd quartile) date is the date that 50% (25%, 75%) of the pixels were snow-free by CSS standards (see Swanson 2014) for that year or for the long-term median for the 2001-2016 period. The deviation is the number of days that 50% of the pixels differed from the long-term median end date; i.e., negative values indicate early snow melt years and positive values indicate late snow melt years.

| | W Baird | | Itkillik, GAAR | | DENA | | Nabesna, WRST | | LACL | |
|---|---|---|---|---|---|---|---|---|---|---|
| 2001 | 135 (137, 152) | *10.5* | 152 (138, 156) | *12* | 143 (115, 154) | *15* | 146 (114, 185) | *7* | 156 (148, 166) | *13* |
| 2002 | 137 (135, 141) | *2.5* | 138 (132, 142) | *0* | 136 (132, 139) | *5.5* | 140 (122, 169) | *4* | 144 (137, 164) | *0.5* |
| 2003 | 151 (129, 155) | *13* | 156 (151, 163) | *19* | 116 (39, 148) | *-4* | 144 (116, 164) | *3* | 155 (140, 174) | *7* |
| 2004 | 123 (109, 126) | *-13.5* | 136 (125, 140) | *-3* | 121 (108, 127) | *-4.5* | 126 (115.75, 142) | *-4.5* | 135 (124, 156) | *-9* |
| 2005 | 138 (122, 141) | *0* | 123 (119, 133) | *-9.5* | 119 (57, 130) | *-1* | 121 (114, 154) | *-5.5* | 146 (124, 166) | *0* |
| 2006 | 138 (131, 144) | *3* | 135 (127, 152) | *1* | 138 (128, 145) | *10.5* | 142 (120, 158) | *1.5* | 146 (142, 164) | *3* |
| 2007 | 135 (124, 140) | *-1.5* | 136 (112, 141) | *-6* | 107 (33, 136.25) | *-12.5* | 137 (98, 160) | *-4* | 141 (116, 162) | *-7.5* |
| 2008 | 133 (129, 143) | *0.5* | 132 (124, 144) | *-1.5* | 137 (128, 151) | *14* | 141 (114, 172) | *3* | 158 (142, 183) | *12* |
| 2009 | 137 (123, 142) | *0* | 143 (141, 146) | *4.5* | 121 (118, 136) | *0* | 130 (119, 155) | *1* | 133 (122, 144) | *-11* |
| 2010 | 126 (116, 135) | *-9* | 128 (116, 139) | *-9.5* | 110 (40, 137) | *-13* | 124 (85, 147) | *-7* | 146 (128, 158) | *-1.5* |
| 2011 | 140 (137, 142) | *3.5* | 137 (134, 142) | *-0.5* | 133 (109, 141) | *1.5* | 140 (116, 153) | *1* | 145 (132, 163) | *1* |
| 2012 | 127 (112, 138) | *-6.5* | 143 (134, 150) | *4* | 137 (114, 144) | *6.5* | 150 (110, 193) | *10.5* | 157 (139, 173) | *10* |
| 2013 | 145 (134, 148) | *6* | 152 (149, 156) | *15.5* | 147 (145, 149) | *19* | 146 (142, 154) | *8* | 147 (140, 161) | *1* |
| 2014 | 142 (122, 146) | *3* | 148 (132, 160) | *10* | 113.5 (29, 133) | *-6.5* | 126 (111, 174) | *-0.5* | 133 (116, 157) | *-10.5* |
| 2015 | 130 (130, 135) | *-2* | 129 (126, 138) | *-5.5* | 116 (79, 132) | *-8.5* | 127 (98, 138) | *-9.5* | 136 (124, 152) | *-7.5* |
| 2016 | 115 (106, 127) | *-18* | 129 (119, 139) | *-6* | 106 (34, 130) | *-13.5* | 92 (39, 147) | *-26.5* | 147 (122, 166) | *-2* |
| Median 2001-2016 | 135 (128.5, 141) | | 137.5 (128.5, 144) | | 125 (113, 138.5) | | 137 (115.5, 159) | | 146 (132.5, 162.5) | |

Figure S1. Dall's sheep minimum count survey units and subunits in Lake Clark National Park and Preserve (LACL). Units 1 and 2 comprise southern LACL and units 3-6 comprise central LACL in the distance sampling survey areas. Map from Zanon et al. (2016).



# Enclosure 3

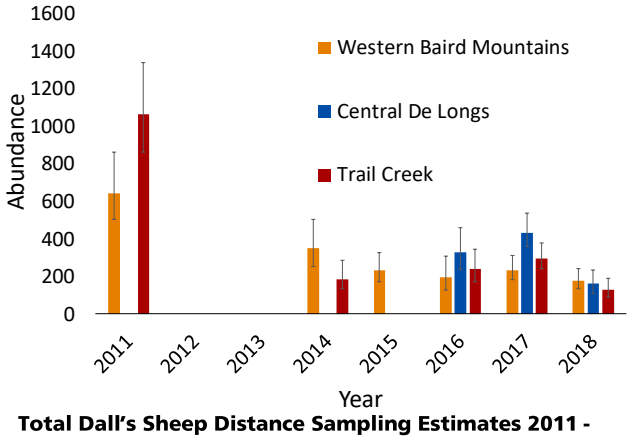
Arctic Network
Inventory & Monitoring Program

National Park Service
U.S. Department of the Interior

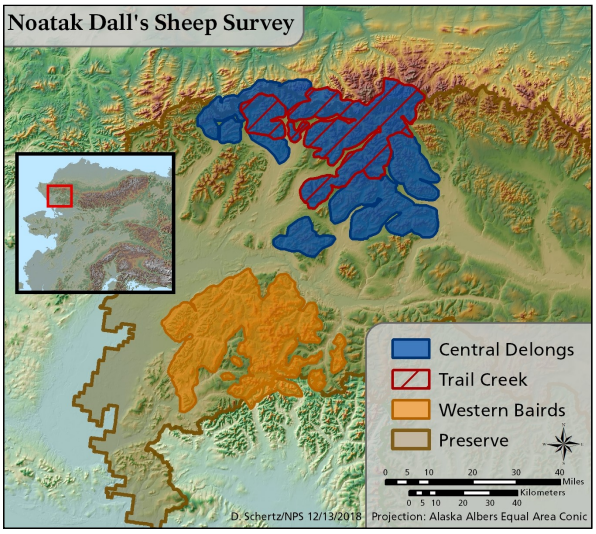
# Dall's Sheep – 2018 Survey Summary

## Western Arctic Parklands

The National Park Service conducted an aerial survey for Dall's sheep in Noatak National Preserve between July 21st and 27th, 2018. This survey area includes portions of game management units (GMU) 23 and 26A. The survey method uses distance sampling following transects based on elevation contours to estimate the total population. This survey was conducted using two aircraft based out of Kotzebue. In total, 152 out of 188 transects were completed in approximately 54 hours of flight time.




**Total Dall's Sheep Distance Sampling Estimates 2011 - 2018** for the Western Bairds, Central Delongs, and Trail Creek subareas within Noatak National Preserve, Alaska. (Above)




**2018 Study Areas** surveyed for Dall's sheep in Noatak National Preserve. (Above)

When compared with previous years the provisional estimates for the Central Delongs/Trail Creek areas suggest a decline while the Western Bairds are approximately stable. The lamb to ewe-like ratio in all subareas is near average to potentially low. For the full estimate breakdowns see the table (below).

**Upcoming surveys:** We will continue surveys in these subareas continued through 2020 as part of a region wide study. As part of a five year rotation, in 2019 the survey area will be expanded in both the Delongs and Baird mountains.

**Estimates:** The provisional estimates for total sheep by subarea are 178 (95% Bayesian Credible Interval: 135 - 244) in the Western Bairds, 161 (95% CI: 110 - 236) in the Central Delongs, and 129 (95% CI: 91 - 192) in the Trail Creek area.

**Provisional 2018 Dall's Sheep Estimates** for the Western Bairds, Central Delongs, and Trail Creek subareas within Noatak National Preserve, Alaska. (Below)

| | Western Bairds | | Central Delongs | | Trail Creek | |
|---|---|---|---|---|---|---|
| | Mean | 95% CI* | Mean | 95% CI* | Mean | 95% CI* |
| Total sheep | 178 | (135 - 244) | 161 | (110 - 236) | 129 | (91 - 192) |
| Adults | 160 | (124 - 217) | 127 | (83 - 194) | 100 | (67 - 156) |
| Lambs | 18 | (9 - 39) | 34 | (23 - 57) | 29 | (21 - 49) |
| Lambs:Ewe-like | 0.14 | (0.06 - 0.30) | 0.34 | (0.19 – 0.60) | 0.38 | (0.21 – 0.65) |

* 95% CI = 95% Bayesian Credible Intervals

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# Enclosure 4

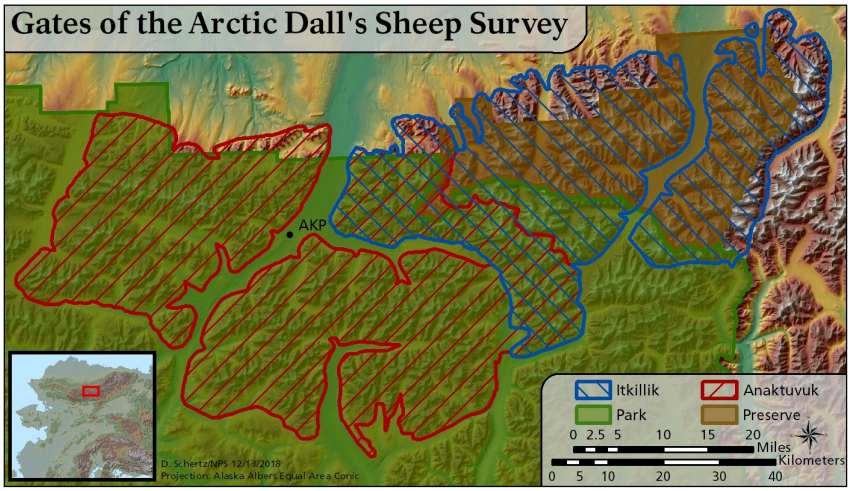
Arctic Network
Inventory & Monitoring Program

National Park Service
U.S. Department of the Interior

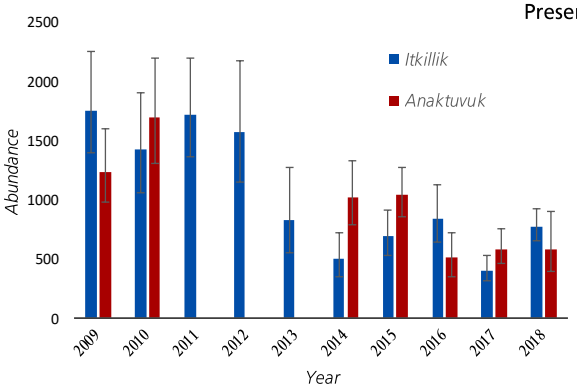
# Dall's Sheep – 2018 Survey Summary

## Gates of the Arctic National Park and Preserve

The National Park Service conducted an aerial survey for Dall's sheep in Gates of the Arctic National Park and Preserve between July 2nd and 7th, 2018. This survey area includes portions of game management units (GMU) 24A, 24B, 26A, and 26B. The survey method uses distance sampling following transects based on elevation contours to estimate the total population. This survey was conducted using a single aircraft based out of Galbraith Lake.




**2018 Study Areas** surveyed for Dall's sheep in Gates of the Arctic National Park and Preserve. (Above)




**Total Dall's Sheep Distance Sampling Estimates 2009-2018** for the Anaktuvuk and Itkillik subareas within Gates of the Arctic National Park and Preserve, Alaska. (Above)

In total, 136 out of 154 transects were completed in approximately 42 hours of flight time between the Itkillik and Anaktuvuk subareas (See map upper right). **Estimates:** The provisional estimates for total sheep by subarea are 578 (95% Bayesian Credibility Interval: 387 -897) in the Anaktuvuk and 765 (95% CI: 649 – 925) in the Itkillik.

These estimates are approximately stable when compared to the previous couple of years. The lamb to ewe-like ratio in both subareas is approximately average, in the Itkillik, it is potentially low. For the full estimate breakdowns see the table below.

**Upcoming surveys:** We will continue surveys in these study areas annually because the Itkillik is a long term dataset and the Anaktuvuk has an important subsistence value. As part of a five year rotation in 2020, the survey area will be expanded to cover almost all of Gates of the Arctic National Park.

**Provisional 2018 Dall's Sheep Estimates** for the Anaktuvuk and Itkillik subareas within Gates of the Arctic National Park and Preserve, Alaska. (Below)

| | Itkillik | | Anaktuvuk | |
|---|---|---|---|---|
| | Mean | 95% CI* | Mean | 95% CI* |
| Total sheep | 765 | (649 - 925) | 578 | (387 - 897) |
| Adults | 645 | (544 - 790) | 482 | (314 - 771) |
| Lambs | 120 | (95 - 167) | 96 | (59 - 166) |
| Lambs:Ewe-like | 0.24 | (0.18 – 0.33) | 0.39 | (0.19 – 0.69) |

* 95% CI = 95% Bayesian Credible Intervals

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**Anchorage, Alaska 99503 - 6199**

FISH and WILDLIFE SERVICE
BUREAU of LAND MANAGEMENT
NATIONAL PARK SERVICE
BUREAU of INDIAN AFFAIR

FOREST SERVICE

OSM 19062.KW

Sue Entsminger, Chair
Eastern Interior Alaska Subsistence
Regional Advisory Council
c/o Office of Subsistence Management
1101 East Tudor Road, MS 121
Anchorage, Alaska 99503-6119

Dear Chairwoman Entsminger:

This letter responds to the Eastern Interior Alaska Subsistence Regional Advisory Council's (Council) fiscal year 2018 Annual Report. The Secretaries of the Interior and Agriculture have delegated to the Federal Subsistence Board (Board) the responsibility to respond to these reports. The Board appreciates your effort in developing the Annual Report. Annual Reports allow the Board to become aware of the issues outside of the regulatory process that affect subsistence users in your region. We value this opportunity to review the issues concerning your region.

**1. Hunter displacement and the "Domino Effect" contribution to changing hunting patterns and user conflict**

*Over the last few years, the Council has become increasingly concerned about the displacement of local hunters from their home region by hunters from other regions. The displacement often happens due to the various Federal and State wildlife management decisions, including closures, which force hunters to hunt in a different region. This phenomenon, also known as the "Domino Effect," is an underlying reason for some of the user conflict in the State.*

*The issue of user conflict and finding ways to preempt and mitigate the conflict has been a long-standing concern for the Council. The Council requests that the Office of Subsistence Management (OSM) provide a report with data on hunter communities of residency and harvest locations for various species. This information can be obtained from the harvest ticket reports filed with the Alaska Department of Fish and Game, including data on what percentage of hunters were Federally qualified subsistence users. The Council suggests that OSM also seek out other potential sources of information.*

*The Council understands that collecting the requested data for the entire state is a large project, but notes that it is needed to understand hunter movement patterns and changing harvest pressures in different areas. This data will help wildlife managers gain a comprehensive picture of displacement, address the impacts of the "Domino Effect," and find approaches to mitigate it in the future.*

*Also, this data would assist the Council in proposing better informed regulatory changes to hunting seasons or other changes that would redistribute and lessen hunting impacts to Federally qualified subsistence users.*
*The Council considers this research a priority and suggests that OSM collaborate with the State to collect the information. This may be a good research project for a University of Alaska Anchorage or University of Alaska Fairbanks graduate student, such as an Alaska Native Science and Engineering Program student, and has the potential to be his or her graduation thesis as well. The Council feels strongly that this information will also help the Federal Subsistence Board and the Alaska Board of Game understand the impacts of closing hunting in one area and the pressure that it may put on other areas. It might also result in developing better regulations that provide harvest opportunities on more equitable basis. There is the potential for long-term positive impacts to State and Federal wildlife management from this research.*

**Response:**

The Board acknowledges the Council's concern about the "Domino Effect." Data on hunters' resident community for wildlife species and locations across Alaska exist in State and Federal databases. Hunting locations are only specific to the subunit level and, of course, these databases only reflect reported harvest.

While these databases likely contain the information needed to examine what the Council describes as the "Domino Effect," further clarification is needed before a useful report can be generated. First, what is the time frame? Is the Council interested in hunting trends over the last 10, 20 or 30 years? Also, are any species (e.g. caribou, moose), units (e.g. Unit 20E), or closed areas of particular interest or priority to the Council or does the Council want a comprehensive report including every species and subunit in Alaska? Is the Council only concerned about the "Domino Effect" of hunting or also of trapping? Is the Council concerned about the displacement of non-local and non-Federally qualified hunters or only of local, Federally qualified subsistence users?

The Board encourages the Council to work further with your Council Coordinator in order to refine and clarify your request.

**2. <u>Accurate reporting of the customary trade of all subsistence-caught Yukon River Chinook Salmon</u>**

*The Council doubts the accuracy of subsistence harvest data for Chinook Salmon on the Yukon River. There is significant disparity in numbers between the total recorded run coming into the Yukon River, the reported commercial catch and subsistence harvest. In reviewing the data, the Council observed that approximately 20,000 - 25,000 Chinook Salmon were unaccounted for in 2018, which in the Council's opinion more than likely indicates that these salmon were not reported in the harvest.*

*Joint concerns about Chinook Salmon harvest and whether customary trade has been legally conducted led to the formation of an Eastern Interior, Yukon-Kuskokwim Delta, and Western Interior Alaska Subsistence Regional Advisory Council Customary Trade Subcommittee. This Subcommittee developed several proposals addressing customary trade regulations and made recommendations to the Board at its January 2013 meeting. The Board adopted one of these proposals limiting customary trade of Yukon River Chinook Salmon to those with a current customary and traditional use determination for Yukon River Chinook Salmon.*

*Under State regulations, exchange of subsistence-caught fish for cash is illegal unless specifically authorized by the Alaska Board of Fisheries. Currently, the customary trade of Yukon River salmon stocks for cash has not been authorized by the Alaska Board of Fisheries. Council members have personal knowledge that subsistence users regularly make harvested salmon into strips, but do not report to the State the correct number of fish that have been harvested for strips to avoid being prosecuted.*

*The Council would like the Board to work with the State to find ways to improve the accurate reporting of the customary trade of salmon on the Yukon River. The Council would like to stress that accurate information and understanding of the harvest is essential to managers to be able to correctly manage the Yukon River Chinook Salmon, especially in the times of low abundance or during rebuilding efforts.*

**Response:**

The Council describes several observations concerning the harvest of Yukon Chinook Salmon for subsistence. The Board understands that the Council questions the accuracy of harvest estimates that are derived from household harvest surveys conducted by the Alaska Department of Fish and Game each fall. However, the Council's observation that 20,000 to 25,000 Chinook Salmon were unaccounted for in 2018 does not appear to be accurate. The Yukon Chinook Salmon run-size estimate in 2018 was 161,800 fish +/- 24,539. This run size estimate was in a range of almost 50,000 fish around the point estimate of 161,800 fish. Due to this uncertainty in these data, we cannot estimate the amount of unreported Chinook Salmon harvest based on the run size estimate.

Additionally, the estimate of the harvest of Chinook Salmon for subsistence is considered accurate by fishery managers and the Yukon Panel. Each fall, a sample of households in the

Alaska portion of the Yukon River drainage report their harvests of salmon to surveyors from the Alaska Department of Fish and Game Division of Commercial Fisheries. The questionnaire includes questions concerning how many salmon each household harvested. The survey does not ask people what they did with their harvests, whether they bartered it or exchanged it for cash. Participation in this survey is voluntary and confidential and personal names are not used. Based on these surveys, staff estimate the harvest of Chinook Salmon for subsistence at the community level only.

Currently, Federally qualified subsistence users are not required to report the customary trade of fish. The Council can request the Board to implement a customary trade reporting system; although, meetings of the Customary Trade Subcommittee representing the Eastern Interior, Yukon-Kuskokwim Delta, and Western Interior Councils did not support requiring a permit. A person engaging in customary trade would have to enter all sales on a Customary Trade Record Keeping Form and would have to return the form to the Federal agency that issued it. This would ensure that all legal trades are recorded, making illegal trades easier for enforcement officers to identify. The next call for proposals to change fishery regulations begins in January 2020. As the Council has pointed out, any Federally qualified subsistence user exchanging Chinook Salmon, their parts, or their eggs for cash with anyone other than a Federally qualified subsistence user in the Yukon River drainage is illegal, and if observed, should be reported to U.S. Fish and Wildlife Service's offices in Fairbanks.

**3. <u>Effects of releasing 1.6 billion hatchery salmon into the marine environment</u>**

*Over the course of last 15-20 years, private non-profit hatcheries in Alaska have released an average of 1.6 billion hatchery salmon annually into the marine environment. The Council continues to have concerns over the effects of hatchery-released salmon on wild salmon stocks. The Council notes that some major institutions and agencies, such as University of Washington, University of Hokkaido, University of Alaska Fairbanks, Oregon State University, National Oceanic and Atmospheric Administration, U.S. Fish and Wildlife Service, State of Alaska, and others have conducted and published a substantial amount of scientific research on the hatchery-versus-wild fish interactions in the marine environment.*

*The Council notes that significant evidence in the research shows that the decline of salmon stocks in Alaska is a marine phenomenon. The Council's two major concerns are:*

*1). <u>Competition for food in the marine environment</u>. There is substantial evidence that hatchery-released salmon compete directly with wild salmon stocks for food in the marine environment. This might result in significant adverse effects on the wild salmon populations, especially if food resources are limited and competition is high. Consequently, this can greatly contribute to the decline of wild stocks.*

*2). <u>Predation of larger hatchery juveniles on other salmon smolt</u>. According to the research, hatchery-released juvenile Pink Salmon spend one year in the ocean with the majority of their growth (80 percent) occurring during the last three to four months. This growth period coincides with the migration of other salmon species' smolt. Thus, there is the possibility of*

*extensive predation by larger hatchery juvenile Pink Salmon on smaller wild juveniles (fry and smolt) in the marine environment.*

*These two interactions may have potentially significant adverse impacts on wild salmon stocks resulting in decreased growth and survival. That is why it becomes increasingly important to understand the effects of the interaction of hatchery-released salmon with the wild stocks.*

*From previous Board responses on issues of concern brought up by the Council, we understand that OSM staff "generally does not plan or conduct research."*[1] *In view of this, the Council requests that the Board seek cooperation with other agencies or organizations to compile and analyze the results of the above-mentioned research. This would provide a comprehensive picture of the long- and short-term effects of hatchery released salmon on the wild salmon stocks.*

**Response:**

Although research about interactions of hatchery reared and wild salmon in the marine environment is outside the purview of the Board, we do share the Council's concern. The Board's authority is limited to providing a subsistence priority for the use of fish and wildlife taken from Federal public lands under Title VIII of the Alaska National Interest Lands Conservation Act (ANILCA). The only research the Board can authorize pertains to the Fisheries Resource Monitoring Program (FRMP). Activities not eligible for funding under the FRMP include: (1) habitat protection, mitigation, restoration, and enhancement; (2) hatchery propagation, restoration, enhancement, and supplementation; and (3) contaminant assessment, evaluation, and monitoring. The rationale behind this approach is to ensure that existing responsibilities and effort by government agencies are not duplicated under the FRMP. Land management or regulatory agencies already have direct responsibility, as well as specific programs, to address these activities. Additionally, the Board has jurisdiction over very little marine waters.

One of the most thorough literature reviews on this topic is still the May 2012 special issue of the journal *Environmental Biology of Fishes* (Volume 94, Number 1, Ecological Interactions of Hatchery and Wild Salmon). This article compiles published results from numerous studies and reviews presented at a conference organized by the Wild Salmon Center in Portland, Oregon. This publication contains a collection of 22 studies conducted by various university scientists and government agency fisheries researchers that address potential impacts of hatcheries to wild salmon stocks throughout the Pacific Rim in Russia, Japan, Canada, and the United States. Most of the articles pertain to hatchery management in other regions, but a couple of papers report on investigations of hatchery fish interactions at sea that may be applicable to Western Alaska wild salmon stocks. The Board refers the Council to this journal for further details. The Board would also like to direct the Council to the more recent publication *New Research Quantifies Record-Setting Salmon Abundance in North Pacific Ocean* (https://fisheries.org/2018/04/new-research-quantifies-record-setting-salmon-abundance-in-north-pacific-ocean/). The Board highly encourages the Council to invite subject matter experts to speak about the research findings.

1 Federal Subsistence Board Reply to the Eastern Interior Alaska Subsistence Regional Advisory Council's Fiscal Year 2018 Annual Report, p. 4.

**4. <u>Concerns over the Alaska Department of Fish and Game lowering the biological escapement goal and its effect on salmon stocks</u>**

*The Council was troubled by a report titled Another side of Meeting Canadian Border Escapement in 2018: US/Canada Border Escapement Cuts prepared by Tanana/Rampart/Manley Advisory Council (enclosed). The report states that, over time, the Alaska Department of Fish and Game has been effectively lowering the cross-border interim management escapement goal (IMEG) for Chinook Salmon by shifting the unit of measure from a mark-recapture metric to one based on units produced by the Eagle Yukon River sonar. Historically, the original escapement goals set under the U.S. - Canada Yukon River Salmon Agreement of 2001 (2001 Agreement) were adjusted based on the Canadian-run mark recapture projects. In 2005, ADF&G began using Didson and split-beam sonar technology at the Eagle Yukon River site, which counted passing salmon more accurately. Statistics show that during the period between 2005-2007, the Eagle sonar counted approximately 1.7 times more Chinook Salmon than the simultaneously operated Canadian mark-recapture projects. However, the sonar counts fish in general and cannot distinguish between male and female fish, thus it does not count how many fecund females pass across the border.*

*Yearly Passage Estimates*[2]

| *Year* | *DFO Tag/Recap* | *Eagle Sonar* | *Times higher at Eagle* |
|---|---|---|---|
| *2005* | *45,000* | *81,529* | *1.81* |
| *2006* | *47,965* | *73,691* | *1.54* |
| *2007* | *22,958* | *41,697* | *1.82* |

*The Council feels that despite the higher Chinook Salmon passage numbers gathered at the Eagle sonar, which provides a scientific basis for increasing the escapement numbers under the 2001 Agreement, the unit conversion did not appropriately translate the relative order of magnitude, which is now set significantly lower than specified in the Agreement. Moreover, in 2008 the Yukon River Panel adopted 45,000 as the reduced IMEG for Chinook Salmon. In 2010, it was reduced further to 42,500 fish. It is the Council's understanding that that some managers would like to reduce it even further to 30,000 fish for the upcoming season.*

*In 2014 over 64,000 Chinook Salmon returned to their spawning grounds in Canada, which is 21,500 over the lower margin on the IMEG range (42,500 – 55,000). A similar situation repeated in 2015 with spawning escapement reaching 82,674, which was about 40,000 over the lower escapement goal (42,500 – 55,000). However, Chinook Salmon are returning at younger ages with smaller average sizes. Consequently, there are fewer eggs being deposited in the gravel than in the past because smaller fish carry fewer eggs, lowering the reproductive potential. Thus, though the estimated passage was above the lower end of the IMEG, the actual spawning potential was the same as if the passage was much lower.*

2 *Another side of Meeting Canadian Border Escapement in 2018: US/Canada Border Escapement Cuts* report prepared by Tanana/Rampart/Manley Advisory Council (Attachment 1).

*The Council points to scientific research showing that the average size of Pacific salmon have declined over the past few decades. This decrease over the past 30 years may be "because of a decline in the predominant age at maturity and because of a decrease in age-specific length,"[3] but the Council also feels the selective large mesh gillnet fishery has compounded impacts. Further research indicates that "the relationship between mean fecundity and length differed among broad regions within the [Yukon River] drainage. … In the middle and upper portions of the drainage, Chinook salmon tended to have fewer eggs and fecundity was more strongly dependent on fish length."[4] When making decisions, managers need to consider that populations in the middle and upper portions of the drainage do not have the same reproductive potential as the fish in the lower river and "may be more dependent on the size of reproducing individuals."[5] The Council is very concerned that the returning fish are now younger ages and have smaller average sizes and that the number of older, larger, fecund females have decreased. The Council believes that because of the decline in age classes and fecundity, management needs to compensate by increasing escapement goals with a focus on the number of eggs in the gravel.*

*According to the 2001 Agreement, the Yukon River Panel "shall establish and modify as necessary interim escapement objectives of the rebuilding program" and "for any year when a strong run is anticipated, the Yukon River Panel may recommend a spawning escapement objective greater than the agreed level." Moreover, the 2001 Agreement mandates that "in any year of a strong run, the United States agrees to consider increasing the border escapement to a level greater than agreed in order to allow a higher spawning escapement for that year." The Council is concerned that IMEG had not been set at its optimum based on solid science, and that the decisions made had been influenced by politics. Additionally, the Council is concerned that the restoration of salmon stocks have been significantly affected by these decisions. The Council would like to request that the Board direct OSM to take a closer look at these matters and prepare a report for the Council that: 1) describes the transition of units of measure of salmon crossing the U.S./Canada Border from mark-recapture to sonar units; and 2) evaluates whether the current IMEG appropriately reflects the intent of the 2001 Agreement toward rebuilding the Canadian origin Chinook Salmon stocks, given that fewer eggs are being deposited in the gravel proportionally than at the time of the Agreement when Chinook were of larger size.*

**Response:**

The Federal Board's authority is limited to providing a subsistence priority for the use of fish and wildlife taken from Federal public lands under Title VIII of the Alaska National Interest Lands Conservation Act. The Board does not comment on Treaty obligations such as the IMEG.

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3 *Changes in Size and Age of Chinook Salmon Oncorhynchus tshawytscha Returning to Alaska* (Bert Lewis, W. Stewart Grant, Richard E. Brenner, and Toshihide Hamazaki; 2015, PLOS One). Also see *Demographic changes in Chinook salmon across the Northeast Pacific Ocean* (Jan Ohiberger, Eric J. Ward, Daniel E. Schindler, and Bert Lewis; 2018, Wiley Online Library (access provided by NOAA Library Network).

4 *Effects of Marine Growth on Yukon River Chinook Salmon Fecundity* (Kathrine G. Howard and Jeffrey Bromaghin; Yukon River Salmon Research and Management Fund Report #21-10).

5 *Differential Fecundity among Yukon River Chinook Salmon Populations Revealed by a Generalized Genetic Mixture Model* (Jeffrey F. Bromaghin, Danielle F. Evenson, Thomas H. McLain, and Blair G. Flannery; Arctic-Yukon-Kuskokwim Sustainable Salmon Initiative).

The methodology for salmon crossing the U.S./Canada border changed when the border mark/recapture program ended in 2007. Data collected from the Eagle sonar and the Yukon River drainage-wide mark-recapture with telemetry from 2002-2004 suggested that the border and escapement estimates derived from the mark/recapture program at the border were biased low. In 2008, an estimate of historical Canadian spawning escapements was derived using a combination of estimates from mark-recapture data, sonar, radio telemetry, and aerial survey data. In order to produce the historical Canadian spawning escapements, the border passage estimates from the Eagle sonar (2005-2007) and radio telemetry data (2002-2004) was used as the basis to estimate the total escapement from 2002-2007. Age-specific returns were then calculated based on sampling data in the return years. This created a basis for a stock-recruitment model that began in 2010. Currently, the passage of Chinook Salmon into Canada is estimated by the Eagle sonar, located just downstream of the U.S./Canada Border

Data is lacking to accurately estimate the number of eggs deposited in the gravel now in comparison to what may have been deposited in 2001. The Board feels that this request would be best addressed through a Fisheries Resource Monitoring Program (FRMP) project, or perhaps through the Yukon River Panel Research & Enhancement fund. The FRMP is a primary mechanism for funding research about subsistence fisheries. The best way for the Council to direct research on this subject is through action on Priority Information Needs (PINs) for the FRMP. The Board encourages the Council to work with the other Yukon River Councils and in-season managers and biologists through joint PIN working groups to develop a unified list of PINs for the Yukon FRMP region that addresses these important research questions.

**5. <u>Advancing the hunter ethics education and outreach program</u>**

*The Council is very encouraged by the progress made in the development of the hunter ethics education and outreach pilot program and expresses its continuing appreciation and support. The Council would like relay to the Board that its support has a meaningful effect on the progress of this project. It is evident by the number of participants and their enthusiasm that this is a timely and important effort.*

*It is the Council's understanding that forming partnerships is crucial at the current stage of the program's development. The Council also realizes that in order for a pilot project or projects to be successful they need to have funding sources.*

*Prior to seeking partners, the Council would like to have a clear understanding of the mechanisms of how this Council can form partnerships to advance a pilot project and if there are any government policies or limitations associated with entering partnerships and receiving funding. These partnerships can potentially include Federal and State agencies, tribal organizations, and private entities and businesses that can contribute resources through technical expertise, research, funding, knowledge, outreach and education, and staff time.*

*The Council formally requests that the Board direct OSM to prepare a written report on the various mechanisms available to this Council for forming partnerships and receiving funding.*

*The Council also would like to enquire if the Federal agencies represented on the Board have any funding that can be directed towards implementing a pilot project (or projects).*

*The Council also requests that either the Board or OSM prepare a letter of support for the hunter ethics education and outreach initiative that can be used when seeking partnerships*.

**Response:**

The Board was briefed on the progress of the hunter ethics education and outreach initiative during its April 2019 regulatory meeting and was favorably impressed by the progress and the amount of work that was done during the year and a half that has transpired since the last update. The Board commends the Council on diligently working to advance the initiative and develop true partnerships to implement a pilot project or projects. Considering the extensive interest shown by various stakeholders in this initiative, it is clear that this work is timely and important.

The Board would like to clarify that the Council is an advisory body to the Board and has no legal authority or legal mechanism to seek and/or accept funding or assume any duties related to the management of any such funding. The Board sees that the best way to advance the pilot projects is for the other entities that are a part of each projects' working group to assume a responsibility for obtaining any necessary outside funding and handling accounts and reporting. Under this scenario, the Council members can still contribute their knowledge, expertise, and time to the project in-kind.
Other potential opportunities to leverage funding are through cooperative agreements and contracts with another agency or tribal or hunter organization that the OSM is a party to; however, there needs to be a concrete pilot project with set goals, timelines, and deliverables. OSM will prepare a letter to the Council with a detailed explanation on what is within their purview and what are the legal avenues for advancing the hunter ethics education initiative. The Federal agencies represented on the Board will need to see pilot project(s) developed in detail with an itemized budget, in order to consider contributing any funding towards it.

As for the Council's request that the Board or OSM prepare a letter of support for the hunter ethics education and outreach initiative, the Board will consider directing OSM to prepare such letter; however, the Council needs to be aware that it would be a general endorsement for the initiative, not a letter of support for funding.

In closing, I want to thank you and your Council for your continued involvement and diligence in matters regarding the Federal Subsistence Management Program. I speak for the entire Board in expressing our appreciation for your efforts and our confidence that the subsistence users of the Eastern Interior Region are well represented through your work.

Sincerely,

Anthony Christianson

Chair

Enclosures

cc: Federal Subsistence Board
Thomas Doolittle, Acting Assistant Regional Director, Office of Subsistence Management
Thomas Whitford, Acting Deputy Assistant Regional Director
Office of Subsistence Management
Jennifer Hardin, PhD, Subsistence Policy Coordinator, Office of Subsistence Management
Steven Fadden, Acting Council Coordination Division Supervisor,
Office of Subsistence Management
Chris McKee, Wildlife Division Supervisor, Office of Subsistence Management
Greg Risdahl, Fisheries Division Supervisor, Office of Subsistence Management
George Pappas, State Subsistence Liaison, Office of Subsistence Management
Zachary Stevenson, Council Coordinator, Office of Subsistence Management
Eastern Interior Alaska Subsistence Regional Advisory Council
Benjamin Mulligan, Deputy Commissioner, Alaska Department of Fish and Game
Mark Burch, Special Project Coordinator, Alaska Department of Fish and Game
Interagency Staff Committee
Administrative Record

# Enclosure 1

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**Another side of Meeting Canadian Border Escapement In 2018**

US/Canada Border Escapement Cuts

Tanana/Rampart /Manley Advisory Council

Since 2010 we have had our present US/Canada treaty agreement to pass a basic minimum of king into Canada. That number is now determined by the Eagle Sonar project. Basic spawning minimum is 42,500 kings and with some fish for Canada the harvest minimum is 51,000. So the present range is from a basic spawning minimum of 42,500 to a harvest minimum for Canada of 51,000

Going back for some history

For 3 years the new Eagle sonar project ran at the same time as the older mark recapture project run by the Canadians. Originally prior to 2008 the mark recapture project determined the border escapement. The US Canada Spawning escapement goal was 33,000 to 43,000 kings and with some fish for Canada the harvest minimum was 45,700. So to compare with later years it's correct to say the range was from a basic spawning minimum of 33,000 to a harvest minimum for Canada of 45,700.

Now no two projects count the same and the mark recapture project was probably doing some undercounting, because when the more accurate Eagle sonar came on line and ran at the same time as the mark recapture one it counted higher.

Yearly Passage Estimates

| Year | DFO Tag/Recap | Eagle Sonar | % Higher at Eagle |
|---|---|---|---|
| 2005 | 45,000 | 81,529 | 1.81 |
| 2006 | 47,965 | 73,691 | 1.54 |
| 2007 | 22,958 | 41,697 | 1.82 |

Eagle Sonar for those 3 years counted an average of 1.72% more king salmon. Now when the time came after these three year to transition over to making Eagle Sonar the official escapement counting project it would seem natural and

fair and scientific to increase all the US/Canada agreement numbers by 1.72% but that was not done. And it was not expected for years that it would be done that way. As a matter of fact since the first time the idea of Eagle Sonar project came about many agency people and fishermen feared that while the project would probably be more accurate, that the State would just use the moment to slip in a lower escapement. And so the state did. Instead of using their best science at the time to arrive at a range 1.72 times greater, or 56,760 to 78,604, the US portion of the Yukon River Panel (ADF&G controlled) forced Canada to accept a minimum goal of 45,000 kings. In 2010 that was reduced further to 42,500. ADF&G currently wants to further reduce this as far as 30,000.

Now for some perspective:
In 2014 official escapement was 64,500 kings (84,000 in 2015). This was 22,000 (41,500 in 2015) over the lower end of the goal. If one considers the reduced spawning capabilities of the two run years due to genetic loss of the older age classes of king (which many experts say could be 50% of eggs in the gravel as historically) we could have only put the equivalent of 32,250 kings across the border in 2014 and 42,000 in 2015. That is 24,510 less kings in 2014 (14,760 in 2015) than the lower end of the escapement would be if ADF&G had not succeeded in lowering it in 2008 and 2010. Amazing how lead can be turned into gold.

One of managements pet reasons for lower escapements, voiced many times publically by the last Regional Director of AYK Commercial Fisheries Div., was we were putting to many eggs on the spawning grounds and it was causing over escapement and poor survival. This sentiment was also given as a possible reason for the declining King runs and voiced publically by the present AYK Regional Director in 2009 at a meeting in front of many people at the Rampart Rapids. This is the mindset within some of upper management as it concerns king salmon.

Without considering the smaller king (fewer eggs) going to the spawning grounds today and where our escapement goals used to be in the past our management of king salmon today is based on politics and a whim, instead of science.

(10/11/2018) TRM approved)

# Federal Subsistence Board

**1011 East Tudor Road, MS 121**
**Anchorage, Alaska 99503 - 6199**

**FISH and WILDLIFE SERVICE**
**BUREAU of LAND MANAGEMENT**
**NATIONAL PARK SERVICE**
**BUREAU of INDIAN AFFAIR**

**FOREST SERVICE**



OSM 19063.KW

Gordon Brower, Chair
North Slope Subsistence
Regional Advisory Council
c/o Office of Subsistence Management
1101 East Tudor Road, MS 121
Anchorage, Alaska 99503-6119

Dear Chairman Brower:

This letter responds to the North Slope Subsistence Regional Advisory Council's (Council) fiscal year 2018 Annual Report. The Secretaries of the Interior and Agriculture have delegated to the Federal Subsistence Board (Board) the responsibility to respond to these reports. The Board appreciates your effort in developing the Annual Report. Annual Reports allow the Board to become aware of the issues outside of the regulatory process that affect subsistence users in your region. We value this opportunity to review the issues concerning your region.

**1. <u>Development impacts to caribou and access to healthy subsistence resources</u>**

*The Council has had extensive discussion about the importance of caribou for communities across the North Slope and expressed concern about development impacts to caribou habitat and migration. The Council is especially concerned about the increasing development surrounding Nuiqsut, such as the current proposed changes to the Willow Project, and further industrial development to come with future leasing activities. Specifically, the Council is very concerned about the Alaska National Interest Lands Conservation Act (ANILCA) Section 810 Analysis submitted by the Bureau of Land Management (BLM) to the Council on June 21, 2018 (enclosed) regarding the Alpine Satellite development plan for the Greater Moose's Tooth 2 Project. The finding in this analysis indicated that three of the proposed alternatives in the Draft Environmental Impact Statement "may significantly restrict subsistence use for the community of Nuiqsut" and also found that "the cumulative effects may significantly restrict subsistence uses for the communities of Anaktuvuk Pass, Atqasuk, Nuiqsut, and Utqiagvik." The Council is very concerned about these ongoing and increasing impacts to communities' subsistence resources*

*and subsistence way of life. The community of Nuiqsut in particular has been working very hard in various ways to create protections for subsistence resources and activities, and ensuring continued access to traditional areas used for subsistence. However, there is now development to the north, east and west sides of Nuiqsut, with only the south side free of such development. The south side is vital to the subsistence needs of the community and extremely important for sharing and exchange of subsistence foods and access to hunting areas for the people of Anaktuvuk Pass.*

*The Council has repeatedly asked the Federal Subsistence Board for assistance and support in ensuring the continuation of subsistence opportunities when development activities on Federal public lands are deflecting or impacting subsistence resources and interfering with subsistence activities. The Council has been willing to facilitate discussions on possible strategies for mitigating impacts to subsistence and on suggestions for staggered development that would help to maintain access to healthy subsistence resources. The community of Nuiqsut is very concerned for its future if it becomes completely cut off by the industrial development encircling its traditional hunting, fishing, and gathering areas. The Council requests assistance from the Board to ensure that subsistence opportunities on Federal public lands continue into the future.*

**Response:**

The Federal Subsistence Board (Board) is aware of the Council's concern regarding ongoing and potential future impacts from of oil and gas development on Federal public lands on the continuation of subsistence activities in and around Nuiqsut, Anaktuvuk Pass, Atqasuk, and Utqiagvik. The most immediate concern expressed by the Council is ensuring the continued access to traditional subsistence use areas around Nuiqsut, especially to the south of the community, which is the only area not currently impacted by industrial development. The Board's authority does not extend to actions involving the protection of land or the development of policies to limit industrial activities in traditional hunting, fishing, and gathering areas. However, the Board looks forward to continuing to address the Council's concerns through regulatory proposals and special actions within its jurisdiction.

Federal and State land managers are responsible for making decisions concerning land use. The Bureau of Land Management, as indicated in the ANILCA Section 810 analysis, is aware of the potential impacts of the three alternatives proposed for the Alpine Satellite Development Plan for the Greater Moose's Tooth Project on Nuiqsut. The Board recommends that the Council and affected communities continue to work closely with the North Slope Borough, Federal and State land managers, and industry to develop a plan that will protect areas critical to maintaining the cultural and traditional lifestyle of local subsistence users. The Board encourages the Council to offer solutions to Federal agencies addressing how they may better protect subsistence uses of wild renewable resources, and in so doing, protect subsistence economies.

**2. <u>Effective communication networks and navigating the complex regulatory process</u>**

*The Council sees a need to increase communication networks in support of the Federal subsistence regulatory process. Changing policies and overlapping Federal and State*

*management make it difficult for communities to navigate the regulatory process. Many communities in the region are stretched very thin and beleaguered by the sheer volume of meetings and issues they must remain engaged with in order to protect subsistence resources and their way of life. The Council asks for support for communities to develop Federal subsistence proposals that will protect subsistence resources and ensure subsistence opportunity into the future.*

**Response:**

The Board relies heavily on Federally qualified subsistence users when it comes to the generation of proposals to change Federal subsistence regulations. The Office of Subsistence Management (OSM) serves as technical support to the Board and can offer assistance to the public when it comes to the development of proposals. The Council is encouraged to work with OSM staff to generate proposals and inform members of the communities they represent to contact OSM staff if they need assistance in generating proposals as well.

**3. <u>Concern about recent muskox fatalities</u>**

*The Council received a report at its winter 2018 meeting about the death of seven muskox as a result of vehicle collisions on the Dalton Highway. The Council was saddened to hear this news, such a blow to lose so many muskox from this very small population. Muskox is a special subsistence resource but has not been accessible for a long time due to a hunting moratorium put in place to allow the population to recover. Not only are muskoxen important for food security, but muskox hides are used for traditional crafts and as blankets for snow machine sleds. People in Nuiqsut also use muskox skin and fur for mask-making.*

*The Council wishes to avoid senseless loss of vital resources in the future. To that end, the Council will be sending a letter to the appropriate State office to initiate a roadkill recovery and distribution program for the Dalton Highway, similar to that in operation around Anchorage, Fairbanks and the Mat-Su Valley for moose. The goal is to distribute the carcasses to North Slope villages to continue customary and traditional uses of muskox lost from highway collisions. The villages would share the resource within the community. The Council will keep the Board apprised of its efforts.*

**Response:**

The Board understands that muskox are an important subsistence resource for North Slope communities. The Board also recognizes the efforts of these same communities to support the muskox hunting moratorium to help the population grow to a healthy size that can be hunted sustainably once again. It is unfortunate that so many muskox were lost to vehicle collision on the Dalton Highway and is a setback for the conservation efforts for this herd. The Board commends the Council's efforts to make sure this important subsistence resource is protected and properly managed.

The Board is highly supportive of all efforts by the Council to find creative solutions to problems such as this and to network with other agencies and groups in support of subsistence communities. The Board encourages the Council to explore options in the future with the State Department of Transportation and ADF&G to reduce collisions, like signing, deterrents, etc.

**4. <u>Ongoing concerns about aircraft harassing and deflecting wildlife</u>**

*The Council remains very concerned about ongoing observations from subsistence hunters that aircraft use in the North Slope region has harassed wildlife, caused deflection of migrating animals, and disturbed subsistence activities. The Council has expressed this concern for years and yet the issue has not been addressed.*

*The Council recognizes that aircraft control is beyond the direct authority of the Federal Subsistence Board; however, impacts to subsistence remain and we respectfully request that the Board elevate the problem of aircraft harassment of wildlife via low level flights and intentional cruising of animals to the Federal Aviation Administration (FAA). The Council wants to highlight that the North Slope Borough and the Bureau of Land Management have established some guidelines for industrial flights for permitted projects in the region to help mitigate noise and disturbance. However, other air traffic is only required by FAA to maintain 500 feet above ground level and are not required to throttle noise or prop speed at lower elevations. The Council would like to ensure that research flights, commercial guides, and private planes also adhere to local guidelines for avoiding disturbance of wildlife and subsistence activities.*

*We appreciate the assistance from the Federal Subsistence Board to elevate these ongoing issues of concern to the FAA and other agencies that can implement solutions. At a minimum, local information that could aid in the avoidance of aircraft disturbance to wildlife and subsistence activities could be conveyed to agencies that conduct research in the region, such as the U.S. Fish and Wildlife Service, U.S. Geological Survey, and other agencies.*

**Response:**

The Board is aware of this concern regarding low flying aircraft and the potential effects to wildlife. The In Unit 23, the Alaska Department of Fish and Game developed an online training for private pilots transporting big game (http://www.adfg.alaska.gov/index.cfm?adfg=unit23pilot.main). This is an excellent program and may be something for the Council, State and Federal agencies, and other partners to consider for the North Slope region. Adding outreach materials to local airports is also a strategy the Council could promote along with partners and agencies.

The Federal Aviation Administration (FAA) is indeed responsible for regulations pertaining to aircraft in-flight activity. Because that agency is outside of both the Department of the Interior and the Department of Agriculture, the Board does not have a direct line of communication with them. We suggest that your Council invites a representative of the FAA to an upcoming Council meeting to learn more about the FAA's jurisdiction and regulatory process or write a letter to the FAA.

**5. <u>Information on emergency preparedness and prevention to address increased marine shipping traffic through the Northwest Passage.</u>**

*The Council appreciates the Federal Subsistence Board's reply to our 2017 Annual Report addressing the increased shipping traffic due to declining sea ice in the Beaufort and Chukchi Seas. The Council is alarmed at the volume of shipping traffic passing by our shores and potential impacts to critical subsistence resources our communities depend on. The Council would appreciate more information on the work of the Arctic Waterways Safety Committee and will request that our Council Coordinator arrange for a presentation from the U.S. Coast at our next Council meeting to further discuss marine shipping safety and emergency response preparedness for our communities. The Council is not asking the Board for any action at this time, other than the continued administrative and technical support provided by staff at the Office of Subsistence Management to arrange for such presentations.*

**Response:**

The Board recognizes the importance of the Chukchi and Beaufort Sea to subsistence communities in the North Slope region and the possible impact that loss of sea ice and increased ship traffic could have on subsistence resources. The Chukchi and Beaufort Sea is a productive ocean ecosystem that provides habitat for a multitude of important fish and wildlife species and sea ice central to subsistence hunting and fishing. The Board understands that loss of sea ice may impact the health of marine mammals and also pose danger or difficulty for conducting traditional subsistence activities. A surge in shipping traffic may increase the possibility of a vessel incident that could be harmful to those resources. As recognized by the Council, the Board has limited jurisdiction or authority over Federal undertakings that occur outside of the Federal Subsistence Management Program. However, the Board does seek to remain informed about anticipated shifts or changes in harvest of subsistence resources that are under the purview of the Federal Subsistence Management Program and wants to hear from the Council if impacts to the marine environment create greater need for subsistence resources on Federal lands.

There are numerous efforts underway to track changes to sea ice in the region, monitor impacts to subsistence resources, develop community based mitigation plans, and work proactively to manage for increased shipping traffic in Arctic waters to prevent or respond to marine accidents. The Board is supportive of providing the Council with more information and helping to connect to resources to address concerns about changes to the marine environment. The Council can work with their Coordinator to arrange for marine shipping and emergency preparedness information or presentations to be included on the agenda for upcoming meetings. Some programs and initiatives underway that may be of interest to the Council are:

- The U.S. Coast Guard has been involved in planning and outreach to communities in the region to address the potential for marine accidents and oil spills. Recently, in the summer of 2017, the Coast Guard visited the North Slope communities of Point Hope, Point Lay, Wainwright, and Utqiagvik to meet and learn from local people and address local strategies for oil spill response. A three day oil spill response seminar and workshop was also held in Utqiagvik. Recognizing the growing threat of oil spills in the Arctic, the U.S. Coast Guard and

National Oceanic and Atmospheric Administration (NOAA) have begun conducting month-long scientific expeditions each fall. One of the goals of the expeditions is to demonstrate and evaluate tools, technologies, and techniques for dealing with Arctic oil spills. The expeditions also feature a simulated oil spill to give crews practice in cleanup procedures. The Coast Guard has also launched a new study of vessel traffic in the Chukchi and Beaufort seas off the northwest and north coast of Alaska. The study, which was announced in January 2019, will assess current and predicted vessel traffic in the region and, if warranted, recommend measures to improve safety and environmental protection. The Coast Guard has invited the public to participate in this process. More information can be provided to the Council at your next meeting if interested or found online at: https://toolkit.climate.gov/case-studies/preparing-respond-oil-spills-arctic.

- The Arctic Waterways Safety Committee, formed in 2015, has broad representation from subsistence groups in the region including the Alaska Beluga Whale Committee, Alaska Eskimo Whaling Commission, Eskimo Walrus Commission, and ice seal committee as well as tribal representation and engagement from the North Slope Borough. The purpose of the Arctic Waterways Safety Committee is to bring together local marine interests in the Alaskan Arctic in a single forum, and to act collectively on behalf of those interests to develop best practices to ensure a safe, efficient, and predictable operating environment for all current and future users of the waterways. More information can be provided to the Council at your next meeting if interested or found online at: http://www.arcticwaterways.org.

In closing, I want to thank you and your Council for your continued involvement and diligence in matters regarding the Federal Subsistence Management Program. I speak for the entire Board in expressing our appreciation for your efforts and am confident that the subsistence users of the North Slope Region are well represented through your work.

Sincerely,

Anthony Christianson
Chair

cc: Federal Subsistence Board
Thomas Doolittle, Acting Assistant Regional Director, Office of Subsistence Management
Thomas Whitford, Acting Deputy Assistant Regional Director
Office of Subsistence Management
Jennifer Hardin, PhD, Subsistence Policy Coordinator, Office of Subsistence Management
Steven Fadden, Acting Council Coordination Division Supervisor,
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Chris McKee, Wildlife Division Supervisor, Office of Subsistence Management
Greg Risdahl, Fisheries Division Supervisor, Office of Subsistence Management
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Eva Patton, Council Coordinator, Office of Subsistence Management

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**POLICY ON NONRURAL DETERMINATIONS**

**FEDERAL SUBSISTENCE BOARD**
Adopted January 2017

## PURPOSE

This policy clarifies the internal management of the Federal Subsistence Board (Board) and provides transparence to the public regarding the process of making or rescinding nonrural determinations of communities or areas for the purpose of identifying rural residents who may harvest fish and wildlife for subsistence uses on Federal public lands in Alaska. This policy is intended to clarify existing practices under the current statute and regulations. It does not create any right or benefit enforceable at law or in equity, against the United States, its agencies, officers, or employees, or any other person.

## INTRODUCTION

Title VIII of the Alaska National Interest Lands Conservation Act (ANILCA) declares that,

> the continuation of the opportunity for subsistence uses by rural residents of Alaska, including both Natives and non-Natives, on the public lands and by Alaska Natives on Native lands is essential to Native physical, economic, traditional, and cultural existence and to non-Native physical, economic, traditional, and social existence; the situation in Alaska is unique in that, in most cases, no practical alternative means are available to replace the food supplies and other items gathered from fish and wildlife which supply rural residents dependent on subsistence uses" (ANILCA Section 801).

Rural status provides the foundation for the subsistence priority on Federal public lands to help ensure the continuation of the subsistence way of life in Alaska. Prior to 2015, implementation of ANILCA Section 801 and rural determinations were based on criteria set forth in Subpart B of the Federal subsistence regulations.

In October 2009, the Secretary of the Interior, with the concurrence of the Secretary of Agriculture, directed the Board to review the process for rural determinations. On December 31, 2012, the Board initiated a public review of the rural determination process. That public process lasted nearly a year, producing 278 comments from individuals, 137 comments from members of Regional Advisory Councils (Councils), 37 comments from Alaska Native entities, and 25 comments from other entities (e.g., city and borough governments). Additionally, the Board engaged in government-to-government consultation with tribes and consultation with Alaska Native Claims Settlement Act (ANCSA) corporations. In general, the comments received indicated a broad dissatisfaction with the rural determination process. Among other comments, respondents indicated the aggregation criteria were perceived as arbitrary, the population thresholds were seen as inadequate to capture the reality of rural Alaska, and the decennial review was widely viewed to be unnecessary.

Based on this information, the Board held a public meeting on April 17, 2014 and decided to recommend a simplification of the process to the Secretaries of the Interior and Agriculture (Secretaries) to address rural status in the Federal Subsistence Management Program. The Board's recommended simplified process would eliminate the rural determination criteria from regulation and allows the Board to determine which areas or communities are nonrural in Alaska. All other communities or areas would, therefore, be considered "rural" in relation to the Federal subsistence priority in Alaska.

The Secretaries accepted the Board recommendation and published a Final Rule on November 4, 2015, revising the regulations governing the rural determination process for the Federal Subsistence Management Program in Alaska. The Secretaries removed specific rural determination guidelines and criteria, including requirements regarding population data, the aggregation of communities, and a decennial review. The final rule allowed the Board to make nonrural determinations using a comprehensive approach that may consider such factors as population size and density, economic indicators, military presence, industrial facilities, use of fish and wildlife, degree of remoteness and isolation, and any other relevant material, including information provided by the public.

By using a comprehensive approach and not relying on set guidelines and criteria, this new process will enable the Board to be more flexible in making decisions that take into account regional differences found throughout the State. This will also allow for greater input from the Councils, Federally recognized tribes of Alaska, Alaska Native Corporations, and the public in making nonrural determinations by incorporating the nonrural determination process into the subsistence regulatory schedule which has established comment periods and will allow for multiple opportunities for input. Simultaneously with the Final Rule, the Board published a Direct Final Rule (80 FR 68245; Nov. 4, 2015) (**Appendix B**) establishing the list of nonrural communities, those communities not subject to the Federal subsistence priority on Federal public lands, based on the list that predated the 2007 Final Rule (72 FR 25688; May 7, 2007).

As of November 4, 2015, the Board determined in accordance with 36 CFR 242.15 and 50 CFR 100.15 that the following communities or Census-designated Places (CDPs)[1] are nonrural: Fairbanks North Star Borough; Homer area – including Homer, Anchor Point, Kachemak City, and Fritz Creek; Juneau area – including Juneau, West Juneau, and Douglas; Kenai area – including Kenai, Soldotna, Sterling, Nikiski, Salamatof, Kalifornsky, Kasilof, and Clam Gulch; Ketchikan area – including Ketchikan City, Clover Pass, North Tongass Highway, Ketchikan East, Mountain Point, Herring Cove, Saxman East, Pennock Island, and parts of Gravina Island; Municipality of Anchorage; Seward area – including Seward and Moose Pass; Valdez; and Wasilla/Palmer area – including Wasilla, Palmer, Sutton, Big Lake, Houston, and Bodenberg

[1] Census Designated Place (CDP) is defined by the Federal Census Bureau as the statistical counterpart of incorporated places, delineated to provide data for settled concentrations of populations identifiable by name but not legally incorporated under the laws of the state in which they are located. CDPs are delineated cooperatively by state and local officials and the Census Bureau, following Census Bureau guidelines.

Butte (36 CFR 242.23 and 50 CFR 100.23). All other communities and areas in Alaska are, therefore, rural.

## BOARD AUTHORITIES

- ANILCA 16 U.S.C. 3101, 3126.
- Administrative Procedures Act (APA), 5 U.S.C. 551-559
- 36 CFR 242.15; 50 CFR 100.15
- 36 CFR 242.18(a); 50 CFR 100.18(a)
- 36 CFR 242.23; 50 CFR 100.23

## POLICY

In accordance with the Administrative Procedures Act (APA), Federal rulemaking undertaken by the Federal Subsistence Management Program requires that any individual, organization, or community be given the opportunity to submit proposals to change Federal regulations. The Board will only address changes to the nonrural status of communities or areas when requested in a proposal. This policy describes the Board's administrative process for addressing proposals to change the nonrural status of a community or area by outlining proposal requirements and submission, identifying a process schedule and general process timeline, and outlining Board decision making when acting on such proposals.

### SECTION A: Submitting a Proposal

Proponents must submit a written proposal in accordance with the guidance provided in the same Federal Register notice that includes a call for proposals to revise subsistence taking of fish and shellfish regulations and nonrural determinations. This notice is published in even-numbered years. Proposals to revise nonrural determinations will be accepted every other fish and shellfish regulatory cycle, starting in 2018.

### SECTION B: Requirements for Proposals

**Making a Nonrural Determination**

Proposals can be submitted to the Board to make a nonrural determination for a community or area. It is the proponent's responsibility to provide the Board with substantive narrative evidence to support their rationale of why the proposed nonrural determination should be considered. Proposals seeking a nonrural determination must also include the basic requirements and meet the threshold requirements outlined below.

***Basic Requirements***

All proposals must contain the following information:

- Full name and mailing address of the proponent;
- A statement describing the proposed nonrural determination action requested;
- A detailed description of the community or area under consideration, including any current boundaries, borders, or distinguishing landmarks, so as to identify which Alaska residents would be affected by the change in nonrural status;

- Rationale and supporting evidence (law, policy, factors, or guidance) for the Board to consider in determining the nonrural status of a community or area;
- A detailed statement of the facts that illustrate that the community or area is nonrural or rural using the rationale and supporting evidence stated above; and
- Any additional information supporting the proposed change.

***Threshold Requirements***

In addition to the basic requirements outlined above, the following threshold requirements apply. The Board shall only accept a proposal to designate a community or area as nonrural, if the Board determines the proposal meets the following threshold requirements:

- The proposal is based upon information not previously considered by the Board;
- The proposal provides substantive rationale and supporting evidence for determining the nonrural status of a community or area that takes into consideration the unique qualities of the region; and
- The proposal provides substantive information that supports the proponent's rationale that a community or area is nonrural.

The Board shall carefully weigh the initial recommendation from the affected Regional Advisory Council(s) when determining whether the proposal satisfies the threshold requirements outlined above. If the Board determines the proposal does not satisfy the threshold requirements, the proponent will be notified in writing. If it is determined the proposal does meet the threshold, it shall be considered in accordance with the process schedule and timeline set forth below.

***Limitation on Submission of Proposals Seeking Nonrural Determinations***

The Board is aware of the burden placed on rural communities and areas in defending their rural status. If the rural status of a community or area is maintained after a proposal to change its status to nonrural is rejected, then no proposals to change the rural status of that community or area shall be accepted until the next proposal cycle. If a new proposal is submitted during the next proposal cycle, then it must address a demonstrated change that was not previously considered by the Board. Additionally, the following considerations apply to resubmitting proposals to change a community's status from rural to nonrural:

- Whether or not there has been a "demonstrated change" to the rural identity of a community or area is the burden of the proponent to illustrate by a preponderance of the evidence;
- Many characteristics, individually or in combination, may constitute a "demonstrated change" including, but not limited to, changes in population size and density, economic indicators, military presence, industrial facilities, use of fish and wildlife, or degree of remoteness and isolation; and

- The Board's most recent decision on the nonrural status of a community or area will be the baseline for any future proposals for that community or area, thus, a "demonstrated change", as referred to in this portion of the process, must occur after the Board's most recent decision.

**Rescinding a Nonrural Determination**

For proposals seeking to have the Board rescind a nonrural determination, it is the proponent's responsibility to provide the Board with substantive narrative evidence to support their rationale of why the nonrural determination should be rescinded. Proposals seeking to have the Board rescind a nonrural determination must also include the basic requirements and meet the threshold requirements outlined below.

***Basic Requirements***

All proposals must contain the following information:

- Full name and mailing address of the proponent;
- A statement describing the proposed nonrural determination action requested;
- A description of the community or area considered as nonrural, including any current boundaries, borders, or distinguishing landmarks, so as to identify what Alaska residents would be affected by the change in rural status;
- Rationale and supporting evidence (law, policy, factors, or guidance) for the Board to consider in determining the nonrural status of a community or area;
- A detailed statement of the facts that illustrate that the community or area is rural using the rationale stated above; and
- Any additional information supporting the proposed change.

***Threshold Requirements***

In addition to the baseline information outlined above, the following threshold requirements apply. The Board shall only accept a proposal to rescind a nonrural determination, if the Board determines the proposal meets the following threshold requirements:

- The proposal is based upon information not previously considered by the Board;
- The proposal demonstrates that the information used and interpreted by the Board in designating the community as nonrural has changed since the original determination was made;
- The proposal provides substantive rationale and supporting evidence for determining the nonrural status of a community or area that takes into consideration the unique qualities of the region; and
- The proposal provides substantive information that supports the provided rationale that a community or area is rural instead of nonrural.

The Board shall determine whether the proposal satisfies the threshold requirements outlined above after considering the recommendation(s) from the affected Regional Advisory Council(s). If the Board determines the proposal does not satisfy the threshold

requirements, the proponent will be notified in writing. If it is determined the proposal does meet the threshold, it shall be considered in accordance with the process schedule and timeline set forth below.

## SECTION C: Decision Making

The Board will make nonrural determinations using a comprehensive approach that may consider such factors as population size and density, economic indicators, military presence, industrial facilities, use of fish and wildlife, degree of remoteness and isolation, and any other relevant material including information provided by the public. As part of its decision-making process, the Board may compare information from other, similarly-situated communities or areas if limited information exists for a certain community or area.

When acting on proposals to change the nonrural status of a community or area, the Board shall:

- Proceed on a case–by–case basis to address each proposal regarding nonrural determinations;
- Base its decision on nonrural status for a community or area on information of a reasonable and defensible nature contained within the administrative record;
- Make nonrural determinations based on a comprehensive application of evidence and considerations presented in the proposal that have been verified by the Board as accurate;
- Rely heavily on the recommendations from the affected Regional Advisory Council(s);
- Consider comments from government-to-government consultation with affected tribes;
- Consider comments from the public;
- Consider comments from the State of Alaska;
- Engage in consultation with affected ANCSA corporations;
- Have the discretion to clarify the geographical extent of the area relevant to the nonrural determination; and
- Implement a final decision on a nonrural determination in compliance with the APA.

**Regional Advisory Council Recommendations**

The Board intends to rely heavily on the recommendations of the Councils and recognizes that Council input will be critical in addressing regional differences in the nonrural determination process. The Board will look to the Regional Advisory Councils for confirmation that any relevant information brought forth during the nonrural determination process accurately describes the unique characteristics of the affected community or region.

**SECTION D: Process Schedule**

As authorized in 36 CFR 242.18(a) and 50 CFR 100.18(a), "The Board may establish a rotating schedule for accepting proposals on various sections of subpart C or D regulations over a period of years." To ensure meaningful input from the Councils and allow opportunities for tribal and ANCSA corporation consultation and public comment, the Board will only accept nonrural determination proposals every other year in even-numbered years in conjunction with the call for proposals to revise subsistence taking of fish and shellfish regulations, and nonrural determinations. If accepted, the proposal will be deliberated during the regulatory Board meeting in the next fisheries regulatory cycle. This schedule creates a three-year period for proposal submission, review, analysis, Regional Advisory Council input, tribal and ANCSA corporation consultation, public comment, and Board deliberation and decision.

**SECTION E: General Process Timeline**

Outlined in Table 1 and Table 2

Table 1. General Process Timeline

| |
|---|
| **1. January to March (Even Year)** – A proposed rule is published in the Federal Register with the call for proposals to revise subsistence taking of fish and shellfish regulations and nonrural determinations. |
| **2. April to July (Even Year)** – Staff will verify that proposals include the basic requirements and can be legally addressed by the Federal Subsistence Program. If the proposal is incomplete or cannot be addressed by the Federal Subsistence Program, the proponent will be notified in writing. Additionally for verified proposals, tribal consultation and ANCSA corporation consultation opportunities will be provided during this time. |
| **3. August to November (Even Year)** –Affected Regional Advisory Council(s) reviews the verified proposals and provides a preliminary recommendation for the Board. The Council preliminary recommendation may include: relevant regional characteristics; whether or not the Council supports the proposal; and if, in the Council's opinion, the proposal meets the threshold requirements with justification. This action shall occur at the affected Council's fall meeting on the record. |
| **4. November to December (Even Year)** – The Interagency Staff Committee (ISC) shall provide comments on each verified proposal. Staff shall organize nonrural determination proposal presentations that include the original proposal, the Council preliminary recommendation, tribal and ANCSA consultation comments, and the ISC comments. |
| **5. January (Odd Year)** – At the Board's public meeting, Staff will present the proposals, and the Board will determine if the threshold requirements have been met. If the Board determines the proposal does not satisfy the threshold requirements, the proponent will be notified in writing. If it is determined the proposal does meet the threshold requirements, the Board will direct staff to prepare a full analysis according to established guidelines and address the proposal in accordance with the process schedule and timeline set forth below. |
| **6. February (Odd Year) to July (Even Year) (18 months)** – For proposals determined to satisfy the threshold requirements, the Board will conduct public hearings in the communities that may be affected should the proposal be adopted by the Board. During this time period, independent of the fall Council meetings, interested tribes may request formal government-to-government consultation and ANCSA corporations may also request consultation on the nonrural determination proposals. |
| **7. August to November (Even Year)** –The Council(s) shall provide recommendations at their fall meetings and the ISC shall provide comments on the draft nonrural determination analyses. |
| **8. November to December (Even Year)** – Staff incorporates Council recommendations and ISC comments into the draft nonrural determination analyses for the Board. |
| **9. January (Odd Year)** – At the Board's Fisheries Regulatory meeting, staff present the nonrural determination analyses to the Board. The Board adopts, adopts with modification, or rejects the proposals regarding nonrural determinations. |

Table 2. General Process Timeline Comparison with other Cycles

| *Wildlife & FRMP Cycle* | *Fishery Cycle* | Dates / *Council Cycle* | Board or Activity | *Proposed Nonrural Determination Cycle* | |
|---|---|---|---|---|---|
| | | | | *Even Years* | |
| | *Fishery Review Cycle* | *January* | ***Board FRMP Work Session*** | *1* | Nonrural Proposed Rule |
| | | *February* *March* | Fishery Proposed Rule Jan- Mar | | |
| | | *April* | **Board Meeting** | *2* | Proposal verification, Tribal and ANCSA consultation |
| | | *July* | | | |
| | | *August* *September* *October* *November* | *Fishery Proposal Review* | *3* | Proposal Threshold Review by Councils |
| | | *December* | | *4* | Finalize Threshold presentations for the Board |
| *Wildlife & FRMP Review Cycle* | | *January* | **Board Meeting** | *5* | ***Odd Years - Board determines which proposals meet the threshold requirements*** |
| | | *February* *March* | Wildlife Proposed Rule Jan - Mar | *6* | Odd to Even Years (18 months) - Public Hearings, government-government consultation with the tribes, ANCSA Corporation Consultation, and writing of Nonrural Determination Analyses for proposals that meet the threshold requirements as determined by the Board |
| | | *April* *July* | | | |
| | | *August* *September* *October* *November* | *Wildlife Proposal & FRMP Project Review* | | |
| | | *December* | | | |
| | *Fishery Review Cycle* | *January* | ***Board FRMP Work Session*** | | |
| | | *February* *March* | Fishery Proposed Rule Jan- Mar | | |
| | | *April* | **Board Meeting** | | |
| | | *July* | | | |
| | | *August* *September* *October* *November* | *Fishery Proposal Review* | *7* | Even Years Analysis Review |
| | | *December* | | *8* | Finalize Nonrural Determination Analyses |
| | | *January* | **Board Meeting** | *9* | ***Odd Years – Final Board Decision*** |

SIGNATORIES

In WITNESS THEREOF, the parties hereto have executed this Policy as of the last date written below.

Chair of the Federal Subsistence Board
Date: 1-12-17

Regional Director
U.S. Fish and Wildlife Service
Date:

Regional Forester
USDA Forest Service
Date: 1/12/17

Regional Director
National Park Service
Date:

State Director
Bureau of Land Management
Date: 1/12/17

Regional Director
Bureau of Indian Affairs
Date: 1/12/2017

Member of the Federal Subsistence Board
Date: 01/12/2017

Member of the Federal Subsistence Board
Date: 01/12/17

**Appendix A – Final Rule – Rural Determination Process**

Federal Register / Vol. 80, No. 213 / Wednesday, November 4, 2015 / Rules and Regulations 68249

**DEPARTMENT OF AGRICULTURE**

**Forest Service**

**36 CFR Part 242**

**DEPARTMENT OF THE INTERIOR**

**Fish and Wildlife Service**

**50 CFR Part 100**

**[Docket No. FWS–R7–SM–2014–0063; FXRS12610700000–156–FF07J00000; FBMS# 4500086287]**

**RIN 1018–BA62**

## Subsistence Management Regulations for Public Lands in Alaska; Rural Determination Process

**AGENCIES:** Forest Service, Agriculture; Fish and Wildlife Service, Interior.

**ACTION:** Final rule.

**SUMMARY:** The Secretaries of Agriculture and the Interior are revising the regulations governing the rural determination process for the Federal Subsistence Management Program in Alaska. The Secretaries have removed specific guidelines, including requirements regarding population data, the aggregation of communities, and a decennial review. This change will allow the Federal Subsistence Board (Board) to define which communities or areas of Alaska are nonrural (all other communities and areas would, therefore, be rural). This new process will enable the Board to be more flexible in making decisions and to take into account regional differences found throughout the State. The new process will also allow for greater input from the Subsistence Regional Advisory Councils (Councils), Federally recognized Tribes of Alaska, Alaska Native Corporations, and the public.

**DATES:** This rule is effective November 4, 2015.

**ADDRESSES:** This rule and public comments received on the proposed rule may be found on the Internet at *www.regulations.gov* at Docket No. FWS–R7–SM–2014–0063. Board meeting transcripts are available for review at the Office of Subsistence Management, 1011 East Tudor Road, Mail Stop 121, Anchorage, AK 99503, or on the Office of Subsistence Management Web site (*https://www.doi.gov/subsistence*).

**FOR FURTHER INFORMATION CONTACT:** Chair, Federal Subsistence Board, c/o U.S. Fish and Wildlife Service, Attention: Eugene R. Peltola, Jr., Office of Subsistence Management; (907) 786–3888 or *subsistence@fws.gov*. For questions specific to National Forest System lands, contact Thomas Whitford, Regional Subsistence Program Leader, USDA, Forest Service, Alaska Region; (907) 743–9461 or *twhitford@fs.fed.us*.

**SUPPLEMENTARY INFORMATION:**

### Background

Under Title VIII of the Alaska National Interest Lands Conservation Act (ANILCA) (16 U.S.C. 3111–3126), the Secretary of the Interior and the Secretary of Agriculture (Secretaries) jointly implement the Federal Subsistence Management Program. This program provides a preference for take of fish and wildlife resources for subsistence uses on Federal public lands and waters in Alaska. The Secretaries published temporary regulations to carry out this program in the **Federal Register** on June 29, 1990 (55 FR 27114), and published final regulations in the **Federal Register** on May 29, 1992 (57 FR 22940). The program regulations have subsequently been amended a number of times. Because this program is a joint effort between Interior and Agriculture, these regulations are located in two titles of the Code of Federal Regulations (CFR): Title 36, "Parks, Forests, and Public Property," and Title 50, "Wildlife and Fisheries," at 36 CFR 242.1–242.28 and 50 CFR 100.1–100.28, respectively. The regulations contain subparts as follows: Subpart A, General Provisions; Subpart B, Program Structure; Subpart C, Board Determinations; and Subpart D, Subsistence Taking of Fish and Wildlife.

Consistent with Subpart B of these regulations, the Secretaries established a Federal Subsistence Board to administer the Federal Subsistence Management Program. The Board comprises:

- A Chair appointed by the Secretary of the Interior with concurrence of the Secretary of Agriculture;
- The Alaska Regional Director, U.S. Fish and Wildlife Service;
- The Alaska Regional Director, U.S. National Park Service;
- The Alaska State Director, U.S. Bureau of Land Management;
- The Alaska Regional Director, U.S. Bureau of Indian Affairs;
- The Alaska Regional Forester, U.S. Forest Service; and
- Two public members appointed by the Secretary of the Interior with concurrence of the Secretary of Agriculture.

Through the Board, these agencies and members participate in the development of regulations for subparts C and D, which, among other things, set forth program eligibility and specific harvest seasons and limits.

In administering the program, the Secretaries divided Alaska into 10 subsistence resource regions, each of which is represented by a Regional Advisory Council. The Councils provide a forum for rural residents with personal knowledge of local conditions and resource requirements to have a meaningful role in the subsistence management of fish and wildlife on Federal public lands in Alaska. The Council members represent varied geographical, cultural, and user interests within each region.

### Prior Rulemaking

On November 23, 1990 (55 FR 48877), the Board published a notice in the **Federal Register** explaining the proposed Federal process for making rural determinations, the criteria to be used, and the application of those criteria in preliminary determinations. On December 17, 1990, the Board adopted final rural and nonrural determinations, which were published on January 3, 1991 (56 FR 236). Final programmatic regulations were published on May 29, 1992, with only slight variations in the rural determination process (57 FR 22940). As a result of this rulemaking, Federal subsistence regulations at 36 CFR 242.15 and 50 CFR 100.15 require that the rural or nonrural status of communities or areas be reviewed every 10 years, beginning with the availability of the 2000 census data.

Because some data from the 2000 census was not compiled and available until 2005, the Board published a proposed rule in 2006 to revise the list of nonrural areas recognized by the Board (71 FR 46416, August 14, 2006). The final rule published in the **Federal Register** on May 7, 2007 (72 FR 25688).

### Secretarial Review

On October 23, 2009, Secretary of the Interior Salazar announced the initiation of a Departmental review of the Federal Subsistence Management Program in Alaska; Secretary of Agriculture Vilsack later concurred with this course of action. The review focused on how the Program is meeting the purposes and subsistence provisions of Title VIII of ANILCA, and if the Program is serving rural subsistence users as envisioned when it began in the early 1990s.

On August 31, 2010, the Secretaries announced the findings of the review, which included several proposed administrative and regulatory reviews and/or revisions to strengthen the Program and make it more responsive to those who rely on it for their subsistence uses. One proposal called

for a review, with Council input, of the rural determination process and, if needed, recommendations for regulatory changes.

The Board met on January 20, 2012, to consider the Secretarial directive and the Councils' recommendations and review all public, Tribal, and Alaska Native Corporation comments on the initial review of the rural determination process. After discussion and deliberation, the Board voted unanimously to initiate a review of the rural determination process and the 2010 decennial review. Consequently, the Board found that it was in the public's best interest to extend the compliance date of its 2007 final rule (72 FR 25688; May 7, 2007) on rural determinations until after the review of the rural determination process and the decennial review were completed or in 5 years, whichever comes first. The Board published a final rule on March 1, 2012 (77 FR 12477), extending the compliance date.

The Board followed this action with a request for comments and announcement of public meetings (77 FR 77005; December 31, 2012) to receive public, Tribal, and Alaska Native Corporations input on the rural determination process.

Due to a lapse in appropriations on October 1, 2013, and the subsequent closure of the Federal Government, some of the preannounced public meetings and Tribal consultations to receive comments on the rural determination process during the closure were cancelled. The Board decided to extend the comment period to allow for the complete participation from the Councils, public, Tribes, and Corporations to address this issue (78 FR 66885; November 7, 2013).

The Councils were briefed on the Board's **Federal Register** documents during their winter 2013 meetings. At their fall 2013 meetings, the Councils provided a public forum to hear from residents of their regions, deliberate on the rural determination process, and provide recommendations for changes to the Board.

The Secretaries, through the Board, also held hearings in Barrow, Ketchikan, Sitka, Kodiak, Bethel, Anchorage, Fairbanks, Kotzebue, Nome, and Dillingham to solicit comments on the rural determination process. Public testimony was recorded during these hearings. Government-to-government tribal consultations on the rural determination process were held between members of the Board and Federally recognized Tribes of Alaska. Additional consultations were held between members of the Board and Alaska Native Corporations.

Altogether, the Board received 475 substantive comments from various sources, including individuals, members of the Councils, and other entities or organizations, such as Alaska Native Corporations and borough governments. In general, this information indicated a broad dissatisfaction with the current rural determination process. The aggregation criteria were perceived as arbitrary. The current population thresholds were seen as inadequate to capture the reality of rural Alaska. Additionally, the decennial review was widely viewed to be unnecessary.

Based on this information, the Board at their public meeting held on April 17, 2014, elected to recommend a simplification of the process by determining which areas or communities are nonrural in Alaska; all other communities or areas would, therefore, be rural. The Board would make nonrural determinations using a comprehensive approach that considers population size and density, economic indicators, military presence, industrial facilities, use of fish and wildlife, degree of remoteness and isolation, and any other relevant material, including information provided by the public. The Board would rely heavily on the recommendations of the Subsistence Regional Advisory Councils.

In summary, based on Council and public comments, Tribal and Alaska Native Corporation consultations, and briefing materials from the Office of Subsistence Management, the Board developed a proposal that simplifies the process of rural determinations and submitted its recommendation to the Secretaries on August 15, 2014.

On November 24, 2014, the Secretaries requested that the Board initiate rulemaking to pursue the regulatory changes recommended by the Board. The Secretaries also requested that the Board obtain Council recommendations and public input, and conduct Tribal and Alaska Native Corporation consultation on the proposed changes. If adopted through the rulemaking process, the current regulations would be revised to remove specific guidelines, including requirements regarding population data, the aggregation of communities, and the decennial review, for making rural determinations.

**Public Review and Comment**

The Departments published a proposed rule on January 28, 2015 (80 FR 4521), to revise the regulations governing the rural determination process in subpart B of 36 CFR part 242 and 50 CFR part 100. The proposed rule opened a public comment period, which closed on April 1, 2015. The Departments advertised the proposed rule by mail, radio, newspaper, and social media; comments were submitted via *www.regulations.gov* to Docket No. FWS–R7–SM–2014–0063. During that period, the Councils received public comments on the proposed rule and formulated recommendations to the Board for their respective regions. In addition, 10 separate public meetings were held throughout the State to receive public comments, and several government-to-government consultations addressed the proposed rule. The Councils had a substantial role in reviewing the proposed rule and making recommendations for the final rule. Moreover, a Council Chair, or a designated representative, presented each Council's recommendations at the Board's public work session of July, 28, 2015.

The 10 Councils provided the following comments and recommendations to the Board on the proposed rule:

*Northwest Arctic Subsistence Regional Advisory Council*—unanimously supported the proposed rule.

*Seward Peninsula Subsistence Regional Advisory Council*—unanimously supported the proposed rule.

*Yukon-Kuskokwim Delta Subsistence Regional Advisory Council*—unanimously supported the proposed rule.

*Western Interior Alaska Regional Advisory Council*—supported the proposed rule.

*North Slope Subsistence Regional Advisory Council*—unanimously supported the proposed rule as written. The Council stated the proposed rule will improve the process and fully supported an expanded role and inclusion of recommendations of the Councils when the Board makes nonrural determinations. The Council wants to be closely involved with the Board when the Board sets policies and criteria for how it makes nonrural determinations under the proposed rule if the rule is approved, and the Council passed a motion to write a letter requesting that the Board involve and consult with the Councils when developing criteria to make nonrural determinations, especially in subject matter that pertains to their specific rural characteristics and personality.

*Bristol Bay Subsistence Regional Advisory Council*—supported switching the focus of the process from rural to

nonrural determinations. They indicated there should be criteria for establishing what is nonrural to make determinations defensible and justifiable, including determinations of the carrying capacity of the area for sustainable harvest, and governmental entities should not determine what is spiritually and culturally important for a community. They supported eliminating the mandatory decennial; however, they requested a minimum time limit between requests (at least 3 years). They discussed deference and supported the idea but felt it did not go far enough.

*Southcentral Alaska Subsistence Regional Advisory Council*—supported the proposed rule with modification. They recommended deference be given to the Councils on the nonrural determinations.

*Southeast Alaska Subsistence Regional Advisory Council*—supported the proposed rule with modification. The Council recommended a modification to the language of the proposed rule: "The Board determines, after considering the report and recommendations of the applicable regional advisory council, which areas or communities in Alaska are non-rural . . . ." The Council stated that this modification is necessary to prevent the Board from adopting proposals contrary to the recommendation(s) of a Council and that this change would increase transparency and prevent rural communities from being subject to the whims of proponents.

*Kodiak/Aleutians Subsistence Regional Advisory Council*—is generally appreciative that the Board has recommended changes to the rural determination process and supported elimination of the decennial review. The Council recommended that the Board implement definitive guidelines for how the Board will make nonrural determinations to avoid subjective interpretations and determinations; that the language of the proposed rule be modified to require the Board to defer to the Councils and to base its justification for not giving deference on defined criteria to avoid ambiguous decisions; that the Board provide program staff with succinct direction for conducting analyses on any proposals to change a community's status from rural to nonrural; and that the Board develop written policies and guidelines for making nonrural determinations even if there is a lack of criteria in the regulations. The Council is concerned that proposals to change rural status in the region will be frequently submitted from people or entities from outside the region; the Council is opposed to proposals of this nature from outside its region and recommends that the Board develop guidelines and restrictions for the proposal process that the Board uses to reassess nonrural status.

*Eastern Interior Alaska Subsistence Regional Advisory Council*—opposed the proposed rule due to the lack of any guiding criteria to determine what is rural or nonrural. They stated the lack of criteria could serve to weaken the rural determination process. They supported greater involvement of the Councils in the Board's process to make rural/nonrural determinations. This Council was concerned about changes including increasing developments, access pressure on rural subsistence communities and resources, and social conflicts in the Eastern Interior region.

A total of 90 substantive comments were submitted from public meetings, letters, deliberations of the Councils, and those submitted via *www.regulations.gov.*

- 54 supported the proposed rule;
- 16 neither supported nor opposed the proposed rule;
- 7 supported the proposed rule with modifications;
- 7 neither supported nor opposed the proposed rule and suggested modifications; and
- 6 opposed the proposed rule.

Major comments from all sources are addressed below:

*Comment:* The Board should provide, in regulatory language, objective criteria, methods, or guidelines for making nonrural determinations.

*Response:* During the request for public comment (77 FR 77005; December 31, 2012), the overwhelming response from the public was dissatisfaction with the list of regulatory guidelines used to make rural determinations. The Board, at their April 17, 2014, public meeting, stated that if the Secretaries approved the recommended simplification of the rural determination process, the Board would make nonrural determinations using a comprehensive approach that considers, but is not limited to, population size and density, economic indicators, military presence, industrial facilities, use of fish and wildlife, degree of remoteness and isolation, and any other relevant material, including information provided by the public. The Board also indicated that they would rely heavily on the recommendations of the Subsistence Regional Advisory Councils. The Board, at their July 28, 2015, public work session, directed that a subcommittee be established to draft options (policy or rulemaking) to address future rural determinations. The subcommittee options, once reviewed by the Board at their January 12, 2016, public meeting will be presented to the Councils for their review and recommendations.

*Comment:* The Board should give deference to the Regional Advisory Councils on nonrural determinations and place this provision in regulatory language.

*Response:* The Board expressed during its April 2014 and July 2015 meetings that it intends to rely heavily on the recommendations of the Councils and that Council input will be critical in addressing regional differences in the rural determination process. Because the Board has confirmed that Councils will have a meaningful and important role in the process, a change to the regulatory language is neither warranted nor necessary at the present time.

*Comment:* Establish a timeframe for how often proposed changes may be submitted.

*Response:* During previous public comment periods, the decennial review was widely viewed to be unnecessary, and the majority of comments expressed the opinion that there should not be a set timeframe used in this process. The Board has been supportive of eliminating a set timeframe to conduct nonrural determinations. However, this issue may be readdressed in the future if a majority of the Councils support the need to reestablish a nonrural review period.

*Comment:* Redefine "rural" to allow nonrural residents originally from rural areas to come home and participate in subsistence activities.

*Response:* ANILCA and its enacting regulations clearly state that you must be an Alaska resident of a rural area or community to take fish or wildlife on public lands. Any change to that definition is beyond the scope of this rulemaking.

*Comment:* Develop a policy for making nonrural determinations, including guidance on how to analyze proposed changes.

*Response:* The Board, at their July 28, 2015, public work session, directed that a subcommittee be established to draft options (policy or rulemaking) to address future rural determinations that, once completed, will be presented to the Councils for their review and recommendations.

*Comment:* Allow rural residents to harvest outside of the areas or communities of residence.

*Response:* All rural Alaskans may harvest fish and wildlife on public lands unless there is a customary and traditional use determination that identifies the specific community's or area's use of particular fish stocks or

wildlife populations or if there is a closure.

**Rule Promulgation Process and Related Rulemaking**

These final regulations reflect Secretarial review and consideration of Board and Council recommendations, Tribal and Alaska Native Corporations government-to-government tribal consultations, and public comments. The public received extensive opportunity to review and comment on all changes.

Because this rule concerns public lands managed by an agency or agencies in both the Departments of Agriculture and the Interior, identical text will be incorporated into 36 CFR part 242 and 50 CFR part 100.

Elsewhere in today's **Federal Register** is a direct final rule by which the Board is revising the list of rural determinations in subpart C of 36 CFR part 242 and 50 CFR part 100. See "Subsistence Management Regulations for Public Lands in Alaska; Rural Determinations, Nonrural List" in Rules and Regulations.

**Conformance With Statutory and Regulatory Authorities**

*Administrative Procedure Act Compliance*

The Board has provided extensive opportunity for public input and involvement in compliance with Administrative Procedure Act requirements, including publishing a proposed rule in the **Federal Register**, participation in multiple Council meetings, and opportunity for additional public comment during the Board meeting prior to deliberation. Additionally, an administrative mechanism exists (and has been used by the public) to request reconsideration of the Secretaries' decision on any particular proposal for regulatory change (36 CFR 242.18(b) and 50 CFR 100.18(b)). Therefore, the Secretaries believe that sufficient public notice and opportunity for involvement have been given to affected persons regarding this decision. In addition, because the direct final rule that is mentioned above and is related to this final rule relieves restrictions for many Alaskans by allowing them to participate in the subsistence program activities, we believe that we have good cause, as required by 5 U.S.C. 553(d), to make this rule effective upon publication.

*National Environmental Policy Act Compliance*

A Draft Environmental Impact Statement that described four alternatives for developing a Federal Subsistence Management Program was distributed for public comment on October 7, 1991. The Final Environmental Impact Statement (FEIS) was published on February 28, 1992. The Record of Decision (ROD) on Subsistence Management for Federal Public Lands in Alaska was signed April 6, 1992. The selected alternative in the FEIS (Alternative IV) defined the administrative framework of an annual regulatory cycle for subsistence regulations.

A 1997 environmental assessment dealt with the expansion of Federal jurisdiction over fisheries. The Secretary of the Interior, with concurrence of the Secretary of Agriculture, determined that expansion of Federal jurisdiction does not constitute a major Federal action significantly affecting the human environment and, therefore, signed a Finding of No Significant Impact.

*Section 810 of ANILCA*

An ANILCA section 810 analysis was completed as part of the FEIS process on the Federal Subsistence Management Program. The intent of all Federal subsistence regulations is to accord subsistence uses of fish and wildlife on public lands a priority over the taking of fish and wildlife on such lands for other purposes, unless restriction is necessary to conserve healthy fish and wildlife populations. The final section 810 analysis determination appeared in the April 6, 1992, ROD and concluded that the Program, under Alternative IV with an annual process for setting subsistence regulations, may have some local impacts on subsistence uses, but will not likely restrict subsistence uses significantly.

*Paperwork Reduction Act*

An agency may not conduct or sponsor and you are not required to respond to a collection of information unless it displays a currently valid Office of Management and Budget (OMB) control number. This rule does not contain any new collections of information that require OMB approval. OMB has reviewed and approved the collections of information associated with the subsistence regulations at 36 CFR part 242 and 50 CFR part 100, and assigned OMB Control Number 1018–0075, which expires February 29, 2016.

*Regulatory Planning and Review (Executive Orders 12866 and 13563)*

Executive Order 12866 provides that the Office of Information and Regulatory Affairs (OIRA) in the Office of Management and Budget will review all significant rules. OIRA has determined that this rule is not significant.

Executive Order 13563 reaffirms the principles of E.O. 12866 while calling for improvements in the nation's regulatory system to promote predictability, to reduce uncertainty, and to use the best, most innovative, and least burdensome tools for achieving regulatory ends. The executive order directs agencies to consider regulatory approaches that reduce burdens and maintain flexibility and freedom of choice for the public where these approaches are relevant, feasible, and consistent with regulatory objectives. E.O. 13563 emphasizes further that regulations must be based on the best available science and that the rulemaking process must allow for public participation and an open exchange of ideas. We have developed this rule in a manner consistent with these requirements.

*Regulatory Flexibility Act*

The Regulatory Flexibility Act of 1980 (5 U.S.C. 601 *et seq.*) requires preparation of flexibility analyses for rules that will have a significant effect on a substantial number of small entities, which include small businesses, organizations, or governmental jurisdictions. In general, the resources to be harvested under this rule are already being harvested and consumed by the local harvester and do not result in an additional dollar benefit to the economy. However, we estimate that two million pounds of meat are harvested by subsistence users annually and, if given an estimated dollar value of $3.00 per pound, this amount would equate to about $6 million in food value Statewide. Based upon the amounts and values cited above, the Departments certify that this rulemaking will not have a significant economic effect on a substantial number of small entities within the meaning of the Regulatory Flexibility Act.

*Small Business Regulatory Enforcement Fairness Act*

Under the Small Business Regulatory Enforcement Fairness Act (5 U.S.C. 801 *et seq.*), this rule is not a major rule. It does not have an effect on the economy of $100 million or more, will not cause a major increase in costs or prices for consumers, and does not have significant adverse effects on competition, employment, investment, productivity, innovation, or the ability of U.S.-based enterprises to compete with foreign-based enterprises.

*Executive Order 12630*

Title VIII of ANILCA requires the Secretaries to administer a subsistence priority on public lands. The scope of this Program is limited by definition to certain public lands. Likewise, these regulations have no potential takings of private property implications as defined by Executive Order 12630.

*Unfunded Mandates Reform Act*

The Secretaries have determined and certify pursuant to the Unfunded Mandates Reform Act, 2 U.S.C. 1502 *et seq.*, that this rulemaking will not impose a cost of $100 million or more in any given year on local or State governments or private entities. The implementation of this rule is by Federal agencies, and there is no cost imposed on any State or local entities or tribal governments.

*Executive Order 12988*

The Secretaries have determined that these regulations meet the applicable standards provided in sections 3(a) and 3(b)(2) of Executive Order 12988, regarding civil justice reform.

*Executive Order 13132*

In accordance with Executive Order 13132, the rule does not have sufficient Federalism implications to warrant the preparation of a Federalism summary impact statement. Title VIII of ANILCA precludes the State from exercising subsistence management authority over fish and wildlife resources on Federal lands unless it meets certain requirements.

*Executive Order 13175*

Title VIII of ANILCA does not provide specific rights to tribes for the subsistence taking of wildlife, fish, and shellfish. However, the Secretaries, through the Board, provided Federally recognized Tribes and Alaska Native corporations opportunities to consult on this rule. Consultation with Alaska Native corporations are based on Public Law 108–199, div. H, Sec. 161, Jan. 23, 2004, 118 Stat. 452, as amended by Public Law 108–447, div. H, title V, Sec. 518, Dec. 8, 2004, 118 Stat. 3267, which provides that: "The Director of the Office of Management and Budget and all Federal agencies shall hereafter consult with Alaska Native corporations on the same basis as Indian tribes under Executive Order No. 13175."

The Secretaries, through the Board, provided a variety of opportunities for consultation: Commenting on proposed changes to the existing rule; engaging in dialogue at the Council meetings; engaging in dialogue at the Board's meetings; and providing input in person, by mail, email, or phone at any time during the rulemaking process.

On March 23 and 24, 2015, the Board provided Federally recognized Tribes and Alaska Native Corporations a specific opportunity to consult on this rule. Federally recognized Tribes and Alaska Native Corporations were notified by mail and telephone and were given the opportunity to attend in person or via teleconference.

*Executive Order 13211*

This Executive Order requires agencies to prepare Statements of Energy Effects when undertaking certain actions. However, this rule is not a significant regulatory action under E.O. 13211, affecting energy supply, distribution, or use, and no Statement of Energy Effects is required.

**Drafting Information**

Theo Matuskowitz drafted these regulations under the guidance of Eugene R. Peltola, Jr. of the Office of Subsistence Management, Alaska Regional Office, U.S. Fish and Wildlife Service, Anchorage, Alaska. Additional assistance was provided by

- Daniel Sharp, Alaska State Office, Bureau of Land Management;
- Mary McBurney, Alaska Regional Office, National Park Service;
- Dr. Glenn Chen, Alaska Regional Office, Bureau of Indian Affairs;
- Trevor T. Fox, Alaska Regional Office, U.S. Fish and Wildlife Service; and
- Thomas Whitford, Alaska Regional Office, U.S. Forest Service.

**Authority**

This rule is issued under the authority of Title VIII of the Alaska National Interest Lands Conservation Act (ANILCA) (16 U.S.C. 3111–3126).

**List of Subjects**

*36 CFR Part 242*

Administrative practice and procedure, Alaska, Fish, National forests, Public lands, Reporting and recordkeeping requirements, Wildlife.

*50 CFR Part 100*

Administrative practice and procedure, Alaska, Fish, National forests, Public lands, Reporting and recordkeeping requirements, Wildlife.

**Regulation Promulgation**

For the reasons set out in the preamble, the Secretaries amend 36 CFR part 242 and 50 CFR part 100 as set forth below.

**PART ___—SUBSISTENCE MANAGEMENT REGULATIONS FOR PUBLIC LANDS IN ALASKA**

■ 1. The authority citation for both 36 CFR part 242 and 50 CFR part 100 continues to read as follows:

**Authority:** 16 U.S.C. 3, 472, 551, 668dd, 3101–3126; 18 U.S.C. 3551–3586; 43 U.S.C. 1733.

**Subpart B—Program Structure**

■ 2. In subpart B of 36 CFR part 242 and 50 CFR part 100, § ___.15 is revised to read as follows:

**§ ___.15 Rural determination process.**

(a) The Board determines which areas or communities in Alaska are nonrural. Current determinations are listed at § ___.23.

(b) All other communities and areas are, therefore, rural.

Dated: Oct. 28, 2015.

**Sally Jewell,**

*Secretary of the Interior.*

Dated: Sept. 30, 2015.

**Beth G. Pendleton,**

*Regional Forester, USDA—Forest Service.*

[FR Doc. 2015–27994 Filed 10–30–15; 8:45 am]

BILLING CODE 3410–11–4333–15–P

## ENVIRONMENTAL PROTECTION AGENCY

### 40 CFR Parts 52 and 81

[EPA–R04–OAR–2014–0904; FRL–9936–55–Region 4]

### Air Plan Approval and Air Quality Designation; TN; Reasonably Available Control Measures and Redesignation for the TN Portion of the Chattanooga 1997 Annual $PM_{2.5}$ Nonattainment Area

**AGENCY:** Environmental Protection Agency (EPA).

**ACTION:** Final rule.

**SUMMARY:** The Environmental Protection Agency (EPA) is approving the portion of a State Implementation Plan (SIP) revision submitted by the State of Tennessee, through the Tennessee Department of Environment and Conservation (TDEC), on October 15, 2009, that addresses reasonably available control measures (RACM), including reasonably available control technology (RACT), for the Tennessee portion of the Chattanooga, TN-GA-AL nonattainment area for the 1997 fine particulate matter ($PM_{2.5}$) national ambient air quality standards (NAAQS) (hereinafter referred to as the "Chattanooga TN-GA-AL Area" or

**Appendix B – Direct Final Rule – Nonrural List**

**Need for Correction**

As published, the final regulations (TD 9728) contain errors that may prove to be misleading and are in need of clarification.

**Correction of Publication**

Accordingly, the final regulations (TD 9728), that are subject to FR Doc. 2015–18816, are corrected as follows:

1. On page 45866, in the preamble, third column, last sentence of first full paragraph, the language "rules, including section 706(d)(2) and section 706(d)(3)." is corrected to read "rules, including section 704(c), § 1.704–3(a)(6) (reverse section 704(c)), section 706(d)(2), and section 706(d)(3)."
2. On page 45868, in the preamble, first column, fourth line from the bottom of the column, the language "interim closings of its books except at" is corrected to read "interim closing of its books except at".
3. On page 45871, in the preamble, second column, third line from the bottom of the column, under paragraph heading "*v. Deemed Timing of Variations,*" the language "taxable year was deemed to close at the" is corrected to read "taxable year was deemed to occur at the".
4. On page 45873, in the preamble, third column, eighth line from the bottom of the column, the language "taxable as of which the recipients of a" is corrected to read "taxable year as of which the recipients of a".
5. On page 45874, second column, eight lines from the bottom of the column, the following sentence is added to the end of the paragraph: "These final regulations do not override the application of section 704(c), including reverse section 704(c), and therefore the final regulations provide that the rules of section 706 do not apply in making allocations of book items upon a partnership revaluation."
6. On page 45876, in the preamble, second column, under paragraph heading "*Effective/Applicability Dates*", fifth line of the first paragraph, the language "of a special rule applicable to § 1.704–" is corrected to read "of a special rule applicable to § 1.706–".
7. On page 45876, in the preamble, second column, under paragraph heading "*Effective/Applicability Dates*", third line of the second paragraph, the language "regulations apply to the partnership" is corrected to read "regulations apply to partnership".
8. On page 45876, in the preamble, third column, fourth line from the top of the column, the language "that was formed prior to April 19, 2009." is corrected to read "that was formed prior to April 14, 2009."
9. On page 45877, first column, under paragraph heading "*List of Subjects,*" the fourth line, the language "26 CFR part 2" is corrected to read "26 CFR part 602".
10. On page 45883, third column, the first line of the signature block, the language "Karen L. Schiller," is corrected to read "Karen M. Schiller,".

**Martin V. Franks,**

*Chief, Publications and Regulations Branch, Legal Processing Division, Associate Chief Counsel (Procedure and Administration).*

[FR Doc. 2015–28014 Filed 11–3–15; 8:45 am]

BILLING CODE 4830–01–P

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**DEPARTMENT OF AGRICULTURE**

**Forest Service**

**36 CFR Part 242**

**DEPARTMENT OF THE INTERIOR**

**Fish and Wildlife Service**

**50 CFR Part 100**

**[Docket No. FWS–R7–SM–2015–0156; FXRS12610700000–156–FF07J00000; FBMS#4500086366]**

**RIN 1018–BA82**

## Subsistence Management Regulations for Public Lands in Alaska; Rural Determinations, Nonrural List

**AGENCY:** Forest Service, Agriculture; Fish and Wildlife Service, Interior.

**ACTION:** Direct final rule.

**SUMMARY:** This rule revises the list of nonrural areas in Alaska identified by the Federal Subsistence Board (Board). Only residents of areas that are rural are eligible to participate in the Federal Subsistence Management Program on public lands in Alaska. Based on a Secretarial review of the rural determination process, and the subsequent change in the regulations governing this process, the Board is revising the current nonrural determinations to the list that existed prior to 2007. Accordingly, the community of Saxman and the area of Prudhoe Bay will be removed from the nonrural list. The following areas continue to be nonrural, but their boundaries will return to their original borders: the Kenai Area; the Wasilla/Palmer area; the Homer area; and the Ketchikan area.

**DATES:** This rule is effective on December 21, 2015 unless we receive significant adverse comments on or before December 4, 2015.

**ADDRESSES:** You may submit comments by one of the following methods:

- *Electronically:* Go to the Federal eRulemaking Portal: *http://www.regulations.gov* and search for FWS–R7–SM–2015–0156, which is the docket number for this rulemaking.
- *By hard copy:* U.S. mail or hand-delivery to: USFWS, Office of Subsistence Management, 1011 East Tudor Road, MS 121, Attn: Theo Matuskowitz, Anchorage, AK 99503–6199

**FOR FURTHER INFORMATION CONTACT:** Chair, Federal Subsistence Board, c/o U.S. Fish and Wildlife Service, Attention: Eugene R. Peltola, Jr., Office of Subsistence Management; (907) 786–3888 or *subsistence@fws.gov*. For questions specific to National Forest System lands, contact Thomas Whitford, Regional Subsistence Program Leader, USDA, Forest Service, Alaska Region; (907) 743–9461 or *twhitford@fs.fed.us*.

**SUPPLEMENTARY INFORMATION:**

**Background**

Under Title VIII of the Alaska National Interest Lands Conservation Act (ANILCA) (16 U.S.C. 3111–3126), the Secretary of the Interior and the Secretary of Agriculture (Secretaries) jointly implement the Federal Subsistence Management Program (Program). This program provides a preference for take of fish and wildlife resources for subsistence uses on Federal public lands and waters in Alaska. Only residents of areas identified as rural are eligible to participate in the Program on Federal public lands in Alaska. Because this program is a joint effort between Interior and Agriculture, these regulations are located in two titles of the Code of Federal Regulations (CFR): Title 36, "Parks, Forests, and Public Property," and Title 50, "Wildlife and Fisheries," at 36 CFR 242.1–242.28 and 50 CFR 100.1–100.28, respectively.

Consistent with these regulations, the Secretaries established a Federal Subsistence Board (Board) comprising Federal officials and public members to administer the Program. One of the Board's responsibilities is to determine which communities or areas of the State are rural or nonrural. The Secretaries also divided Alaska into 10 subsistence resource regions, each of which is represented by a Regional Advisory Council (Council). The Council members represent varied geographical, cultural, and user interests within each region. The Councils provide a forum for rural residents with personal knowledge of local conditions and resource requirements to have a

meaningful role in the subsistence management of fish and wildlife on Federal public lands in Alaska.

**Related Rulemaking**

Elsewhere in today's **Federal Register** is a final rule that sets forth a new process by which the Board will make rural determinations ("Subsistence Management Regulations for Public Lands in Alaska; Rural Determination Process"). Please see that rule for background information on how this new process was developed and the extensive Council and public input that was considered. A summary of that information follows:

Until promulgation of the rule mentioned above, Federal subsistence regulations at 36 CFR 242.15 and 50 CFR 100.15 had required that the rural or nonrural status of communities or areas be reviewed every 10 years, beginning with the availability of the 2000 census data. Some data from the 2000 census was not compiled and available until 2005, so the Board published a proposed rule in 2006 to revise the list of nonrural areas recognized by the Board (71 FR 46416, August 14, 2006). The final rule published in the **Federal Register** on May 7, 2007 (72 FR 25688), and changed the rural determination for several communities or areas in Alaska. These communities had 5 years following the date of publication to come into compliance.

The Board met on January 20, 2012, and, among other things, decided to extend the compliance date of its 2007 final rule on rural determinations. A final rule published March 1, 2012 (77 FR 12477), that extended the compliance date until either the rural determination process and findings review were completed or 5 years, whichever came first. The 2007 regulations have remained in titles 36 and 50 of the CFR unchanged since their effective date.

The Board followed that action with a request for comments and announcement of public meetings (77 FR 77005; December 31, 2012) to receive public, Tribal, and Alaska Native Corporations input on the rural determination process. At their fall 2013 meetings, the Councils provided a public forum to hear from residents of their regions, deliberate on the rural determination process, and provide recommendations for changes to the Board. The Board also held hearings in Barrow, Ketchikan, Sitka, Kodiak, Bethel, Anchorage, Fairbanks, Kotzebue, Nome, and Dillingham to solicit comments on the rural determination process, and public testimony was recorded. Government-to-government tribal consultations on the rural determination process were held between members of the Board and Federally recognized Tribes of Alaska. Additional consultations were held between members of the Board and Alaska Native Corporations.

Altogether, the Board received 475 substantive comments from various sources, including individuals, members of the Councils, and other entities or organizations, such as Alaska Native Corporations and borough governments. In general, this information indicated a broad dissatisfaction with the current rural determination process.

Based on this information, the Board at their public meeting held on April 17, 2014, elected to recommend a simplification of the process by determining which areas or communities are nonrural in Alaska; all other communities or areas would, therefore, be rural. The Board would make nonrural determinations using a comprehensive approach that considers population size and density, economic indicators, military presence, industrial facilities, use of fish and wildlife, degree of remoteness and isolation, and any other relevant material, including information provided by the public. The Board would rely heavily on the recommendations of the Councils. The Board developed a proposal that simplifies the process of rural determinations and submitted its recommendation to the Secretaries on August 15, 2014.

On November 24, 2014, the Secretaries requested that the Board initiate rulemaking to pursue the regulatory changes recommended by the Board. The Secretaries also requested that the Board obtain Council recommendations and public input, and conduct Tribal and Alaska Native Corporation consultation on the proposed changes.

The Departments published a proposed rule on January 28, 2015 (80 FR 4521), to revise the regulations governing the rural determination process in subpart B of 36 CFR part 242 and 50 CFR part 100. Following a process that involved substantial Council and public input, the Departments published the final rule that may be found elsewhere in today's **Federal Register**.

**Direct Final Rule**

During that process, the Board went on to address a starting point for nonrural communities and areas. The May 7, 2007 (72 FR 25688), final rule was justified by the Board's January 3, 1991, notice (56 FR 236) adopting final rural and nonrural determinations and the final rule of May 7, 2002 (67 FR 30559), amending 36 CFR 242.23(a) and 50 CFR 100.23(a) to add the Kenai Peninsula communities (Kenai, Soldotna, Sterling, Nikiski, Salamatof, Kalifornsky, Kasilof, Clam Gulch, Anchor Point, Homer, Kachemak City, Fritz Creek, Moose Pass, and Seward) to the list of areas determined to be nonrural. The 2007 rule added the village of Saxman and the area of Prudhoe Bay to the nonrural list and expanded the nonrural boundaries of the Kenai Area; the Wasilla/Palmer area; the Homer area; and the Ketchikan Area.

Since the 2007 final rule (72 FR 25688; May 7, 2007) was contentious, and so many comments were received objecting to the changes imposed by that rule, the Board has decided to return to the rural determinations prior to the 2007 final rule. The Board further decided that the most expedient method to enact their decisions was to publish this direct final rule adopting the pre-2007 nonrural determinations. As a result, the Board has determined the following areas to be nonrural: Fairbanks North Star Borough; Homer area—including Homer, Anchor Point, Kachemak City, and Fritz Creek; Juneau area—including Juneau, West Juneau, and Douglas; Kenai area—including Kenai, Soldotna, Sterling, Nikiski, Salamatof, Kalifornsky, Kasilof, and Clam Gulch; Ketchikan area—including Ketchikan City, Clover Pass, North Tongass Highway, Ketchikan East, Mountain Point, Herring Cove, Saxman East, Pennock Island, and parts of Gravina Island; Municipality of Anchorage; Seward area—including Seward and Moose Pass, Valdez, and Wasilla area—including Palmer, Wasilla, Sutton, Big Lake, Houston, and Bodenberg Butte.

These final regulations reflect Board review and consideration of Council recommendations, Tribal and Alaska Native Corporations government-to-government tribal consultations, and public comments. Based on concerns expressed by some of the Councils and members of the public, the Board went on to direct staff to develop options for the Board to consider and for presentation to the Councils, to address future nonrural determinations. These options will be presented to the Board and Chairs of each Council at the January 12, 2016, public meeting.

We are publishing this rule without a prior proposal because we view this action as an administrative action by the Federal Subsistence Board. This rule will be effective, as specified above in DATES, unless we receive significant

adverse comments on or before the deadline set forth in DATES. Significant adverse comments are comments that provide strong justifications why the rule should not be adopted or for changing the rule. If we receive significant adverse comments, we will publish a notice in the **Federal Register** withdrawing this rule before the effective date. If no significant adverse comments are received, we will publish a document in the **Federal Register** confirming the effective date.

Because this rule concerns public lands managed by an agency or agencies in both the Departments of Agriculture and the Interior, identical text will be incorporated into 36 CFR part 242 and 50 CFR part 100.

**Conformance With Statutory and Regulatory Authorities**

*Administrative Procedure Act Compliance*

In compliance with Administrative Procedure Act, the Board has provided extensive opportunity for public input and involvement in its efforts to improve the rural determination process as described in the related final rule published elsewhere in today's **Federal Register**. In addition, anyone with concerns about this rulemaking action may submit comments as specified in **DATES** and **ADDRESSES**.

*National Environmental Policy Act Compliance*

A Draft Environmental Impact Statement that described four alternatives for developing a Federal Subsistence Management Program was distributed for public comment on October 7, 1991. The Final Environmental Impact Statement (FEIS) was published on February 28, 1992. The Record of Decision (ROD) on Subsistence Management for Federal Public Lands in Alaska was signed April 6, 1992. The selected alternative in the FEIS (Alternative IV) defined the administrative framework of an annual regulatory cycle for subsistence regulations.

A 1997 environmental assessment dealt with the expansion of Federal jurisdiction over fisheries and is available at the office listed under **FOR FURTHER INFORMATION CONTACT**. The Secretary of the Interior, with concurrence of the Secretary of Agriculture, determined that expansion of Federal jurisdiction does not constitute a major Federal action significantly affecting the human environment and, therefore, signed a Finding of No Significant Impact.

*Section 810 of ANILCA*

An ANILCA section 810 analysis was completed as part of the FEIS process on the Federal Subsistence Management Program. The intent of all Federal subsistence regulations is to accord subsistence uses of fish and wildlife on public lands a priority over the taking of fish and wildlife on such lands for other purposes, unless restriction is necessary to conserve healthy fish and wildlife populations. The final section 810 analysis determination appeared in the April 6, 1992, ROD and concluded that the Program, under Alternative IV with an annual process for setting subsistence regulations, may have some local impacts on subsistence uses, but will not likely restrict subsistence uses significantly.

During the subsequent environmental assessment process for extending fisheries jurisdiction, an evaluation of the effects of this rule was conducted in accordance with section 810. That evaluation also supported the Secretaries' determination that the rule will not reach the "may significantly restrict" threshold that would require notice and hearings under ANILCA section 810(a).

*Paperwork Reduction Act*

An agency may not conduct or sponsor and you are not required to respond to a collection of information unless it displays a currently valid Office of Management and Budget (OMB) control number. This rule does not contain any new collections of information that require OMB approval. OMB has reviewed and approved the collections of information associated with the subsistence regulations at 36 CFR part 242 and 50 CFR part 100, and assigned OMB Control Number 1018–0075, which expires February 29, 2016.

*Regulatory Planning and Review (Executive Orders 12866 and 13563)*

Executive Order 12866 provides that the Office of Information and Regulatory Affairs (OIRA) in the Office of Management and Budget will review all significant rules. OIRA has determined that this rule is not significant.

Executive Order 13563 reaffirms the principles of E.O. 12866 while calling for improvements in the nation's regulatory system to promote predictability, to reduce uncertainty, and to use the best, most innovative, and least burdensome tools for achieving regulatory ends. The executive order directs agencies to consider regulatory approaches that reduce burdens and maintain flexibility and freedom of choice for the public where these approaches are relevant, feasible, and consistent with regulatory objectives. E.O. 13563 emphasizes further that regulations must be based on the best available science and that the rulemaking process must allow for public participation and an open exchange of ideas. We have developed this rule in a manner consistent with these requirements.

*Regulatory Flexibility Act*

The Regulatory Flexibility Act of 1980 (5 U.S.C. 601 *et seq.*) requires preparation of flexibility analyses for rules that will have a significant effect on a substantial number of small entities, which include small businesses, organizations, or governmental jurisdictions. In general, the resources to be harvested under this rule are already being harvested and consumed by the local harvester and do not result in an additional dollar benefit to the economy. However, we estimate that two million pounds of meat are harvested by subsistence users annually and, if given an estimated dollar value of $3.00 per pound, this amount would equate to about $6 million in food value Statewide. Based upon the amounts and values cited above, the Departments certify that this rulemaking will not have a significant economic effect on a substantial number of small entities within the meaning of the Regulatory Flexibility Act.

*Small Business Regulatory Enforcement Fairness Act*

Under the Small Business Regulatory Enforcement Fairness Act (5 U.S.C. 801 *et seq.*), this rule is not a major rule. It does not have an effect on the economy of $100 million or more, will not cause a major increase in costs or prices for consumers, and does not have significant adverse effects on competition, employment, investment, productivity, innovation, or the ability of U.S.-based enterprises to compete with foreign-based enterprises.

*Executive Order 12630*

Title VIII of ANILCA requires the Secretaries to administer a subsistence priority on public lands. The scope of this Program is limited by definition to certain public lands. Likewise, these regulations have no potential takings of private property implications as defined by Executive Order 12630.

*Unfunded Mandates Reform Act*

The Secretaries have determined and certify pursuant to the Unfunded Mandates Reform Act, 2 U.S.C. 1502 *et seq.*, that this rulemaking will not impose a cost of $100 million or more

in any given year on local or State governments or private entities. The implementation of this rule is by Federal agencies and there is no cost imposed on any State or local entities or tribal governments.

*Executive Order 12988*

The Secretaries have determined that these regulations meet the applicable standards provided in sections 3(a) and 3(b)(2) of Executive Order 12988, regarding civil justice reform.

*Executive Order 13132*

In accordance with Executive Order 13132, the rule does not have sufficient Federalism implications to warrant the preparation of a Federalism summary impact statement. Title VIII of ANILCA precludes the State from exercising subsistence management authority over fish and wildlife resources on Federal lands unless it meets certain requirements.

*Executive Order 13175*

The Alaska National Interest Lands Conservation Act, Title VIII, does not provide specific rights to tribes for the subsistence taking of wildlife, fish, and shellfish. However, the Secretaries, through the Board, provided Federally recognized Tribes and Alaska Native corporations opportunities to consult on this rule. Consultation with Alaska Native corporations are based on Public Law 108–199, div. H, Sec. 161, Jan. 23, 2004, 118 Stat. 452, as amended by Public Law 108–447, div. H, title V, Sec. 518, Dec. 8, 2004, 118 Stat. 3267, which provides that: "The Director of the Office of Management and Budget and all Federal agencies shall hereafter consult with Alaska Native corporations on the same basis as Indian tribes under Executive Order No. 13175."

The Secretaries, through the Board, provided a variety of opportunities for consultation on the rural determination process: commenting on changes under consideration for the existing regulations; engaging in dialogue at the Council meetings; engaging in dialogue at the Board's meetings; and providing input in person, by mail, email, or phone at any time during the rulemaking process.

Since 2007 multiple opportunities were provided by the Board for Federally recognized Tribes and Alaska Native Corporations to consult on the subject of rural determinations. Federally recognized Tribes and Alaska Native Corporations were notified by mail and telephone and were given the opportunity to attend in person or via teleconference.

*Executive Order 13211*

This Executive Order requires agencies to prepare Statements of Energy Effects when undertaking certain actions. However, this rule is not a significant regulatory action under E.O. 13211, affecting energy supply, distribution, or use, and no Statement of Energy Effects is required.

**Drafting Information**

Theo Matuskowitz drafted these regulations under the guidance of Eugene R. Peltola, Jr. of the Office of Subsistence Management, Alaska Regional Office, U.S. Fish and Wildlife Service, Anchorage, Alaska. Additional assistance was provided by

- Daniel Sharp, Alaska State Office, Bureau of Land Management;
- Mary McBurney, Alaska Regional Office, National Park Service;
- Dr. Glenn Chen, Alaska Regional Office, Bureau of Indian Affairs;
- Trevor T. Fox, Alaska Regional Office, U.S. Fish and Wildlife Service; and
- Thomas Whitford, Alaska Regional Office, U.S. Forest Service.

**Authority**

This rule is issued under the authority of Title VIII of the Alaska National Interest Lands Conservation Act (ANILCA) (16 U.S.C. 3111–3126).

**List of Subjects**

*36 CFR Part 242*

Administrative practice and procedure, Alaska, Fish, National forests, Public lands, Reporting and recordkeeping requirements, Wildlife.

*50 CFR Part 100*

Administrative practice and procedure, Alaska, Fish, National forests, Public lands, Reporting and recordkeeping requirements, Wildlife.

**Regulation Promulgation**

For the reasons set out in the preamble, the Secretaries amend 36 CFR part 242 and 50 CFR part 100 as set forth below.

## PART—SUBSISTENCE MANAGEMENT REGULATIONS FOR PUBLIC LANDS IN ALASKA

■ 1. The authority citation for both 36 CFR part 242 and 50 CFR part 100 continues to read as follows:

**Authority:** 16 U.S.C. 3, 472, 551, 668dd, 3101–3126; 18 U.S.C. 3551–3586; 43 U.S.C. 1733.

### Subpart C—Board Determinations

■ 2. In subpart C of 36 CFR part 242 and 50 CFR part 100, § __.23 is revised to read as follows:

**§ __.23 Rural determinations.**

(a) The Board has determined all communities and areas to be rural in accordance with § __.15 except the following: Fairbanks North Star Borough; Homer area—including Homer, Anchor Point, Kachemak City, and Fritz Creek; Juneau area—including Juneau, West Juneau, and Douglas; Kenai area—including Kenai, Soldotna, Sterling, Nikiski, Salamatof, Kalifornsky, Kasilof, and Clam Gulch; Ketchikan area—including Ketchikan City, Clover Pass, North Tongass Highway, Ketchikan East, Mountain Point, Herring Cove, Saxman East, Pennock Island, and parts of Gravina Island; Municipality of Anchorage; Seward area—including Seward and Moose Pass, Valdez, and Wasilla/Palmer area—including Wasilla, Palmer, Sutton, Big Lake, Houston, and Bodenberg Butte.

(b) You may obtain maps delineating the boundaries of nonrural areas from the U.S. Fish and Wildlife Service at the Alaska Regional Office address provided at 50 CFR 2.2(g), or on the Web at *https://www.doi.gov/subsistence.*

Dated: September 30, 2015.

**Eugene R. Peltola, Jr.,**

*Assistant Regional Director, U.S. Fish and Wildlife Service, Acting Chair, Federal Subsistence Board.*

Dated: September 30, 2015.

**Thomas Whitford,**

*Subsistence Program Leader, USDA—Forest Service.*

[FR Doc. 2015–27996 Filed 10–30–15; 8:45 am]

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# Nonrural Policy Current Threshold Criteria

**SECTION B: Requirements for Proposals**

**Making a Nonrural Determination**

***Threshold Requirements***

In addition to the basic requirements outlined above, the following threshold requirements apply. The Board shall only accept a proposal to designate a community or area as nonrural, if the Board determines the proposal meets the following threshold requirements:

- The proposal is based upon information not previously considered by the Board;
- The proposal provides substantive rationale and supporting evidence for determining the nonrural status of a community or area that takes into consideration the unique qualities of the region; and
- The proposal provides substantive information that supports the proponent's rationale that a community or area is nonrural.

**Rescinding a Nonrural Determination**

***Threshold Requirements***

In addition to the baseline information outlined above, the following threshold requirements apply. The Board shall only accept a proposal to rescind a nonrural determination, if the Board determines the proposal meets the following threshold requirements:

- The proposal is based upon information not previously considered by the Board;
- The proposal demonstrates that the information used and interpreted by the Board in designating the community as nonrural has changed since the original determination was made;
- The proposal provides substantive rationale and supporting evidence for determining the nonrural status of a community or area that takes into consideration the unique qualities of the region; and
- The proposal provides substantive information that supports the provided rationale that a community or area is rural instead of nonrural.

# Nonrural Policy Threshold Criteria
# Suggested Revisions

**SECTION B: Requirements for Proposals**

**Making a Nonrural Determination**

***Threshold Requirements***

In addition to the basic requirements outlined above, the following threshold requirements apply. The Board shall only accept a proposal to designate a community or area as nonrural, if the Board determines the proposal meets the following threshold requirements:

- ~~The proposal is based upon information not previously considered by the Board;~~
- The proposal provides new or different information than was used by the Board in its most recent decision about the nonrural status of the individual community or area
- The proposal provides substantive rationale ~~and supporting evidence~~ for ~~determining~~ the nonrural character ~~status~~ of a community or area that takes into consideration the unique qualities of the region; and
- The proposal provides ~~substantive information that supports~~ evidence supporting the proponent's rationale that a community or area is nonrural.

**Rescinding a Nonrural Determination**

***Threshold Requirements***

In addition to the baseline information outlined above, the following threshold requirements apply. The Board shall only accept a proposal to rescind a nonrural determination, if the Board determines the proposal meets the following threshold requirements:

- ~~The proposal is based upon information not previously considered by the Board;~~
- The proposal provides new or different information than was used by the Board in its most recent decision about the nonrural status of the individual community or area~~demonstrates that the information used and interpreted by the Board in designating the community as nonrural has changed since the original determination was made~~;
- The proposal provides substantive rationale ~~and supporting evidence~~ for ~~determining~~ the ~~non~~rural character ~~status~~ of a community or area that takes into consideration the unique qualities of the region; and
- The proposal provides ~~substantive information~~ evidence ~~that~~ supporting~~s~~ the proponent's ~~vided~~ rationale that a community or area is rural instead of nonrural.

# Nonrural Policy Revised Threshold Criteria

**SECTION B: Requirements for Proposals**

**Making a Nonrural Determination**

***Threshold Requirements***

In addition to the basic requirements outlined above, the following threshold requirements apply. The Board shall only accept a proposal to designate a community or area as nonrural, if the Board determines the proposal meets the following threshold requirements:

- The proposal provides new or different information than was used by the Board in its most recent decision about the nonrural status of the individual community or area;
- The proposal provides substantive rationale for the nonrural character of a community or area that takes into consideration the unique qualities of the region; and
- The proposal provides evidence supporting the proponent's rationale that a community or area is nonrural.

**Rescinding a Nonrural Determination**

***Threshold Requirements***

In addition to the baseline information outlined above, the following threshold requirements apply. The Board shall only accept a proposal to rescind a nonrural determination, if the Board determines the proposal meets the following threshold requirements:

- The proposal provides new or different information than was used by the Board in its most recent decision about the nonrural status of the individual community or area;
- The proposal provides substantive rationale for the rural character of a community or area that takes into consideration the unique qualities of the region; and
- The proposal provides evidence supporting the proponent's rationale that a community or area is rural instead of nonrural.

**Table 1: General Process Timeline**

**Administrative Edits – [**Additions in bold and blue. Strike through language to be deleted.]

Table 1. General Process Timeline

| |
|---|
| **1. January to March (Even Year)** – A proposed rule is published in the Federal Register with the call for proposals to revise subsistence taking of fish and shellfish regulations and nonrural determinations. |
| **2**. **April to July (Even Year)** – Staff will verify that proposals include the basic requirements and can be legally addressed by the Federal Subsistence Program. If the proposal is incomplete or cannot be addressed by the Federal Subsistence Program, the proponent will be notified in writing. Additionally for verified proposals, tribal consultation and ANCSA corporation consultation opportunities will be provided during this time. |
| **3. August to November (Even Year)** – **Staff will conduct a threshold assessment for verified proposals.** Affected Regional Advisory Council(s) reviews the verified proposals and provides ~~a preliminary recommendation~~ **comments** for the Board. The Council ~~preliminary recommendation~~ **comments** may include: relevant regional characteristics; ~~whether or not the Council supports the proposal;~~ and if, in the Council's opinion, the proposal meets the threshold requirements with justification. This action shall occur at the affected Council's fall meeting on the record. |
| **4. November to December (Even Year) –** The Interagency Staff Committee (ISC) shall provide comments on each verified proposal. Staff shall organize nonrural determination proposal presentations that include the original proposal, the Council preliminary recommendation, tribal and ANCSA consultation comments, and the ISC comments. |
| **5**. **January (Odd Year)** – At the Board's public meeting, Staff will present the proposals, and the Board will determine if the threshold requirements have been met. If the Board determines the proposal does not satisfy the threshold requirements, the proponent will be notified in writing. If it is determined the proposal does meet the threshold requirements, the Board will direct staff to prepare a full analysis according to established guidelines and address the proposal in accordance with the process schedule and timeline set forth below. |
| **6. February (Odd Year) to July (Even Year) (18 months)** – For proposals determined to satisfy the threshold requirements, the Board will conduct public hearings in communities that may be affected should the proposal be adopted by the Board. **OSM staff will also confer with affected Regional Advisory Council(s) about the unique regional characteristics that should be considered in the analysis of the proposal and the suggested public hearing schedule.** During this time period, independent of the fall Council meetings, interested tribes may request formal government-to-government consultation and ANCSA corporations may also request consultation on the nonrural determination proposals. |
| **7. August to November (Even Year)** –The Council(s) shall provide recommendations at their |

| |
|---|
| fall meetings and the ISC shall provide comments on the draft nonrural determination analyses. |
| **8. November to December (Even Year)** – Staff incorporates Council recommendations and ISC comments into the draft nonrural determination analyses for the Board. |
| **9. January (Odd Year)** – At the Board's Fisheries Regulatory meeting, staff present the nonrural determination analyses to the Board. The Board adopts, adopts with modification, or rejects the proposals regarding nonrural determinations. |

Draft Template July 2019

**NONRURAL PROPOSAL NPXX-XX COMMUNITY**
**THRESHOLD REQUIREMENTS ASSESSMENT: MAKING NONRURAL DETERMINATION**

**ISSUE**

Nonrural Proposal NPXX-XX, submitted by [insert proponent] of [insert community], is a request to make the nonrural determination for [insert community]. In consultation with the [insert region] Regional Advisory Council and based on recommendations from the Interagency Staff Committee (ISC), the OSM preliminary conclusion is Nonrural Proposal NPXX-XX met/not met the following "Threshold" requirements:

**PRELIMINARY ASSESSMENT OF THRESHOLD REQUIREMENTS**

When making a nonrural determination there are three requirements that the Federal Subsistence Board (Board) uses to ensure a proposal has met the threshold in order to proceed with an analysis.

**Threshold Requirement 1.** The proposal provides new or different information than was used by the Board in its most recent decision about the nonrural status of the individual community or area;

*Provide a justification/description of the threshold requirement here. How does the proposal meet or not meet the threshold requirement.*

*OSM Conclusion:* **Threshold met/not met**

**Threshold Requirement 2.** "The proposal provides substantive rationale for the nonrural character of a community or area that takes into consideration the unique qualities of the region."

*Provide a justification/description of the threshold requirement here. How does the proposal meet or not meet the threshold requirement.*

*OSM Conclusion:* **Threshold met/not met**

**Threshold Requirement 3.** "The proposal provides evidence supporting the proponent's rationale that a community or area is nonrural."

*Provide a justification/description of the threshold requirement here. How does the proposal meet or not meet the threshold requirement.*

*OSM Conclusion:* **Threshold met/not met**

Draft Template July 2019

*Provide the following for the Federal Subsistence Board Meeting:*

**SUBSISTENCE REGIONAL ADVISORY COUNCIL COMMENTS**

**Region Alaska Subsistence Regional Advisory Council**

**INTERAGENCY STAFF COMMITTEE COMMENTS**

Draft Template July 2019

**NONRURAL PROPOSAL NPXX-XX COMMUNITY**
**THRESHOLD REQUIREMENTS ASSESSMENT: RESCINDING**

**ISSUE**

Nonrural Proposal NPXX-XX, submitted by proponent of community, is a request to rescind the nonrural determination for community. In consultation with the region Regional Advisory Council and based on recommendations from the Interagency Staff Committee (ISC), the OSM preliminary conclusion is Nonrural Proposal NPXX-XX met/not met the following "Threshold" requirements:

**PRELIMINARY ASSESSMENT OF THRESHOLD REQUIREMENTS**

When rescinding a nonrural determination there are three requirements that the Federal Subsistence Board (Board) uses to ensure a proposal has met the threshold in order to proceed with an analysis.

**Threshold Requirement 1.** "The proposal provides new or different information than was used by the Board in its most recent decision about the nonrural status of the individual community or area."

*Provide a justification/description of the threshold requirement here. How does the proposal meet or not meet the threshold requirement.*

*OSM Conclusion:* **Threshold met/not met**

**Threshold Requirement 2.** "The proposal provides substantive rationale for the rural character of a community or area that takes into consideration the unique qualities of the region."

*Provide a justification/description of the threshold requirement here. How does the proposal meet or not meet the threshold requirement.*

*OSM Conclusion:* **Threshold met/not met**

**Threshold Requirement 3.** "The proposal provides evidence supporting the proponent's rationale that a community or area is rural instead of nonrural."

*Provide a justification/description of the threshold requirement here. How does the proposal meet or not meet the threshold requirement.*

*OSM Conclusion:* **Threshold met/not met**

Draft Template July 2019

*Provide the following for the Federal Subsistence Board Meeting:*

**SUBSISTENCE REGIONAL ADVISORY COUNCIL COMMENTS**

**Region Alaska Subsistence Regional Advisory Council**

**INTERAGENCY STAFF COMMITTEE COMMENTS**

# STAFF ANALYSIS
# WSA19-01

## ISSUES

Temporary Wildlife Special Action WSA19-01 was submitted by the Togiak National Wildlife Refuge (Refuge). The Refuge requests that the Federal moose hunt area in the portion of Unit 18 south of and including the Kanektok River drainage to the Goodnews River drainage be enlarged to match the existing State hunt area boundary. The existing Federal hunt area consists of Federal public lands south of and including the Kanektok River to the Goodnews River drainage. The proposed addition consists of Federal public lands between the Kanektok and Eek River drainages (**Figure 1**). WSA19-01 also requests that the Federal public lands closure within this hunt area be rescinded and that a Federal season be established.

## DISCUSSION

Currently, the hunt area that includes the Kanektok drainage of Unit 18 is different in State and Federal regulation. The State hunt area encompasses the entire area between the Eek River drainage to the north and the Goodnews River drainage to the south. Most of this area is drained by the Kanektok and Arolik Rivers. However, the northernmost portion of the hunt area is drained by several smaller creeks that are not part of the Kanektok watershed, including Kuskokwak and Tungak Creeks (**Figure 1**). The Federal hunt area excludes these drainages. Rather, these drainages are a noncontiguous portion of the Federal Unit 18 remainder moose hunt area, which occurs in northern Unit 18 and includes the lower Yukon River, and where moose abundance is very high and season and harvest limits are liberal. WSA19-01 requests that the Federal Kanektok/Arolik hunt area be enlarged to include these minor drainages, consistent with the State's hunt area.

WSA19-01 also requests that, within this newly described hunt area, the Federal public lands closure be rescinded and that a Sep. 1 – Sep. 30 season be opened with a harvest limit of 1 antlered bull by State registration permit. The Refuge notes that recent surveys show that the moose population within the Kanektok and Arolik drainages has increased significantly since 2013. The Refuge believes that the proposed changes will not have a negative impact on the moose population in the area. They also note that the changes will result in alignment of State and Federal regulation, which will allow Federally qualified subsistence users to hunt moose throughout the hunt area with a single permit, regardless of land status.

The applicable Federal regulations are found in 36 CFR 242.19(b) and 50 CFR 100.19(b) (Temporary Special Actions) and state that:

> *. . . After adequate notice and public hearing, the Board may temporarily close or open public lands for the taking of fish and wildlife for subsistence uses, or modify the requirements for subsistence take, or close public lands for the taking of fish and wildlife for nonsubsistence uses, or restrict take for nonsubsistence uses.*

**Existing Federal Regulation**

**Unit 18—Moose**

| | |
|---|---|
| *Unit 18 – south of and including the Kanektok River drainages to the Goodnews River drainage.* | *No open season* |
| *Federal public lands are closed to the taking of moose by all users* | |
| *Unit 18, remainder—2 moose, only one of which may be antlered. Antlered bulls may not be harvested from Oct. 1 through Nov. 30* | *Aug. 1 – Apr. 30* |

**Proposed Federal Regulation**

**Unit 18—Moose**

| | |
|---|---|
| *Unit 18 – south of ~~and including the Kanektok River drainages to~~* ***the Eek River drainage and north of*** *the Goodnews River drainage****—1 antlered bull by State registration permit****.* | *~~No open season~~* ***Sep. 1 – Sep. 30*** |
| *~~Federal public lands are closed to the taking of moose by all users~~* | |
| *Unit 18, remainder—2 moose, only one of which may be antlered. Antlered bulls may not be harvested from Oct. 1 through Nov. 30* | *Aug. 1 – Apr. 30* |

**Existing State Regulation**

**Unit 18—Moose**

| | | |
|---|---|---|
| *Residents: Unit 18 – south of the Eek River drainage and north of the Goodnews River drainage— one antlered bull by permit available in Quinhagak Aug. 1 – Sep. 30.* | *RM617* | *Sep. 1 – Sep. 30* |
| *Nonresidents: Unit 18 – south of the Eek River drainage and north of the Goodnews River drainage* | | *No open season* |

**Extent of Federal Public Lands/Waters**

Federal public lands comprise approximately 79% of the existing Kanektok/Arolik moose hunt area, and consist of 69% U.S. Fish and Wildlife Service (USFWS) managed lands and 10% Bureau of Land Management managed lands. Federal public lands comprise approximately 87% of the proposed addition (the area including the Kuskokwak and Tungak Creek drainages), all of which are managed by USFWS (**Figure 1**).

**Customary and Traditional Use Determinations**

Residents of Unit 18, Lower Kalskag and Upper Kalskag have a customary and traditional use determination for moose in Unit 18 remainder.

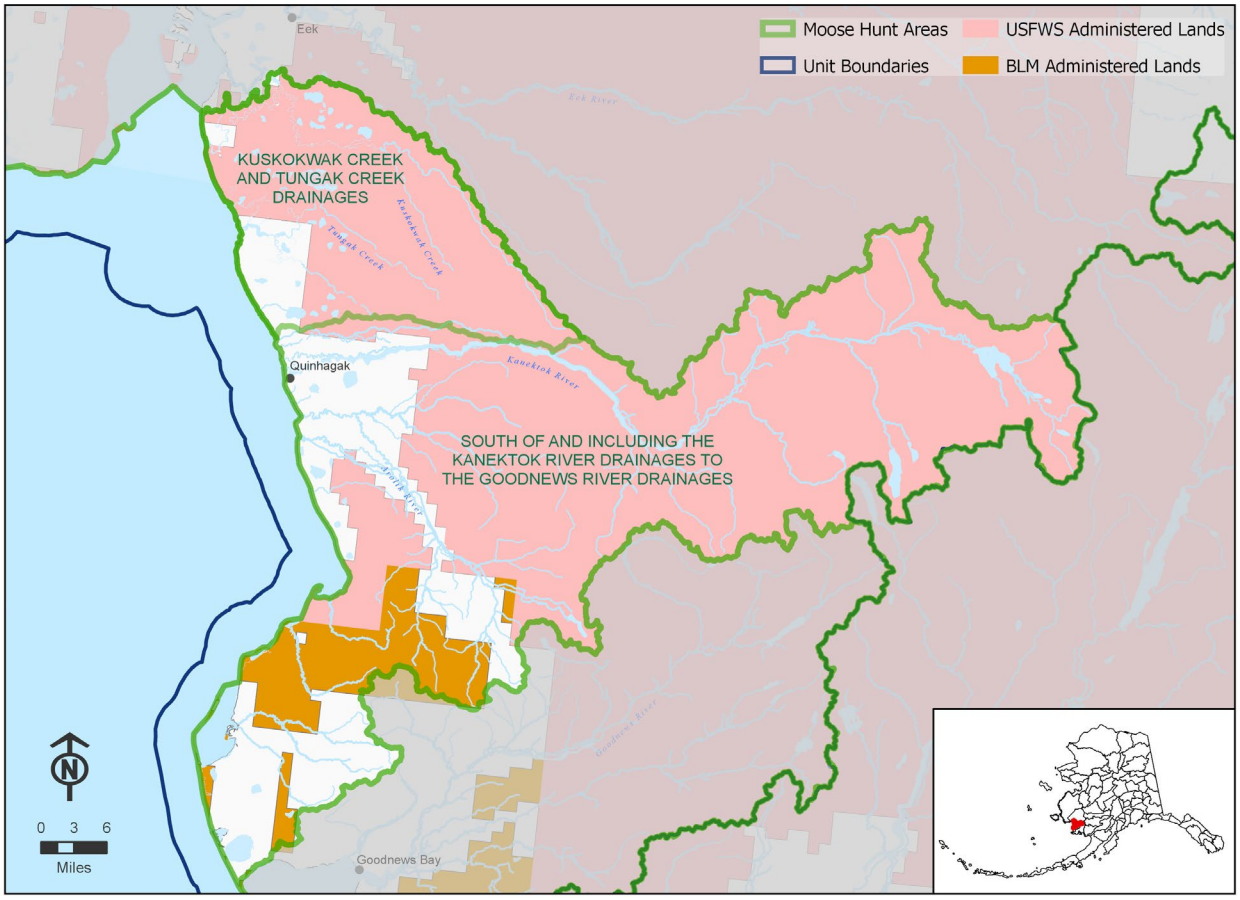


**Figure 1.** The existing Federal hunt area includes only the area south of and including the Kanektok River drainages to the Goodnews drainages. This temporary special action requests the addition of that area including the Kuskokwak Creek and Tungak Creek drainages to the existing Federal hunt area. These minor drainages are currently part of the Unit 18 remainder hunt area.

**Regulatory History**

Federal public lands in this hunt area have been closed to the harvest of moose since 1991. That year, the Federal Subsistence Board (Board) considered Proposal P91-124, submitted by the Refuge. Proposal

P91-124 requested that the regulations for portions of Unit 18 in the Kanektok and Goodnews river drainages be consolidated with the regulation for the lower Yukon hunt area, which had no open moose season at that time. The Refuge believed that closing the season was necessary to allow for the establishment of a harvestable moose population in the Kanektok/Goodnews area. The Board adopted this proposal with modification to close Federal public lands to moose harvest throughout Unit 18.

Separate regulations were established for the Kanektok/Goodnews hunt area and the lower Yukon hunt area in 1994, when Proposal P94-45 was adopted by the Board. This proposal initiated a moose season in the lower Yukon hunt area, but Federal public lands in the Kanektok/Goodnews River hunt area remained closed.

In 1998, as a result of the Board's adoption of WP98-63, the hunt area descriptor for the Kanektok/Goodnews area was modified to include the portion of Unit 18 "south of and including the Kanektok River drainage". The change clarified that the hunt area included the Arolik River drainage, which is located between the Kanektok and Goodnews drainages, as originally intended. It did not address the minor drainages north of the Kanektok drainage, which remained part of the lower Yukon hunt area.

In 2008, the Board considered WP08-34, which requested that a season be established in the southern portion of the Kanektok/Arolik/Goodnews hunt area. The Board adopted the proposal with modification and established the contemporary Federal hunt areas. In the portion of Unit 18 in the "Goodnews River drainage and south to the Unit 18 boundary", the Federal public lands closure was rescinded and a season was established. In the portion of Unit 18 "south of and including the Kanektok River drainages to the Goodnews River drainage", the closure was retained. The Board's action followed a 2005 decision by the Alaska Board of Game (BOG) on Proposals 21 and 22 to similarly create two distinct hunt areas; the portion "south of and including the Goodnews River drainage" and the portion "south of the Eek River drainage and north of the Goodnews River drainage". While the boundary dividing the two hunt areas was identical in State and Federal regulation, discrepancies persisted in the Kanektok/Arolik hunt areas due to the existing exclusion of the minor drainages north of the Kanektok River drainage in Federal regulation.

There have been two previous attempts to establish a Federal moose season in the Kanektok/Arolik hunt area. Proposal WP10-61 and special action request WSA14-01 were both submitted by the Native Village of Kwinhagak (Quinhagak) IRA Council. Each requested the establishment of a Sep. 1 –Sep. 30 moose season, with a harvest limit of one antlered bull by State registration permit. However, these requests were rejected due to ongoing conservation concerns.

The existing Sep. 1 – Sep. 30 State resident season has been in place since 2005 and has been limited to one antlered bull since 2006.

**Current Events Involving the Species**

As outlined in the Board's closure policy (**Appendix 1**), closures should be rescinded as soon as practicable when the conditions that originally justified the closure no longer exist. The Federal public lands closure in the Kanektok/Arolik hunt area was reviewed in 2018 with Wildlife Closure Review WCR20-40 (formerly identified as WCR18-40). At their March 12 – 13, 2019 meeting, the Yukon Kuskokwim Delta

Subsistence Regional Advisory Council (Council) supported opening Federal public lands only to Federally qualified subsistence users.

At their March 14 – 19, 2019 meeting, the BOG adopted Proposal 150, which requested that a registration permit be required for the State moose hunt in the Kanektok/Arolik hunt area, rather than the existing harvest ticket. The proposal, submitted by the Alaska Department of Fish and Game (ADF&G), was one of a series of coordinated regulatory requests made to the Federal and State boards related to this hunt area. In addition to Proposal 150, these requests include Temporary Special Action Request WSA19-01 and Wildlife Proposal WP20-32/33. Both of these requests were submitted by the Refuge and asked that the Kanektok/Arolik Federal moose hunt area be enlarged to match the existing State hunt area boundary, that the Federal public lands closure within this hunt area be rescinded, and that a Federal season be opened using a State registration permit.

On July 10, 2019, an ANCSA corporation consultation, a Tribal consultation, and a public hearing were held in Quinhagak to gather feedback on WSA19-01. Quinhagak is the sole community within the Kanektok/Arolik moose hunt area, though residents of neighboring communities of Eek and Goodnews Bay likely hunt there too.

There were no corporation representatives present for the ANCSA corporation consultation. However, OSM staff were invited to meet informally with the CEO and several board members of Qanirtuuq Inc. following the formal consultation. During this discussion, corporation representatives expressed some concern with the special action request. They noted that the popularity of the Kanektok River among sport anglers has impacted river banks. They were concerned that opening Federal land may result in an influx of non-local users that could exacerbate these impacts, including on corporation lands. They also expressed concern about the potential for increased air traffic, and the possibility that an increase in sport hunting may ultimately harm subsistence users if harvest quotas are met early.

The Tribal consultation with the Native Village of Kwinhagak was well attended, with the Tribal Administrator and eight Tribal Council members present. In addition to OSM staff, Togiak National Wildlife Refuge biological staff were also present for the discussion. Questions from Tribal Council members prompted discussion about the status of moose in the area, the geographic limits of the proposed hunt, and potential effects on subsistence users from neighboring communities, specifically residents of Eek. There was also a discussion, with staff and among Tribal Council members, about the implications of using a State registration permit for the proposed Federal hunt. Because this fall will be the first year that the State's registration permit will be implemented, there was some confusion about what the requirements for that hunt will be, and how those requirements would change with the addition of a Federal hunt. Though the Tribal Council did not offer a formal position, several individuals representing their own position expressed support for the special action request. Overall, comments included general support for more opportunity for the community to hunt moose in the area and to put food on the table. The Tribal Council members expressed appreciation for the information and for the opportunity to discuss the proposal. They also noted that if the Temporary Special Action is approved, there will be additional opportunities to make recommendations on any needed adjustments when the associated wildlife regulatory proposal is considered.

The public hearing was held in the evening, with 22 members of the public attending in-person and one joining by teleconference. In addition to OSM and Refuge Staff, ADF&G biological staff were also present. Prior to opening the floor for public comment, there was a general discussion about hunting requirements. Echoing the Tribal Consultation, much of the discussion was focused on licensing and permitting requirements for hunting under the new State permit. One notable point that came from this discussion is that the State's Area Biologist has the discretion and willingness to change how, where, and when State registration permits are issued. This resolves one concern with the special action request—that residents of Eek, who have C&T for a Federal hunt in this area, would have to travel to Quinhagak to secure permits to hunt in drainages that are relatively close to their community.

Federal and State staff fielded several questions about allowances for proxy or designated hunts, as well as funerary hunts. There were also enquiries about how enforcement pressure was expected to change, given the new State permit and, potentially, a Federal hunt. There were several questions related to private lands such as Native Allotments and Alaska Native Corporation lands, including those that are inholdings within Federal public lands. This discussion focused on which regulations were applicable on these lands and whether it would change in the fall. This was a particular concern for Qanirtuuq Inc., which has allotments along the Arolik River corridor. The community of Quinhagak is familiar with the impact of sport and commercial activity on local resources, given the popularity of the Kanektok River among anglers and rafters, and they are cautious about inviting an additional influx of non-locals.

Among participants who spoke during the public comment portion of the meeting, there was support for the special action request. Participants noted that they have seen the moose population increase and that opening Federal lands would provide additional opportunities for Federally qualified subsistence users. One individual noted that this regulatory change would allow local hunters to hunt in the uplands in areas where the river is bounded by Federal lands, rather than be restricted to State-managed gravel bars. He also noted that having the same permit to hunt on Federal and State lands would allow for a seamless moose hunt during the established season, minimizing regulatory complexity. Some supporters suggested that the Federal hunt could be opened early, or that a winter hunt could be established if the moose population supported additional hunting opportunity. One teleconference participant from the Native Village of Eek said that the community has seen the moose population go up in their area. She noted that they mostly see residents of Eek and Quinhagak hunting along the river, along with a few hunters from Tuntutuliak. The Eek representative expressed her personal support for the proposal based on what she heard from the discussion, but did not offer a formal comment from the Tribe.

**Biological Background**

Prior to the early 2000s, moose were not commonly observed in southern Unit 18. Early population growth is attributed to emigration from adjacent Unit 17A, with high calf recruitment sustaining growth (Aderman 2014). Minimum population counts, obtained by the Refuge as part of their Refuge-wide moose monitoring program, show substantial recent growth of the moose population in this area (**Figure 2**). In 2002, only 3 moose were observed in the Kanektok and Arolik drainages. More than 10 moose were observed for the first time in 2012, and at last count, in 2018, 173 moose were observed (Aderman 2018, pers. comm.). This represents a 42% annual growth rate between 2013 and 2018.

Recent composition surveys showed that there were 48 bulls:100 cows in 2016 and 43 bulls:100 cows in 2017. These surveys showed 41 calves:100 cows in 2016 and 29 calves:100 cows in 2017. Refuge biologists believe that these estimates are likely biased high for bulls and biased low for calves (Aderman 2019, pers. comm.)

Recent growth of the Kanektok/Arolik moose population is similar to that previously exhibited by the Unit 17A and Goodnews River moose populations. In these areas, early surveys revealed few to no moose. Then, over a period of several years, the population increased rapidly and now supports harvest on both Federal and State managed lands. The population in the Goodnews hunt area, in particular, may provide context for understanding when it is appropriate to modify the Federal public lands closure in the Kanektok/Arolik hunt area, given similarities in size, location, land status, and human population size. In the Goodnews hunt area, State and Federal seasons were established in 2008, when the population exceeded a threshold of 100 moose. Subsequent population growth was sufficient to establish may-be-announced winter seasons in 2017 and 2018. This appears to validate that the timing for initiating harvest was not premature in the Goodnews hunt area.

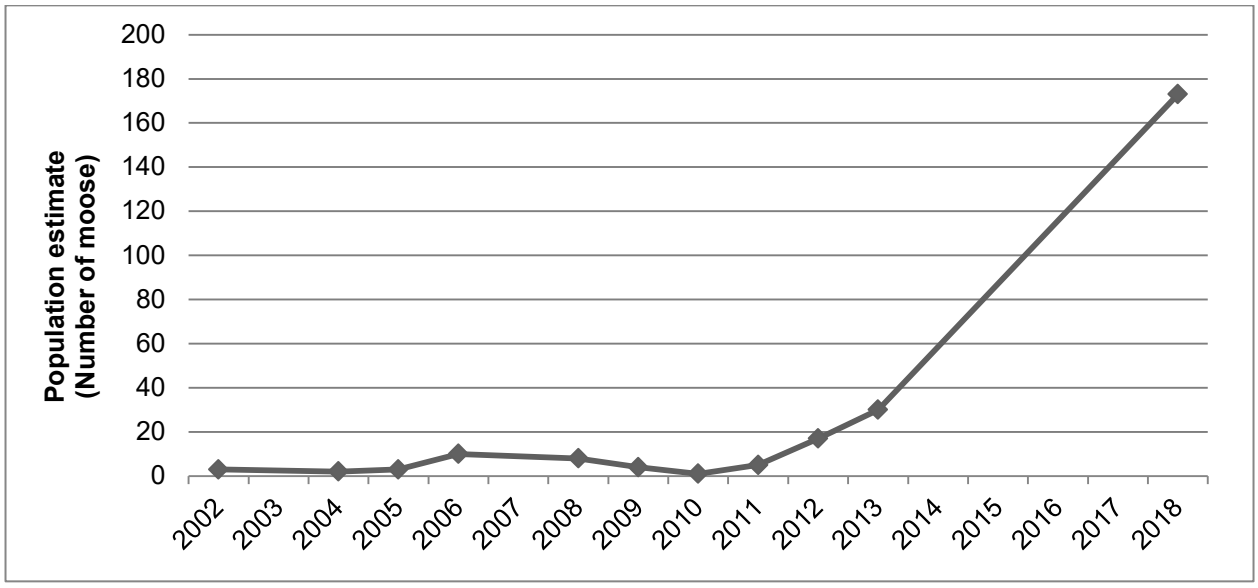


**Figure 2.** Estimated moose population size (minimum count) in the Kanektok and Arolik river drainages, 2002 – 2018 (Aderman 2014, Aderman 2018, pers. comm.).

**Cultural Knowledge and Traditional Practices**

Over 20,000 rural residents, Federally qualified subsistence users, live in communities throughout Unit 18. The focus of this section is Federally qualified subsistence users harvesting moose in both the existing Federal hunt area and the proposed addition.

Quinhagak

Quinhagak is situated along the Kanektok River near the Bering Sea coast. About 700 people are residents of Quinhagak, the majority with Yup'ik cultural heritage (Ikuta et al. 2016). Quinhagak is the only

community within the hunt area. Quinhagak residents hunt for moose primarily in this area because of its close proximity and accessibility by boat, for example up the Kanektok River drainage where myriad historical hunting, trapping, and fishing camps exist.

Wolfe et al. describe moose hunting patterns and locations used by Quinhagak residents in 1983: "From September through October, groups of from three to six hunters go by skiffs on hunting trips up the Kanektok and Eek rivers in search of moose, brown bear, squirrel and beaver. Hunting trips last several days to several weeks. Hunters operate from traditional camps and tend to be mobile" (1984: 322–323). Wolfe et al. also note that residents of Quinhagak occasionally harvest moose during the winter (November–March) in the general area of the headwaters of the Kisaralik, Kanektok, Arolik, and Togiak Rivers (Wolfe et al. 1984: 326).

More recently, in 2013, Ikuta et al. described a Quinhagak hunting party of three people travelling inland by boat, setting up camp, and continuing on foot. Hunters recount collecting from a harvested moose, in addition to meat, the tongue, fat surrounding the gut, heart, liver, kidneys, and arteries. The moose was shared widely in Quinhagak (Ikuta et al. 2016:131–132).

Subsistence Harvest History

Residents of Quinhagak and nearby Eek and Tuntutuliak have documented their moose search and harvest areas, marking up maps to show areas where they harvested or searched for moose in 2013. Quinhagak residents searched and harvested moose "in areas as far north as the Yukon River and as far south as the Goodnews Bay area" (Ikuta et al. 2016:145). Quinhagak moose search and harvest areas included the Kanektok River drainage, and also middle and upper Kwethluk and Eek River drainages. In 2013, Eek and Tuntutuliak search and harvest areas did not extend into the existing or proposed hunt areas. A sample of households in each community completed mapping exercises describing their search and harvest areas for a one year period, and search and harvest areas likely extend beyond those reported by these households.

Ikuta and others describe harvest patterns in 2013:

> For moose, September was the most intense harvest period for Quinhagak residents. Of a total of 42 moose, 36 were harvested during this month. Two moose were harvested in the month of February. The month or months in which 4 moose were harvested were unknown. Of the moose harvested in September, 31 were bull moose, 5 were unknown, and no cow moose were reported. Quinhagak hunters did harvest 2 cow moose in February (Ikuta et al. 2016:132).

Caribou is an important alternative resource to moose, and Quinhagak residents harvested an estimated 125 caribou in 2013. Their large land mammal harvest was 58% moose and 42% caribou in pounds edible weight in 2013 (Ikuta et al. 2016). This is a contrast to 1982 reports, when their harvest was on 33% moose and 67% caribou (ADF&G 2019a).

In 2013, the Quinhagak moose harvest estimate is similar to harvest estimates in other Kuskokwim area communities when comparing harvest rates in pounds per person based on ADF&G Division of Subsistence household surveys (**Table 1**).

**Table 1.** Estimated harvest of moose based on household surveys (CI 95%, lower harvest estimate is the lower bound of the estimate or the reported harvest, whichever is larger) (Source: ADF&G 2019a).

| Community | Study Year | Estimated Moose Harvest (number of moose) | Lower Harvest Estimate (number of moose) | Upper Harvest Estimate (number of moose) | Harvest (pounds per person) |
|---|---|---|---|---|---|
| Tuluksak | 2010 | 20 | 16 | 24 | 24.0 |
| Akiak | 2010 | 27 | 20 | 33 | 37.6 |
| Akiachak | 1998 | 106 | 93 | 119 | 145.4 |
| Kwethluk | 1986 | 33 | | | 45.3 |
| Kwethluk | 2010 | 33 | 25 | 42 | 25.2 |
| Bethel | 2011 | 279 | 220 | 338 | 24.5 |
| Bethel | 2012 | 357 | 294 | 419 | 33.9 |
| Nunapitchuk | 1983 | 12 | 3 | 22 | 18.9 |
| Oscarville | 2010 | 2 | 2 | 4 | 20.0 |
| Napakiak | 2011 | 13 | 13 | 13 | 28.7 |
| Napaskiak | 2011 | 29 | 29 | 29 | 43.4 |
| Tuntutuliak | 2013 | 17 | 17 | 0 | 22.3 |
| Eek | 2013 | 14 | 14 | 14 | 21.9 |
| Quinhagak | 2013 | 42 | 42 | 42 | 30.7 |
| Quinhagak | 1982 | 33 | 4 | 67 | 31.0 |

**Harvest History**

In the existing Federal hunt area, all lands were closed to the harvest of moose in 1991. State-managed lands within this area were reopened in 2005. In the proposed Federal addition, Federal public lands were closed to the harvest of moose to all except Federally qualified subsistence users in 1991, and re-opened in 1994 as part of Unit 18 remainder. Within the proposed addition, Federal regulations currently allow the harvest of up to 2 moose during an 8 month season, by harvest ticket.

Within the State's hunt area, a harvest ticket was required for moose harvest through regulatory year 2018/19. Beginning in fall 2019, a State registration permit will be required, available in Quinhagak beginning August 1. Due to the Federal public lands closure, harvest under State regulation within Kanektok and Arolik drainages is currently limited to State managed lands. These lands comprise a significant length of the Arolik River corridor but only extend approximately 20 miles up the Kanektok River, a floatable river popular with sport anglers (BOG 2019).

Reported harvest is dominated by local users, defined here as Federally qualified subsistence users (residents of Unit 18, Upper Kalskag and Lower Kalskag). Between 2003 and 2018, reported harvest was 61 moose (**Figure 3**). Of those, 90% (55 moose) were taken by local users. Residents of Quinhagak, the only community located within the hunt area, harvested 70% (43 moose) of the total reported harvest during this time period. Only 2 moose were reported harvested by residents of Eek, the nearest community to the proposed Federal addition (ADF&G 2019b). While reported harvest is low, averaging just four moose per year, observations by local biologists in the past decade indicate that at least some illegal harvest occurs (Aderman 2014). Though the magnitude of unreported harvest is unknown, additional insights into harvest by locals can be gleaned from household harvest surveys conducted by ADF&G's Division of Subsistence. These surveys estimated that residents of Quinhagak harvested 33 moose (CI 95% 4–67) in 1983 and 42 moose (CI 95% 42–42) in 2013 (ADF&G 2019a).

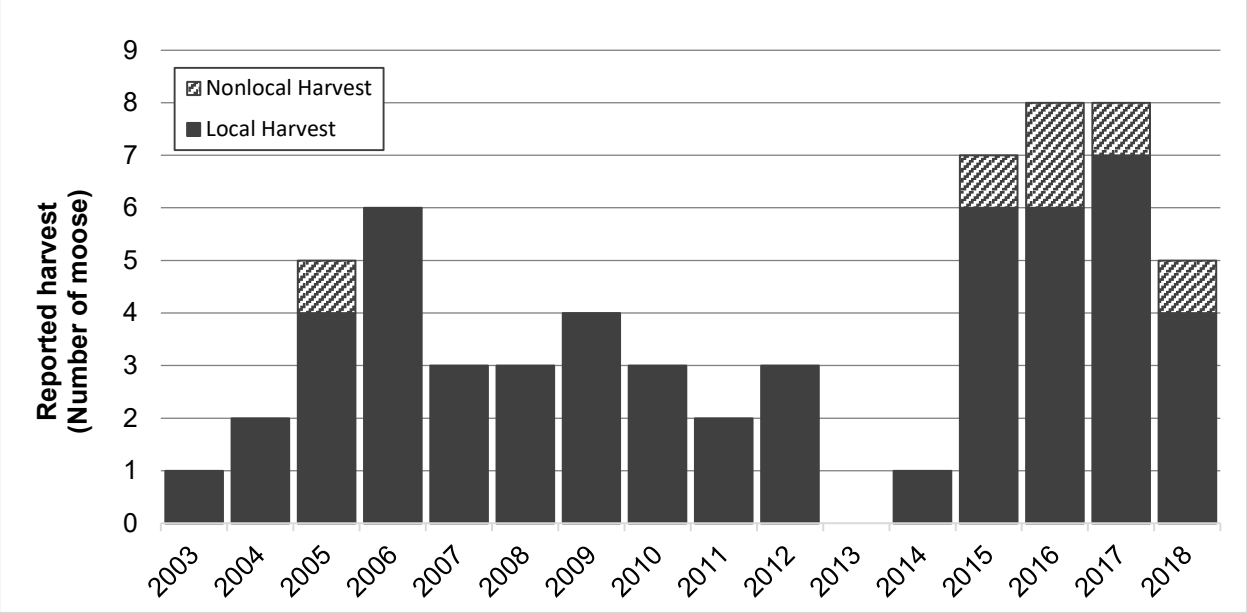


**Figure 3.** Reported harvest in the Kanektok and Arolik river drainages, 2003 – 2018 (ADF&G 2019b).

**Other Alternatives Considered**

Opening Federal public lands only to Federally qualified subsistence users may be a viable alternative to full rescission of the closure. This alternative was favored by the Council when they reviewed WCR20-40 (formerly identified as WCR18-40) at their March 2019 meeting in Bethel. As the Council noted, this alternative would limit opportunity to harvest moose on Federal public lands to Federally qualified subsistence users. However, practically speaking, closing Federal public lands to non-Federally qualified users is probably not necessary to limit participation. The fact that State registration permits are available only in the community of Quinhagak is likely to exclude most hunters who do not live within the hunt area.

**Effects of the Special Action**

If this temporary special action is approved, the Federal Kanektok/Arolik hunt area will be expanded to include the minor drainages situated between the Eek and Kanektok River drainages, including Kuskokwak Creek and Tungak Creek. Currently, these drainages are a non-contiguous part of the Unit 18 remainder hunt area, which primarily describes the area along the lower Yukon River and which has very high moose densities. If these drainages are incorporated in the Kanektok/Arolik hunt area, the Federal harvest limit in the proposed addition will be reduced from two moose to one antlered bull, and the season will be shortened from Aug. 1 – Apr. 30 to Sep. 1 – Sep. 30. In addition, hunters from Eek who may utilize these drainages will be required to comply with the conditions of the State's registration permit, which will only be distributed in Quinhagak. The latter drawback is expected to be small, given that reported harvest is low by residents of Eek, that these drainages don't represent their primary moose search areas, and that permitting locations can be expanded if necessary to accommodate local subsistence needs.

The newly described hunt area will be consistent with the hunt area described in State regulation. This reduction in regulatory complexity will benefit subsistence users, who may not be aware of the difference between State and Federal hunt areas and are thus prone to inadvertent non-compliance. A uniform hunt area across jurisdictions will also simplify harvest management for State and Federal wildlife managers and simplify enforcement of regulations.

Opening Federal public lands and establishing a Federal season within the Kanektok Arolik hunt area will result in additional subsistence opportunity by significantly expanding the area available for moose hunting by Federally qualified subsistence users. Full rescission of the closure will also provide additional opportunity to non-Federally qualified users hunting under State harvest regulation, though participation will likely be limited due to localized permit distribution. A single permit will be required to hunt under both State and Federal regulation, which is consistent with joint State and Federal hunt administration in adjacent moose hunts in Units 17 and 18, and which should ease the burden of compliance within the dual management system. Adoption of this special action is not expected to have a negative effect on the moose population, given recent population growth.

**OSM CONCLUSION**

**Support** Temporary Special Action WSA19-01.

**Justification**

Dissimilar hunt areas in State and Federal regulation pose a problem for Federally qualified subsistence users. For these hunters, divergent hunt area boundaries are a burden that compounds the existing difficulty of hunting under two sets of harvest regulations in areas with complex land status. This reduction in regulatory complexity will also facilitate harvest management and reduce confusion associated with enforcement. Biologically, inclusion of these minor drainages in the Kanektok/Arolik hunt area is more appropriate than their current inclusion in the Unit 18 remainder hunt area, where harvest limits and season are liberal, due to high moose densities along the lower Yukon River.

As outlined in the Board's closure policy, closures should be rescinded as soon as practicable when the conditions that originally justified the closure no longer exist. The moose population in this hunt area has increased significantly in recent years. Given the relative newness of this population, the small area it occupies, and the lack of published population objectives, it can be difficult to find context for assessing future management actions. However, the adjacent Goodnews moose population likely provides an adequate model and suggests that additional harvest is sustainable. Assuming so, rescinding the Federal public lands closure and establishing a Federal season is appropriate at this time.

Rescinding the Federal public lands closure and establishing a season will significantly increase the land area available for moose hunting by Federally qualified subsistence users, representing an increase in subsistence opportunity. Although full rescission of the closure also provides additional opportunity to non-Federally qualified users, the conditions associated with the State registration permit are likely to limit participation by non-local users, mitigating the risk of competition with Federally qualified subsistence users.

At the outset, State registration permits may be more burdensome to Federally qualified subsistence users, who until the current regulatory year, have been required to use only a harvest ticket. However, a registration permit will be required for State hunts in the area beginning this fall. Requiring a State registration permit for the Federal hunt will further reduce regulatory complexity and will allow Federally qualified subsistence users to hunt seamlessly across Federal and State regulations. In addition, use of registration permits will allow managers to better track harvest, while use of a State permit in both Federal and State regulation consolidates reporting within a single system. These are important features, considering that this is still a small population requiring close harvest management.

An important aspect of this temporary special action request is an immediate reduction in regulatory complexity. The BOG recently implemented changes in State regulation for the Kanektok/Arolik moose hunt, requiring a State registration permit instead of a harvest ticket. Proposals to adjust the hunt area boundary, rescind the Federal public lands closure, and establish a Federal season were submitted for the Board's consideration in the 2020 regulatory cycle. However, these changes, if adopted, will not become effective until fall 2020. Approval of this request will reduce regulatory complexity, not only between State and Federal regulations, but across regulatory years, easing compliance for Federally qualified subsistence users.

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# APPENDIX 1

## POLICY ON CLOSURES TO HUNTING, TRAPPING AND FISHING ON FEDERAL PUBLIC LANDS AND WATER IN ALASKA

## FEDERAL SUBSISTENCE BOARD

Adopted August 29, 2007

### PURPOSE

This policy clarifies the internal management of the Federal Subsistence Board (Board) and provides transparency to the public regarding the process for addressing federal closures (closures) to hunting, trapping, and fishing on Federal public lands and waters in Alaska. It also provides a process for periodic review of regulatory closures. This policy recognizes the unique status of the Regional Advisory Councils and does not diminish their role in any way. This policy is intended only to clarify existing practices under the current statute and regulations: it does not create any right or benefit, substantive or procedural, enforceable at law or in equity, against the United States, its agencies, officers, or employees, or any other person.

### INTRODUCTION

Title VIII of the Alaska National Interest Lands Conservation Act (ANILCA) establishes a priority for the taking of fish and wildlife on Federal public lands and waters for non-wasteful subsistence uses over the taking of fish and wildlife on such lands for other purposes (ANILCA Section 804). When necessary for the conservation of healthy populations of fish and wildlife or to continue subsistence uses of such populations, the Federal Subsistence Board is authorized to restrict or to close the taking of fish and wildlife by subsistence and non-subsistence users on Federal public lands and waters (ANILCA Sections 804 and 815(3)). The Board may also close Federal public lands and waters to any taking of fish and wildlife for reasons of public safety, administration or to assure the continued viability of such population (ANILCA Section 816(b)).

### BOARD AUTHORITIES

- ANILCA Sections 804, 814.815(3), and 816.
- 50 CFR Part 100 and 36 CFR Part 242, Section .10(d)(4).

### POLICY

The decision to close Federal public lands or waters to Federally qualified or non-qualified subsistence users is an important decision that will be made as set forth in Title VIII of ANILCA. The Board will not restrict the taking of fish and wildlife by users on Federal public lands (other than national parks and park monuments) unless necessary for the conservation of healthy populations of fish and wildlife resources, or to continue subsistence uses of those populations, or for public

safety or administrative reasons, or 'pursuant to other applicable law." Any individual or organization may propose a closure. Proposed closures of Federal public lands and waters will be analyzed to determine whether such restrictions are necessary to assure conservation of healthy populations of fish and wildlife resources or to provide a meaningful preference for qualified subsistence users. The analysis will identify the availability and effectiveness of other management options that could avoid or minimize the degree of restriction to subsistence and non-subsistence users.

Like other Board decisions, closure actions are subject to change during the yearly regulatory cycle. In addition, closures will be periodically re-evaluated to determine whether the circumstances necessitating the original closure still exist and warrant continuation of the restriction. When a closure is no longer needed, actions to remove it will be initiated as soon as practicable. The Office of Subsistence Management will maintain a list of all closures.

**Decision Making**

The Board will:

- Proceed on a case – by – case basis to address each particular situation regarding closures. In those cases for which conservation of healthy populations of fish and wildlife resources allows, the Board will authorize non-wasteful subsistence taking.

- Follow the statutory standard of "customary and traditional uses." Need is not the standard. Established use of one species may not be diminished solely because another species is available. These established uses have both physical and cultural components, and each is protected against all unnecessary regulatory interference.

- Base its actions on substantial evidence contained within the administrative record, and on the best available information; complete certainty is not required.

- Consider the recommendations of the Regional Advisory Councils, with due deference (ANILCA § 805 (c)).

- Consider comments and recommendations from the State of Alaska and the public (ANILCA § 816(b)).

**Conditions for Establishing or Retaining Closures**

The Board will adopt closures to hunting, trapping or fishing by non-Federally qualified users or Federally qualified subsistence users when one or more of the following conditions are met:

- Closures are necessary for the conservation of healthy populations of fish and wildlife:

a) When a fish or wildlife population is not sufficient to provide for both Federally qualified subsistence users and other users, use by non-Federally qualified users may be reduced or

prohibited, or
b) When a fish or wildlife population is insufficient to sustain all subsistence uses, the available resources shall be apportioned among subsistence users according to their:

**1)** Customary and direct dependence upon the populations as the mainstay of livelihood.

**2)** Local residency, and

**3)** Availability of alternative resources, or

c) When a fish or wildlife population is insufficient to sustain any use, all uses must be prohibited.

- Closures are necessary to ensure the continuation of subsistence uses by Federally qualified subsistence users.
- Closures are necessary for public safety.
- Closures are necessary for administrative reasons.
- Closures are necessary "pursuant to other applicable law."

**Considerations in Deciding on Closures**

When acting upon proposals recommending closure of Federal public lands and waters to hunting, trapping, or fishing. The Board may take the following into consideration to the extent feasible:

- The biological history (data set) of the fish stock or wildlife population.
- The extent of affected lands and waters necessary to accomplish the objective of the closure.
- The current status and trend of the fish stock or wildlife population in question.
- The current and historical subsistence and non-subsistence harvest, including descriptions of harvest amounts effort levels, user groups, and success levels.
- Pertinent traditional ecological knowledge.
- Information provided by the affected Regional Advisory Councils and Alaska Department of Fish and Game.

- Relevant State and Federal management plans and their level of success as well as any relationship lo other Federal or State laws or programs.

- Other Federal and State regulatory options that would conserve healthy populations and provide a meaningful preference for subsistence, but would be less restrictive than closures.

- The potential adverse and beneficial impacts of any proposed closure on affected fish and wildlife populations and uses of lands and waters both inside and outside the closed area.

- Other issues that influence the effectiveness and impact of any closure.

**Reviews of Closures**

A closure should be removed as soon as practicable when conditions that originally justified the closure have changed to such an extent that the closure is no longer necessary. A Regional Council a State or Federal agency, or a member of the public may submit, during the nom1al proposal period, a proposal requesting the opening or closing of an area. A closure may also be implemented, adjusted, or lifted based on a Special Action request according to the criteria in 50 CFR 100.19 and 36 CFR 242.19.

To ensure that closures do not remain m place longer than necessary, all future closures will be reviewed by the Federal Subsistence Board no more than three years from the establishment of the closure and at least every three years thereafter. Existing closures in place at the time this policy is implemented will be reviewed on a three-year rotational schedule, with at least one-third of the closures reviewed each year.

Closure reviews will consist of a written summary of the history and original justification for the closure and a current evaluation of the relevant considerations listed above. Except in some situations which may require immediate action through the Special Action process, closure review analyses will be presented to the affected Regional Cowlcil(s) during the normal regulatory proposal process in the form of proposals to retain, modify or rescind individual closures.

Chair, Federal Subsistence Board

Board Member, U.S. Fish and Wildlife Service

Board Member, Bureau of Indian Affairs

Board Member, U.S. Forest Service

Board Member, National Park Service

Board Member, Bureau of Land Management

**INTERAGENCY STAFF COMMITTEE RECOMMENDATION**

**Support** Temporary Special Action request WSA19-01.

## Justification

The Interagency Staff Committee concurs with the OSM staff analysis that this action will provide for increased moose hunting opportunities for Federally qualified subsistence users and reduce regulatory complexity by aligning State and Federal regulations and hunt areas. This will ease compliance, simplify enforcement, and facilitate harvest management.

Concerns were expressed during tribal consultation and public meetings about the potential for more non-locals to participate in the hunt and the requirement to obtain a State registration permit versus a Federal registration permit. The State requirement to obtain registration permits in person from Quinhagak, should reduce potential increases of non-local participation in the new hunt area, while making permits available to local users. The requirement of a State registration permit will also consolidate both Federal and State reporting requirements into a single system, further reducing regulatory complexity.

The change to add Kuskokwak and Tungak Creeks to the current Kanektok/Arolik hunt area will align all Federal and State hunt unit boundaries within Unit 18 and will reduce regulatory confusion. Changes in seasons and harvest limits associated with alignment of boundaries will improve moose harvest management and enforcement. Full rescission of the closure will provide additional opportunity to both Federally qualified and non-Federally qualified users. The additional harvest by non-Federally qualified users is anticipated to be minimal due to the localized permit distribution out of Quinhagak. Limiting distribution of permits from Quinhagak may negatively affect users from Eek by requiring them to travel to Quinhagak for permits. However, this impact is expected to be small, given that reported harvest by residents of Eek is low and that permitting locations can be expanded if necessary to accommodate local subsistence needs. During the April 2020 wildlife regulatory meeting, the Federal Subsistence Board (Board) will have a chance to consider Eek's situation further when deliberating Proposal WP20-32/33 that proposes to make this special action a permanent regulation.

Rescinding the Federal public lands closure is aligned with the Boards Closure Policy. The moose population has increased significantly since the closure was established in 1991 and showed a 42 % growth rate from 2013-2018. This action is not anticipated to have a negative effect on the moose population, given the rate of growth. Furthermore, the State has allowed harvest since 2006 of one antlered bull on State lands within the hunt unit area where Federal lands are currently closed, indicating additional harvest is sustainable.

Approving this temporary special action will also allow communities to assess the new hunt structure for the 2019 season prior to the Board evaluating WP20-32/33 that could make these regulations permanent.

# STAFF ANALYSIS
# TEMPORARY SPECIAL ACTION
# WSA 19-02

## ISSUES

Temporary Wildlife Special Action Request WSA19-02, submitted by the Southeast Alaska Subsistence Regional Advisory Council (Council), requests extending the sealing period for wolf hunting and trapping and removing language referencing a combined Federal-State harvest quota for wolves in Unit 2.

## DISCUSSION

The Alaska Board of Game (BOG) recently adopted a new harvest management strategy for wolves in Unit 2, resulting in misalignment of State and Federal regulations. The proponent states that their intent is to align State and Federal regulations to facilitate coordination between State and Federal managers and to reduce confusion among users. While the initial request also changed the hunting harvest limit to "no limit," the proponent clarified this was a mistake as that change would misalign State and Federal harvest limits.

The applicable Federal regulations are found in 36 CFR 242.19(b) and 50 CFR 100.19(b) (Temporary Special Actions) and state that:

> *. . . After adequate notice and public hearing, the Board may temporarily close or open public lands for the taking of fish and wildlife for subsistence uses, or modify the requirements for subsistence take, or close public lands for the taking of fish and wildlife for nonsubsistence uses, or restrict take for nonsubsistence uses.*

Note: Wolves in Southeast Alaska are classified as a subspecies called the Alexander Archipelago wolf (*Canis lupus ligoni*) and will be referred to as Alexander Archipelago wolf/wolves throughout this analysis.

### Existing Federal Regulation

**Unit 2 –Wolf Hunting**

| | |
|---|---|
| *5 wolves.* | *Sep. 1-Mar. 31.* |

*Federal hunting and trapping season may be closed when the combined Federal-State harvest quota is reached. Any wolf taken in Unit 2 must be sealed within 14 days of harvest*

**Unit 2 –Wolf Trapping**

| | |
|---|---|
| *No limit.* | *Nov. 15-Mar. 31.* |

*Federal hunting and trapping season may be closed when the combined Federal-State harvest quota is reached. Any wolf taken in Unit 2 must be*

*sealed within 14 days of harvest*

**Proposed Federal Regulation**

**Unit 2 –Wolf Hunting**

*5 wolves.* *Sep. 1-Mar. 31.*

~~*Federal hunting and trapping season may be closed when the combined Federal-State harvest quota is reached*~~*. Any wolf taken in Unit 2 must be sealed within* ~~*14 days of harvest*~~ ***30 days of the end of the season.***

**Unit 2 –Wolf Trapping**

*No limit.* *Nov. 15-Mar. 31.*

~~*Federal hunting and trapping season may be closed when the combined Federal-State harvest quota is reached*~~*. Any wolf taken in Unit 2 must be sealed within* ~~*14 days of harvest*~~ ***30 days of the end of the season.***

**Existing State Regulation**

**Unit 2−Wolf Hunting**

*Residents and Non-residents—5 wolves* *Dec. 1-Mar. 31*

*Hides must be sealed within 30 days of kill.*

**Unit 2−Wolf Trapping**

*Residents and Non-residents—No limit.* *Nov. 15-Mar. 31*

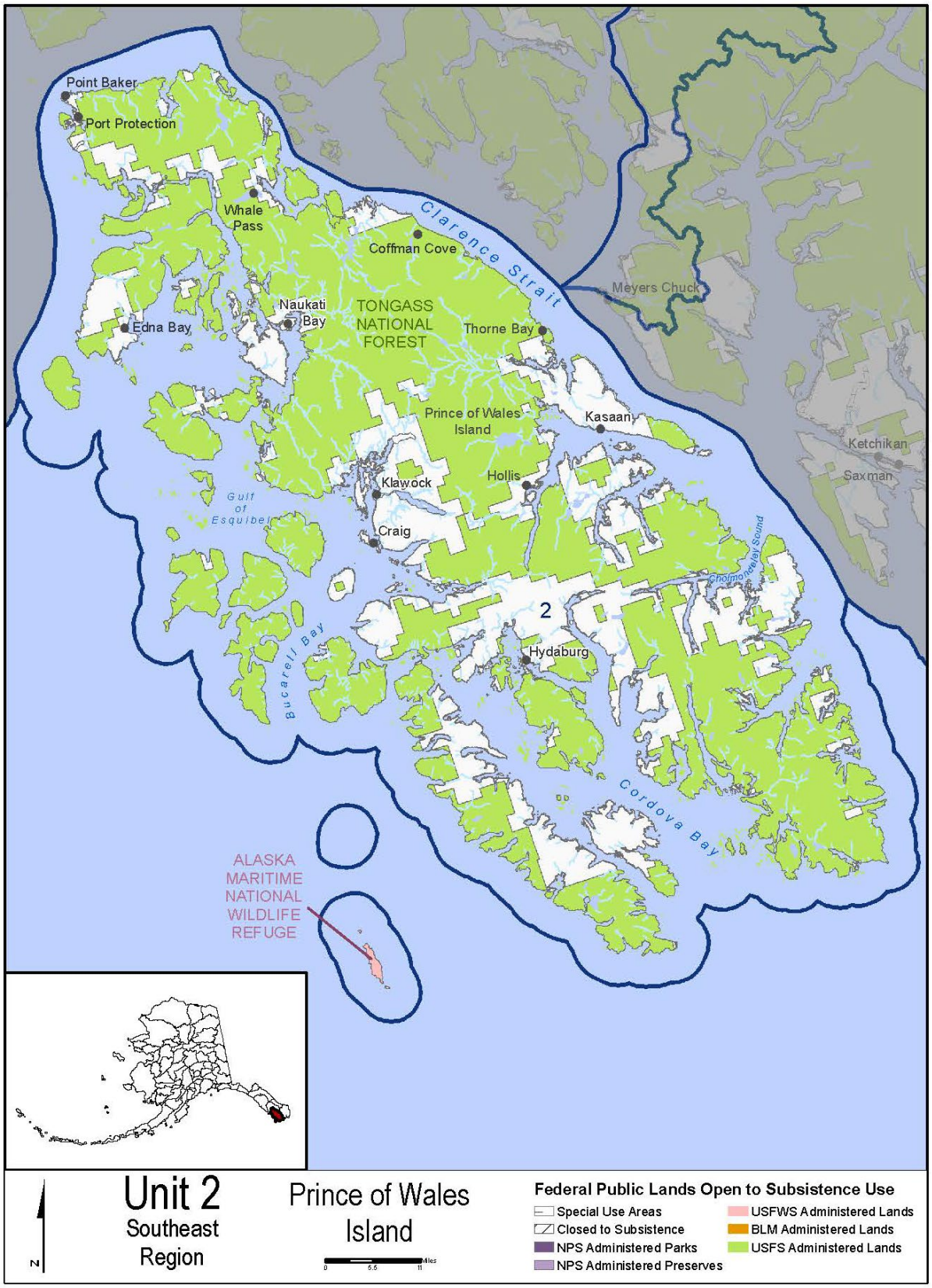
*Hides must be sealed within 30 days after the close of the season.*

**Extent of Federal Public Lands**

Unit 2 is comprised of 71.7% Federal public lands and consists of 71.6% USDA Forest Service (USFS) managed lands and 0.1% U.S. Fish and Wildlife Service (USFWS) managed lands (**Map 1**).

**Customary and Traditional Use Determinations**

The Federal Subsistence Board (Board) has not made a customary and traditional use determination for wolves in Unit 2. Therefore, all Federally qualified subsistence users may harvest wolves in Unit 2.


Point Baker
Port Protection
Whale Pass
Coffman Cove
Clarence Strait
Meyers Chuck
Naukati Bay
TONGASS NATIONAL FOREST
Edna Bay
Thorne Bay
Prince of Wales Island
Kasaan
Ketchikan
Saxman
Klawock
Hollis
Gulf of Esquibel
Craig
Cholmondeley Sound
2
Bucarell Bay
Hydaburg
Cordova Bay
ALASKA MARITIME NATIONAL WILDLIFE REFUGE
Unit 2
Southeast Region
Prince of Wales Island
Federal Public Lands Open to Subsistence Use
Special Use Areas
Closed to Subsistence
NPS Administered Parks
NPS Administered Preserves
USFWS Administered Lands
BLM Administered Lands
USFS Administered Lands

**Map 1.** Unit 2

**Regulatory History**

From 1915 through the early 1970s, the government paid a cash bounty for wolves in Southeast Alaska and during the 1950s, the Federal government poisoned wolves in the region to increase deer numbers (Porter 2018). Following the discontinuance of the wolf bounty program, wolf hunting and trapping regulations in Unit 2 remained the same until 1992 (Larsen 1994).

In 1990, Federal hunting and trapping regulations were adopted from State regulations. State and Federal trapping seasons were Nov. 10-Apr. 30 with no harvest limits, and State and Federal hunting seasons were year-round with no harvest limits.

Also in 1990, an interagency committee sponsored by the USFS had expressed concern about the viability of wolves in Southeast Alaska due to extensive timber harvesting on the Tongass National Forest (Porter 2018).

In 1992, the BOG restricted the State hunting season to Aug. 1-Apr. 30 and decreased the harvest limit to 5 wolves. The State hunting season has not changed since, and the State trapping season remained the same until 2019.

In 1993, the Biodiversity Legal Foundation and an independent biologist from Haines, Alaska petitioned the U.S. Fish and Wildlife Service (USFWS) to list the Alexander Archipelago wolf as a threatened subspecies pursuant to the Endangered Species Act (ESA) (Porter 2018).

In 1994, the Board adopted Proposal P94-02 to align the Federal wolf hunting season and harvest limit with the State hunting season (Aug. 1-Apr. 30 with a 5 wolf harvest limit).

In 1995 and 1997, the USFWS responded to the 1993 petition, finding the listing not to be warranted because the Alexander Archipelago wolf population appeared to be stable and because of a 1997 Tongass National Forest Management Plan, which identified a system of old-growth forest reserves geared toward conserving deer (primary prey of wolves) and, by extension, wolves (USFWS 1995, 2016, Porter 2003).

In 1997, the BOG implemented an annual Harvest Guideline Level (HGL) of 25% of the estimated Unit 2 fall wolf population (**Table 1**). The BOG established this maximum harvest level in response to a record and possibly unsustainable wolf harvest of 132 wolves in 1996 (Porter 2018). As the estimated wolf population was 350, the harvest quota was 90 wolves (see Biological Background section for sustainable harvest rates). The BOG also shortened the State hunting and trapping seasons to Dec. 1-Mar. 31 and required sealing within 30 days of harvest (Person and Logan 2012, Porter 2003).

Also in 1997, the Board adopted Proposal P97-08 to align Federal wolf hunting and trapping seasons and sealing requirements with the new State regulations. The Board also required that wolves must have the radius and ulna of the left foreleg naturally attached to the hide until sealing. Foreleg bone measurements are used as a proxy for wolf ages (pup, yearling, adult), providing population age structure and recruitment information.

In 1999, the Alaska Department of Fish and Game (ADF&G) closed the wolf season a month early (on February 29, 1999) because the HGL was predicted to be reached before the normal closing date (Person and Logan 2012, Bethune 2012, Porter 2003). Several new trappers worked Unit 2 in 1999 with good success, whereas historically only 3-4 trappers took more than 10 wolves each (Porter 2003).

In 2000, the BOG increased the HGL to 30% based on analyses indicating Unit 2 wolves experience low natural mortality (Porter 2018). The assumed wolf population was adjusted to 300 wolves, so the quota remained 90 wolves (Porter 2018).

In 2001, the Board adopted Proposal WP01-05 to shift both the hunting and trapping seasons from Dec. 1-Mar. 31 to Nov. 15- Mar. 15. The intent was to provide better access when less snow is on the ground and to coincide seasons with when wolf pelts are the most prime.

In 2003, the Board adopted Proposal WP03-10 with modification to extend the wolf hunting season from Nov. 15-Mar. 15 to Sept. 1-Mar. 31 to provide additional subsistence harvest opportunity, particularly during the fall deer hunting season and because wolf pelts prime early in Unit 2 (OSM 2003). The Board also delegated authority to the Craig and Thorne Bay District Rangers to close the Federal hunting and trapping season in consultation with ADF&G and the Chair of the Council when the combined Federal-State harvest quota is reached.

In 2007, the Board adopted Proposal WP07-15 with modification to change the closing date of the trapping season from March 15 to March 31 to provide more subsistence opportunity and to align the closing dates of State and Federal hunting and trapping seasons. The modification eliminated the requirement that wolves must have the radius and ulna of the left foreleg naturally attached to the hide until sealing.

In 2010, the BOG and the Board reduced the harvest quota to 60 wolves in response to a perceived decline in the wolf population (Porter 2018).

In 2011, the BOG changed the sealing requirement from 30 days to 14 days after harvest to help managers make quicker in-season management decisions (Bethune 2012).

Also in 2011, the Center for Biological Diversity and Greenpeace filed a second petition to list the Alexander Archipelago wolf as a threatened or endangered species under the ESA, including a request to consider Unit 2 wolves as a distinct population segment (DPS) (Porter 2018, Toppenberg et al. 2015).

In 2012, the Board adopted Proposal WP12-19 to change Federal sealing requirements to 14 days after harvest, aligning with State regulations. The Board shortened the sealing requirement to allow more efficient tracking of harvest to avoid exceeding harvest quotas.

From 2013-2018, ADF&G closed the Unit 2 wolf season early by emergency order because harvest quotas were expected to be met (**Table 1**). In 2014, ADF&G further reduced the harvest quota to 25 wolves based on recent population estimates (Porter 2018).

In 2015, the BOG revised the HGL to 20% in response to decreased population estimates and high estimates of unreported mortality (Porter 2018). As an additional conservation measure to account for unreported harvests and to address concerns about a declining population and potential listing under the ESA, State and Federal managers reduced the harvest quota by 50% (10% HGL) in 2015 and 2016 (**Table 1**) (SERAC 2017).

Also in 2015, the Board rejected Special Action Request WSA15-13 to close the Federal wolf hunting and trapping seasons for the 2015/16 regulatory year to all users. The Board determined the closure was not

warranted for either conservation concerns or continuation of subsistence uses, but noted that ADF&G and the USFS had established a very conservative harvest quota for the year.

In January 2016, the USFWS issued another "not warranted" finding in response to the 2011 ESA petition as the Alexander Archipelago wolf appeared stable and viable across most of its range (USFWS 2016, Porter 2018). Additionally, the USFWS determined that Unit 2 wolves did not meet the criteria for a DPS designation (persisting in a unique ecological setting, marked genetic differences, comprising a significant portion of the range) (USFWS 2016, Porter 2018).

In 2018, the Board rejected WP18-04 to increase the HGL to 30% under Federal regulations. The Council had submitted the proposal because it believed previous quotas were too conservative and did not accurately reflect the Unit 2 wolf population. The Board rejected the proposal due to conservation concerns over unsustainable harvests as well as concerns about the difficulty of State and Federal managers implementing separate quotas, which would also create confusion among users (FSB 2018). However, the Board expressed desire for the USFS and ADF&G to work together to find a sustainable solution to the Unit 2 wolf issue (FSB 2018).

In October 2018, the Board issued a new delegation of authority letter to the in-season managers of Unit 2 wolves. The new letter stated that the in-season managers could close, reopen, or adjust the Federal hunting and trapping season for wolves in Unit 2. Coordination with ADF&G, OSM, and the Council Chair is required.

In 2018, the BOG received three proposals for Unit 2 wolves for the 2018/19 regulatory cycle (effective July 1, 2019). The Council submitted Proposal 42 to increase the HGL to 30%. ADF&G submitted Proposal 43 to change the harvest management strategy from using HGLs to meeting specified population objectives. Proposal 43 also proposed changing the sealing requirement for the State trapping season to 30 days after the close of the season as the new management strategy would not depend on in-season harvest management (ADF&G 2019d). The Craig Fish and Game Advisory Council (Craig AC) submitted Proposal 44 to change the opening date of the wolf trapping season from Dec. 1 to Nov. 15, which would align with the Federal trapping season opening date. The Council and ADF&G had identified the need for population objectives for Unit 2 wolves to clarify and direct management and that population objectives should be set through a transparent, public process (Porter 2018, SERAC 2017). The Council withdrew Proposal 42 in support of Proposal 43.

In January 2019, the BOG adopted Proposal 43 as amended, which had overwhelming support from five ACs and the public (SERAC 2019, ADF&G 2019d). The BOG established the population objective range for Unit 2 wolves as 150-200 wolves (see Biological Background section) (ADF&G 2019a). The BOG also adopted Proposal 44, extending the State trapping season to align with the Federal season.

**Table 1.** Management data for Unit 2 wolves using the Harvest Guideline Level (HGL) management strategy (Schumacher 2019, pers. comm.).

| Regulatory Year | Population Estimate* | Harvest Guideline level (HGL %) | Harvest Quota | Reported Harvest | Date closed by State Emergency Order (EO) |
|---|---|---|---|---|---|
| 1996 | | | | 132 | |
| 1997 | 360 | 25 | 90 | 78 | |
| 1998 | 360 | 25 | 90 | 91 | |
| 1999 | 360 | 25 | 90 | 96 | Feb. 29 |
| 2000 | 300 | 30 | 90 | 73 | |
| 2001 | 300 | 30 | 90 | 62 | |
| 2002 | 300 | 30 | 90 | 64 | |
| 2003 | 300 | 30 | 90 | 33 | |
| 2004 | 300 | 30 | 90 | 77 | |
| 2005 | 300 | 30 | 90 | 60 | |
| 2006 | 300 | 30 | 90 | 38 | |
| 2007 | 300 | 30 | 90 | 36 | |
| 2008 | 300 | 30 | 90 | 24 | |
| 2009 | 300 | 30 | 90 | 22 | |
| 2010 | 200 | 30 | 60 | 28 | |
| 2011 | 200 | 30 | 60 | 28 | |
| 2012 | 200 | 30 | 60 | 52 | |
| 2013 | 200 | 30 | 60 | 57 | Mar. 19 |
| 2014 | 221 | 30 | 25 | 29 | Feb. 22 |
| 2015 | 89 | 20 | 9 | 7 | Dec. 20 |
| 2016 | 108 | 20 | 11 | 29 | Dec. 21 |
| 2017 | 231 | 20 | 46 | 61 | Dec. 16 |
| 2018 | 225 | 20 | 45 | 44 | Dec. 18/21** |

* Population estimates from 1997-2013 were assumed estimates based on harvest levels and a 1994 population estimate. Population estimates from 2014-2018 are from DNA-based spatially explicit capture-recapture studies (see Biological Background section).
** Season closed by EO on Dec. 18, but reopened to Dec. 21 because bad weather prevented trappers from recovering gear.

## Current Events

The Council submitted Proposals WP20-16 to change Unit 2 wolf trapping regulations and WP20-17 to change Unit 2 wolf hunting regulations for the 2020/22 regulatory cycle. The proposed changes mirror the requests of this special action request (eliminating the quota, extending the sealing requirement) with the additional request to change the hunting harvest limit to "no limit."

Tribal and ANCSA Corporation consultations were held on June 18, 2019. The Craig Tribal Association voiced support for WSA19-02, stating that moving away from a quota system is a step in the right direction and that adopting WSA19-02 should provide better harvest opportunity. The Craig Tribal Association also stated that the Unit 2 wolf population is abundant, needs higher harvest, and is negatively impacting the

deer population. The Association hopes deer harvest will improve as a result of higher wolf harvest, and expressed concerns about the accuracy of the wolf population estimates, the effects of logging on deer and wolf populations, and the lack of credibility agency officials give to local knowledge. No other comments were received.

A public meeting was held on June 25, 2019 in Klawock, AK. Four testimonies in support of WSA19-02 were received. One testifier represented the Craig Tribal Association, and three testifiers represented themselves. The Craig Tribal Association commented that people are seeing lots of wolves around the island, including in town, and that WSA19-02 is a step in the right direction. The Association also expressed concern for the deer population because of wolf predation, high buck harvests, and habitat changes, including loss of winter habitat and stem exclusion.

Other testifiers commented that the wolf population is up, that maintaining better control of the wolf population is important, and that the population objective of 150-200 wolves is sustainable. Testifiers also commented that the deer population has declined due to wolf predation and decreasing habitat quality, which is due to many logged areas being in the stem exclusion stage, which can persist for decades. One testifier expressed concern over how the Unit 2 wolf hunt will be regulated, managed and evaluated in the future, and how State and Federal managers would work together to establish season lengths. Another testifier commented that coordinating State and Federal regulations would be helpful to Prince of Wales residents.

ADF&G submitted comments in support of WSA19-02 because aligning State and Federal regulations would facilitate implementation of the new harvest management strategy, eliminate regulatory conflicts, and reduce user confusion. ADF&G also commented that the requested change in the harvest limit for the Federal hunting season would not align with State regulations, but would likely have little effect on harvest (ADF&G 2019f). However, as the proponent clarified that the requested change in the harvest limit was a mistake, ADF&G's comments in this regard are extraneous.

**Biological Background**

Unit 2 wolves are part of the Alexander Archipelago wolf subspecies, which ranges from coastal British Colombia north to Yakutat, Alaska and includes the islands in Southeast Alaska, excluding Unit 4 (USFWS 2015). Alexander Archipelago wolves tend to be smaller with shorter hair than continental wolves and can be genetically differentiated (USFWS 2015, Porter 2018). Using the best available data and modeling, USFWS (2015, 2016) estimated that the 2013 and 2014 Unit 2 wolf population comprised 13% (130-378 wolves) and 6% (50-159 wolves) of the total Alexander Archipelago wolf population (865-2,687 wolves), respectively. Because of the relatively high density of prey available, the islands of Unit 2 have long been assumed to support the highest densities of wolves in the state (Porter 2018). Indeed, USFWS (2015) notes that even the low, 2014 wolf density estimates for Unit 2 (9.9 wolves/1,000 $km^2$) are not particularly low by most standards for Northern wolf populations (Fuller et al. 2003).

State management objectives for Unit 2 wolves include (Note: State objectives were updated in 2019 after the BOG adopted Proposal 43, and are not currently published in any ADF&G management reports) (Schumacher 2019, pers. comm.):

- Manage harvest to meet a population objective of 150-200 wolves.

From 1997 (when the HGL management strategy was implemented) through 2013, Unit 2 wolf abundance was uncertain, and managers based decisions (e.g. harvest quotas) on assumed population levels, sealing records, and a 1994 population estimate (SERAC 2019, ADF&G 2019b, Porter 2003). Person and Ingle (1995) used a simulation model using radio-collared wolf data collected for a graduate research project to estimate 321 wolves and 199 wolves inhabited Unit 2 in fall 1994 and spring 1995, respectively (Porter 2003). The smaller spring estimate reflects overwinter mortality, primarily from trapping (Porter 2003). Between 1998 and 2002, Porter (2003) assumed the Unit 2 wolf population had remained relatively abundant because of consistently high harvests, which provide a population index.

Since 2013, ADF&G in cooperation with the USFS, the Hydaburg Cooperative Association, and The Nature Conservancy have employed a DNA-based spatially explicit capture-recapture (SECR) method to estimate Unit 2 wolf abundance (SERAC 2019, ADF&G 2019b). This method has been found to be the most robust and least biased method of estimating wolf populations in forested habitats (Roffler et al. 2016). The study uses hair boards equipped with scent lure to attract wolves and with barbed wire to obtain hair samples that can be sent to a lab for DNA analysis. Samples are collected from mid-October through December and lab results are usually received in late July (SERAC 2019, ADF&G 2015). Thus, harvest management decisions are made with last year's wolf population estimate. While these surveys and population estimates are currently conducted annually, they are expensive and labor intensive. Therefore, ADF&G will likely transition to conducting population estimates every 2-3 years in the future (ADF&G 2019d).

Between 2013 and 2018, Unit 2 wolf population estimates have ranged from 89-231 wolves (**Table 1, Figure 1**) (Schumacher 2019, pers. comm.). While the point estimates for the first two years differ drastically, statistically, no difference exists between the two estimates due to overlapping confidence intervals. As the study progressed, more hair boards were deployed, more wolves were recaptured in subsequent years, and staff became more skilled at handling samples, resulting in tighter 95% confidence intervals. The wolf population estimate increased significantly between 2016 and 2017. In addition to SECR population estimates, local hunters and trappers have expressed seeing many more wolves in recent years (SERAC 2017, 2018).

Carroll et al. (2014) considered wolf populations <150-200 individuals as small, and USFWS (2015) notes that most minimum viable population estimates for gray wolves range between 100 and 150 wolves. However, despite the comparatively small size and insularity of the Unit 2 wolf population, inbreeding probably is not affecting it (Breed 2007, USFWS 2015).

Natural causes account for only 4% of the annual mortality of the Unit 2 wolf population, while human-caused mortality accounts for the remainder (Person and Russell 2008, Wolf Technical Committee 2017). Person and Russell (2008) studied 55 radio-collared wolves in Unit 2 from 1993-2004, and 39 wolves (71%) were killed by humans, while only 5 (9%) died from natural causes. Similarly, ADF&G collared an additional 12 wolves from 2012-2015, and 8 (67%) were killed by humans, while only 1 (8%) died from natural causes (USFWS 2015). However, these studies took place in roaded portions of Unit 2 where harvest is higher, so human-caused mortality rates may be somewhat inflated (USFWS 2015).

Wolves are remarkably resilient to high levels of harvest and human activities due to their high potential annual productivity and long dispersal abilities (USFWS 2015, Weaver et al. 1996). If sufficient prey is available, wolves can rapidly repopulate areas depleted by hunting and trapping (USFWS 2015, Ballard et al. 1987). However, due to differences in wolf population characteristics (e.g. sex/age structure), a universal, sustainable human-caused mortality rate does not exist, and the Unit 2 wolf population may be particularly vulnerable to overexploitation due to its insularity and lack of immigration (USFWS 2015, Wolf Technical Committee 2017). Person and Russell (2008) reported that a >38% total annual mortality rate for Unit 2 wolves was likely unsustainable based on past harvest rates and population estimates. The Regional Wildlife Supervisor for Southeast Alaska, ADF&G stated that other wolf research and the scientific literature indicate that a healthy wolf population can sustain 30% annual mortality (SERAC 2017). Additionally, wolf harvest records indicate neither offering a cash bounty nor poisoning wolves during the early 20$^{th}$ century had any lasting effects on wolf abundance or distribution on Southeast Alaska islands (Porter 2018).

Alexander Archipelago wolves start breeding at 22-34 months of age, and litter sizes range from 1-8 pups, averaging 4.1 pups (USFWS 2015, Person et al. 1996, Person and Russell 2009). Person and Russell (2008) reported survival rates for Unit 2 wolves > 4 months of age as 0.54 between 1993 and 2004 (USFWS 2015). Den use occurs from mid-April through early-July after which pups are relocated to rendezvous sites usually <1 km from their den where they remain until October (USFWS 2015, Person and Russell 2009). Pack sizes on Prince of Wales Island (POW) average 7.6 wolves in the fall and 4.0 wolves in the spring, and home range sizes average 535 km$^2$, which is a quarter of the size estimated for wolves on the northern mainland of southeastern Alaska (ADF&G 2015d as cited in USFWS 2015).

New Harvest Management Strategy

Unit 2 is a good place to implement population objectives because there is very little dispersal into and out of the unit (ADF&G 2019d). The new wolf management strategy consists of four zones (**Figure 2**). Zone 1 sets the minimum wolf population threshold at 100 wolves and seasons would remain closed until the wolf population recovers. Zone 2 is the conservation zone where the wolf population is estimated between 100-149 wolves, and seasons of up to six week provide limited harvest opportunity and a buffer to recover the population before it declines into Zone 1. Zone 3 sets the population objective range at 150-200 wolves. This is the desirable zone, and harvest would occur during seasons of up to eight weeks. When the population is in Zone 3, SECR population estimates would only be conducted every 2-4 years. Zone 4 is the over-objective zone where wolf numbers exceed 200, and seasons of up to 4 months would be geared toward population reduction (ADF&G 2019b). An issue with this new strategy is the one year time lag in obtaining population estimates. For example, if the wolf population was in Zone 1, an additional trapping season would occur prior to managers learning this (ADF&G 2019b, 2019c). However, the HGL management strategy also announced harvest quotas based on population estimates that were at least one year old and, prior to 2014, were assumed estimates (**Figure 1**). State and Federal managers will announce season lengths annually before November 15, which is the opening date for Federal and State trapping seasons (Schumacher 2019, pers. comm.).

Setting these population objectives incorporated biological as well as social concerns as various user groups have strong and differing opinions about wolves in Unit 2 (e.g. subsistence deer hunters view wolves as competitors, ESA petitioners view wolves as threatened) (SERAC 2017, 2018, Wolf Technical Committee 2017, ADF&G 2019d). They also included traditional knowledge. The Craig Tribal Association testified that the USFS determined 150-200 wolves as a sustainable range after talking with local and traditional knowledge holders on POW (SERAC 2017). Similarly, a working group of the Council also thought the population objective range should be 150-200 wolves, which is the range the BOG adopted (SERAC 2017).

Stressors

Unit 2 wolves experience numerous stressors, including harvest, logging, road development, and climate-related events (USFWS 2015, Porter 2018). In their comprehensive status assessment for the Alexander Archipelago wolf, the USFWS (2015) determined the Unit 2 wolf population to have low resiliency due to high rates of unreported harvest, high rates of timber harvest with detrimental effects on deer, high insularity (little immigration or emigration), and high levels of boat and road access for hunters and trappers.

The presence of wolves in an area is closely linked with prey availability (USFWS 2015). While Unit 2 wolves feed on a variety of species including beavers and salmon, deer are their primary prey (USFWS 2015, Porter 2018). Both the comprehensive conservation assessment (Person et al. 1996) and the species status assessment (USFWS 2015) prepared in response to the 1993 and 2011 ESA listing petitions, respectively, identified maintaining deer populations as a primary conservation measure for Alexander Archipelago wolves (Porter 2018). Wolf abundance may be especially linked to deer abundance and availability in Unit 2 where other ungulate prey species (e.g. moose, elk, caribou) are not present (USFWS 2015).

Deer are primarily limited by habitat rather than by predation (SERAC 2017, USFWS 2015). In Unit 2, deer habitat is adversely affected by industrial-scale logging of old-growth forests, which has occurred in the unit since the 1950s and peaked in the 1980s (USFWS 2015). Clearcut logging has been the primary timber harvesting method and, as of 2015, 23% of forests in Unit 2 were logged (Shanley 2015 as cited in USFWS 2015). Albert and Schoen (2007) modeled deer habitat capability in Unit 2 for two time periods (1954 and 2002), determining it to have lost 38% and 11% of its habitat value in northern and southern POW, respectively (USFWS 2015). USFWS (2015, 2016) predict that past timber harvest in Unit 2 will result in 21-33% declines in the deer population and 8-14% declines in the wolf population over the next 30 years, with future timber harvest exacerbating these declines. However, in 2014 (most recent information available), the Unit 2 deer population appeared to be stable to slowly increasing (Bethune 2015). USFWS (2016) states the rate of future timber harvest is difficult to project.

Declines in understory vegetation correspond with decreased deer carrying capacity (USFWS 2015). Severe (deep snow) winters often result in deer population declines (e.g. Brinkman et al. 2011), and these effects are exacerbated by loss of old-growth forests. Old-growth forests have multi-layered canopies that intercept snow and moderate temperature and wind, providing shelter for and facilitating movements of deer in the winter (USFWS 2015, Porter 2018). They also maintain diverse understories that provide continuous forage for deer (USFWS 2015). Conversely, clearcuts may temporarily provide deer with winter forage, but this forage can be buried during winters with deep snow (Porter 2018). The initial flush

of forbs and shrubs in clearcuts provide deer with lower-quality forage, and regenerating trees shade out the understory vegetation after 20-35 years (Porter 2018, USFWS 2015). As Unit 2 timber harvest peaked in the 1980s, many stands are entering the successional stage that is very poor deer habitat (USFWS 2015).

In addition to altering the habitat of their primary prey species, logging also impacts Unit 2 wolves by constructing roads that provide relatively easy access for hunters and trappers into previously remote areas (Porter 2018, USFWS 2015). Person and Russell (2008) found roads clearly increased risk of death for POW wolves from hunting and trapping and contributed to unsustainable harvest rates. They also determined road density to be an important predictor of harvest up to 0.9 km of road per square kilometer (km/km$^2$). Above this threshold, increased road density did not correspond to increased harvest rates. Mean road density in Unit 2 is 0.62 km/km$^2$, ranging from 0-1.57 km/km$^2$ (Albert 2015 as cited in USFWS 2015). Person and Logan (2012) believe harvest from the densely roaded northcentral and central portions of POW are frequently unsustainable. The USFS aims to shift timber harvest to regenerating stands and away from old-growth stands, which also allows for the use of existing roads as opposed to constructing new ones (USFWS 2015, 2016).

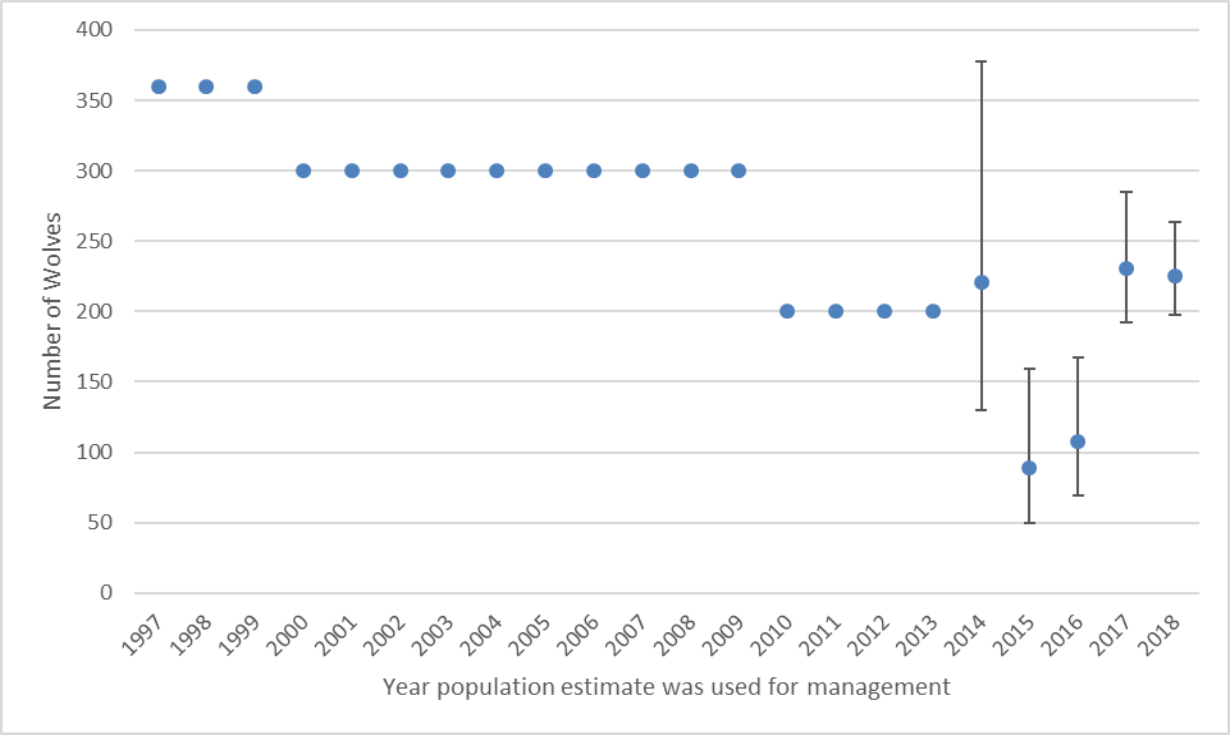



**Figure 1**. Unit 2 wolf population estimates, 1997-2018. Estimates from 1997-2013 are assumed from sealing records and a 1994 population estimate. Estimates from 2014-2018 are from a DNA mark/recapture study. The error bars represent 95% confidence intervals. Estimates take a year to determine; thus the population estimate for 2014 was used to set 2015 harvest quotas. The population estimates in this graph reflect the one year time lag (e.g. the 2015 population estimate actually reflects wolf numbers during fall 2014, but was used to set harvest quotas for the 2015 season) (Schumacher 2019, pers. comm.).

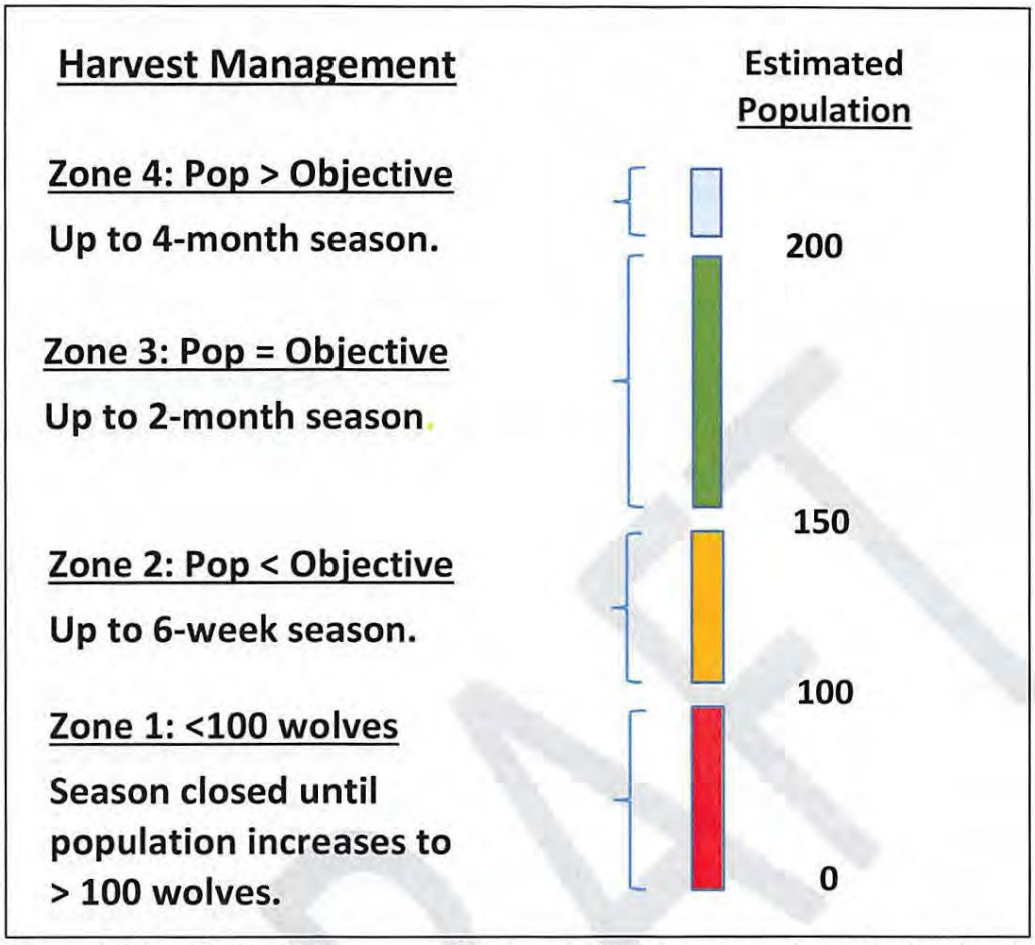



**Figure 2.** Population thresholds and harvest management strategies for the Unit 2 wolf population. The BOG adopted population objectives of 150-200 wolves in 2019 (figure from ADF&G 2019b).

**Cultural Knowledge and Traditional Practices**

Wolves were traditionally harvested for furs and hides throughout their range in Southeast Alaska (ADF&G 2008). Historically the fur of this species was used in making ceremonial masks, blankets, robes, and other articles of clothing (ADF&G 2008). The furs and hides were traded between communities and with other regions of the state (De Laguna 1972, Oberg 1973, Petroff 1884).

Wolves also occupy an important symbolic role in both Tlingit and Haida cultures. Tlingit society is divided into two moieties, which include the Raven and Eagle/Wolf (Emmons 1991). Within the moieties, several clans claim wolves as symbols or crests (Swanton 1909). Members of wolf clans ceremonially address wolves as relatives and believe the animals embody their ancestors (ADF&G 2008). These relationships are similar within the Haida culture, although the wolf is claimed by the Raven rather than the Eagle moiety (Blackman 1998).

Traditionally, wolves were harvested in the late fall and early winter because the fur was considered prime during these seasons and there was no deep snow to restrict travel (ADF&G 2008). Trapping usually started in November and continued through December, and was accomplished with snares and deadfalls set across game trails frequented by wolves (ADF&G 2003, ADF&G 2008, De Laguna 1972, Goldschmidt and

Haas n.d. [1946], Goldschmidt and Haas 1998, Oberg 1973). Families built and maintained trapping cabins in remote areas exhibiting high furbearer abundance and placed them in accordance with clan ownership rights (Goldschmidt and Haas 1998). Harvest areas were traditionally owned by clans that were inherited through family lineages (ADF&G 2008). The wolf's mythical and symbolic nature within Tlingit culture resulted in great care and respect being shown to both the living and harvested members of this species (ADF&G 2008). Wolves were not normally eaten, except as a famine food (ADF&G 2008).

Preparation of animal skins was traditionally assigned to women in both Tlingit and Haida cultural groups (Blackman 1998, Emmons 1991). The order of value among available furs within the Tlingit culture was sea otter, marten, beaver, river otter, black fox, mink, wolverine, wolf, and bear (Oberg 1973). Wolves contemporarily retain cultural value, and wolf harvest, sharing, and use have been recently documented in many areas of Southeast Alaska (ADF&G 2008). Wolf fur continues to be used in Native handicrafts such as blankets, ceremonial robes, winter coat ruffs, and art, but are also sold to commercial fur traders (ADF&G 2008).

Though wolves traditionally and contemporarily play important cultural and economic roles within Southeast Alaska, wolves are also now seen as a direct competitor for an important subsistence food source in Unit 2 – deer (Wolf Technical Committee 2017). Wolves also present other considerations for area residents including their role in both consumptive and non-consumptive tourism, as a top predator within the ecological system, and as a potential threat to humans and pets. It is believed that improving forage production within young-growth stands that are near areas preferred for human hunting of deer will help to alleviate some of the human-wolf-deer tensions in Unit 2 (Wolf Technical Committee 2017).

**Harvest History**

From the 1950s through the mid-1990s, wolf harvest in Unit 2 increased in conjunction with a growing human population and increased road access associated with the logging industry, peaking at 132 wolves in 1996 (**Figure 3**) (Porter 2018). Since 1996, trapper numbers in Unit 2 have generally been declining, possibly due to an aging trapper pool and a human population that is decreasing in response to fewer timber-related jobs (Bethune 2012). Between 1997 and 2018, total trapper numbers in Unit 2 ranged from 4-26 trappers per year, averaging 14.5 trappers per year (Schumacher 2019, pers. comm., Porter 2018). Over the same time period, trappers living in Unit 2 accounted for 60-100% of the annual Unit 2 wolf harvest, averaging 89% (Schumacher 2019, pers. comm., Porter 2018). Most of the non-local resident harvest is by residents of adjacent communities, including Ketchikan, Petersburg, Wrangell, and Sitka (Schumacher 2019, pers. comm.). (Note: As there is no customary and traditional use determination for wolves in Unit 2, all rural residents are Federally qualified subsistence users. Ketchikan and Juneau are the only non-rural communities in Southeast Alaska).

Between 1997 and 2018, average catch per trapper ranged from 1.8-5.5 wolves per trapper, averaging 3.4 wolves per trapper (Schumacher 2019, pers. comm., Porter 2018, Porter 2003). However, in most years, just 2-3 skilled trappers harvest most of the wolves (Schumacher 2019, pers. comm.). Between 1996 and 1998, ADF&G conducted household harvest surveys in all POW communities (ADF&G 2019e). The larger communities of Klawock and Craig accounted for 80% of the POW wolf harvest, and <.05% of the POW population attempts to harvest wolves (ADF&G 2019e).

Unit 2 wolf harvest is primarily monitored through mandatory sealing of pelts (Porter 2018). Harvest primarily occurs on non-Federal lands, including tide lands (ADF&G 2019d, SERAC 2017, Person and Logan 2012). Most wolves are harvested under a combination hunting/trapping license (Schumacher 2019, pers. comm.). The only wolves known to be taken under a hunting license are harvested from Sept. 1-Nov. 14 during the Federal hunting season, but before State and Federal trapping seasons open (Schumacher 2019, pers. comm.). In Unit 2, wolves can be harvested with a firearm under a trapping license under both State and Federal regulations.

Since 1997 when the HGL was initiated (see Regulatory History), annual reported wolf harvest has ranged from 7-96 wolves, averaging 50 wolves (**Figure 3**) (Schumacher 2019, pers. comm.). The annual harvest quota has been exceeded five times (**Table 1**). Most wolves are harvested using traps and relatively few are shot. Between 1997 and 2018, 21%, 53%, and 25% of harvested wolves were shot, trapped, and snared, respectively (Schumacher 2019, pers. comm., Porter 2018, Bethune 2012).

Most of the wolf harvest in Unit 2 occurs in January and February when pelts are most prime and fur prices are highest (Porter 2018). Since 2015, most of the wolf harvest has occurred in December because seasons have closed early by emergency order (ADF&G 2019c). Little harvest occurs before December (Porter 2018, SERAC 2017). Between 1997 and 2014, 60% of wolf harvest occurred in January and February on average (Schumacher 2019, pers. comm., Porter 2018, Bethune 2012). Over the same time period, 3% of wolves were harvested before December on average. Between 2015 and 2018, 32% of wolves were harvested before December on average due to seasons closing early (Schumacher 2019, pers. comm., Porter 2018, Bethune 2012).

Unreported human-caused mortality includes wounding loss, illegal harvest, and vehicle collisions. As part of an ADF&G research program, Person and Russell (2008) estimated unreported human-caused mortality as 47% of total human-caused mortality based on a study of 55 radio-collared wolves in which 16 of 34 human-caused wolf kills were unreported. Most of the unreported kills were either shot out of season or killed during open seasons and not reported (Person and Russell 2008). Later in the research program, ADF&G reported three of eight radio-collared wolves that died during their study were not reported, suggesting 38% of human-caused wolf kills are unreported (USFWS 2015, Schumacher 2019, pers. comm.). Thus, unreported harvest accounts for a substantial portion of wolf harvest in Unit 2, which likely resulted in unsustainable harvests in some years (**Figure 4**) (USFWS 2015, 2016). USFWS (2016) estimated mean total (reported and unreported) annual harvest as 29%, ranging from 11-53%, and concluded that harvest has impacted the Unit 2 wolf population. However, unreported harvests are implicitly accounted for with the new management strategy as management is based on population estimates and objectives rather than on harvest quotas and reported harvests.

USFWS (2015) notes harvest may explain most of the 2013-2014 population decline if unreported harvest is considered. Relatively easy boat and road access may contribute to high rates of unreported harvest in Unit 2, while the insularity of the population makes it more susceptible to overharvest (USFWS 2015). However, as few wolves in Unit 2 are currently radio-collared, documenting unreported human-caused mortality is difficult and accounting for it when setting harvest quotas was a contentious issue (Porter

2018). Additionally, testimony from Federally qualified subsistence users to the Council indicates high levels of illegal harvest is not occurring (SERAC 2017).

In 1999, the wolf season closed early by emergency order for the first time. Afterward, annual reported harvest declined substantially (Person and Logan 2012, Bethune 2012). Similarly, Porter (2003) notes that the number of successful trappers averaged 17 per year from 1999-2001, which was well below the 10-year average of 27 successful trappers per year. Between 2002 and 2014, the number of successful trappers averaged 12 trappers per year (Porter 2018). The threat of early season closures likely discourages hunters and trappers from reporting their harvests, and harvest data after 1999 may be less accurate than harvest data prior to 1999 (Person and Logan 2012). Prior to the public meeting, a wolf trapper from POW mentioned he would wait until the 14th day to seal his wolf pelts in an effort to extend the wolf season.

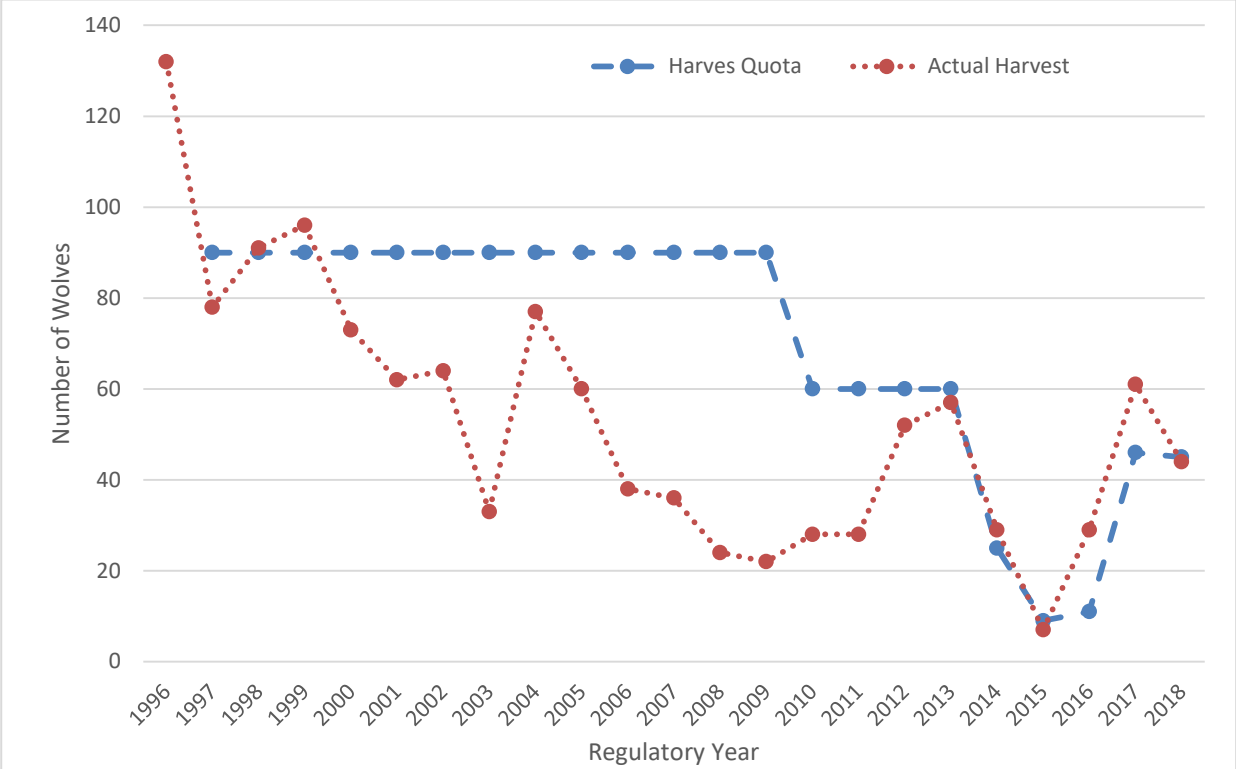



**Figure 3.** Unit 2 wolf harvest and harvest quotas, 1996-2018. Harvest includes reported harvest and other documented human-caused mortality (e.g. vehicle collisions) (Schumacher 2018, pers. comm., Porter 2018).

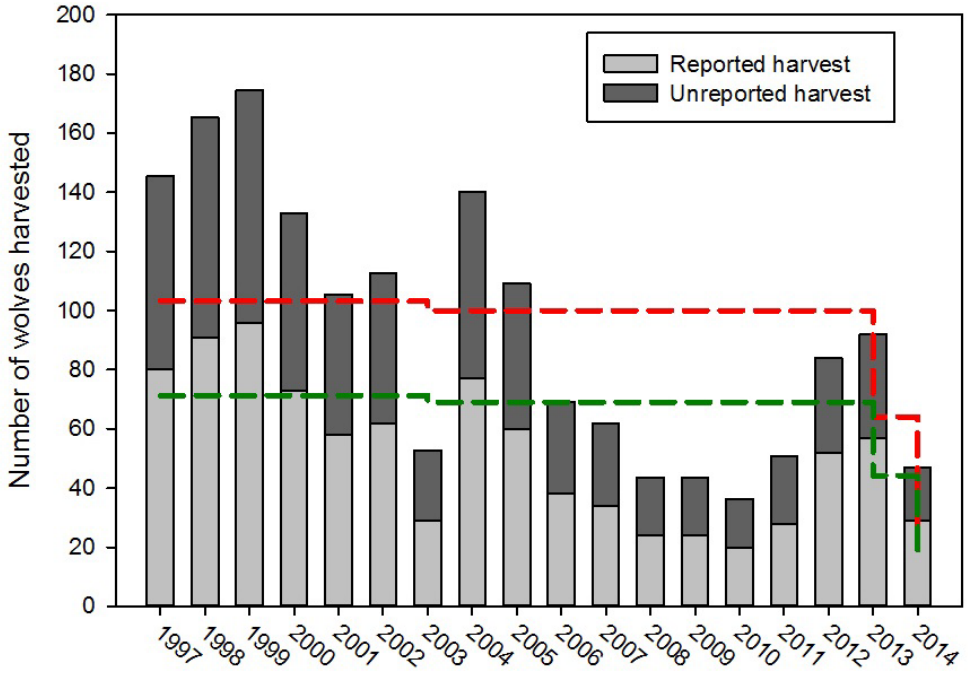



**Figure 4.** Estimated total number of wolves harvested by regulatory year in Unit 2, 1997-2014. Unreported harvest was estimated using a rate of 0.45 of total harvest from 1997-2011 (Person and Russell 2008) and a proportion of 0.38 of total harvest from 2012-2014 (ADF&G 2015a as cited in USFWS 2015). The green and red dotted line indicates 20% and 30% HGL, respectively (figure from USFWS 2015).

**Effects**

If this special action request is approved, the sealing requirement will be extended to 30 days after the end of the season, and the combined Federal-State harvest quota will be eliminated. Extending the sealing requirement will align with the new sealing requirement for the State trapping season, but does not align with the State hunting season. Also, subsistence users will be able to seal all of their wolf pelts at once rather than sealing them piece meal throughout the season. Extending the sealing requirement should have no effect on wolf harvest or abundance since the new management strategy depends on population objectives rather than on in-season harvest tracking (ADF&G 2019d).

An issue identified with the HGL management strategy was that it focused only on the percentage of wolves to harvest and not on how many wolves should be in the population. Without population objectives, State and Federal managers had to decide when the population was too low or too high, whereas population objectives determined through a public process such as BOG proposals clarifies goals, providing guidance to managers and building buy-in among stakeholders (SERAC 2019, ADF&G 2019b, 2019d). Specifically, establishing population objectives provides managers with a quantitative benchmark to gauge successful management, helps guide habitat management and regulatory planning, and mitigates disagreements between stakeholders over what is a sustainable wolf population (Wolf Technical Committee 2017, ADF&G 2019d).

Additionally, the HGL management strategy discouraged hunters and trappers from reporting harvest to prevent the season from closing early. Early season closures also created hardships for trappers who could

not plan for when they needed to pull traps. In 2018, the wolf season closed by emergency order on December 18, but was reopened until December 21 due to bad weather that prevented trappers from pulling their traps. Managing for a population objective and announcing season lengths ahead of time provides predictability, allowing trappers to plan and prepare for the season and, importantly, does not discourage reporting harvests (ADF&G 2019d). The new wolf management strategy further alleviates concerns about illegal or unreported harvests by basing management on population estimates and objectives rather than on harvest quotas (SERAC 2019).

While the new management strategy depends on year-old population estimates to determine season lengths, the HGL management strategy depended on year-old population data to announce harvest quotas (since 2014). Although the SECR population estimates may only be produced every 2-4 years at some point in the future, ADF&G may employ other monitoring techniques to assess the Unit 2 wolf population. These techniques include trail cameras to document wolf reproduction and relative abundance, and measuring the foreleg bones of harvested wolves to monitor age structure and recruitment (ADF&G 2019b).

One of the reasons a species can be listed under the ESA is inadequacy of existing regulatory mechanisms. In response to the 2011 ESA listing petition, USFWS (2016) found wolf harvest regulations in Unit 2 to be inadequate to avoid exceeding sustainable harvests (although their inadequacy would not impact the rangewide population). In 2016 and 2017, actual harvest well exceeded the harvest quota, suggesting that the HGL management strategy does not work (SERAC 2017) and reaffirming USFWS' (2016) assessment of inadequate regulations. Even the relatively short sealing requirement resulted in a two week time lag, making it difficult to monitor harvest and to project when quotas would be met (SERAC 2017, 2018). Establishing population objectives through a public process reduces the likelihood of future litigation (Wolf Technical Committee 2017).

The Southeast Regional Supervisor of the Wildlife Division of ADF&G stated at the fall 2017 Council meeting, "Monitoring harvest using sealing records didn't work, so what's a better idea?" (SERAC 2017, p. 189). Council members stated establishing population goals would constitute "something better" (p. 249) and encouraged State and Federal staff to work toward setting population goals for Unit 2 wolves, "so that we're not bouncing around endlessly on is it 20% [or] is it 30%?" (SERAC 2017, p. 442).

While managing harvest through season length may initially result in more or less wolves harvested than expected, State and Federal managers can fine tune season lengths over time once patterns between season length and harvest are better established (SERAC 2019). Past experiences indicate mixed results when using season length as a means for limiting harvest. After the BOG shortened State trapping and hunting seasons in 1997, wolf harvest declined by 12% (Porter 2003). However, since 1997, wolf harvest has varied considerably in years not closed by emergency order (22-96 wolves per year), although State seasons have not changed. Every season since 2013 has been closed by emergency order, and harvest in these years has also varied considerably (7-61 wolves per year). In 2015, seven wolves were harvested during a five week Federal and three week State season. In 2017, 61 wolves were harvested during a 4.5 week Federal and 2.5 week State season (**Table 1**). This suggests harvest is more a function of abundance rather than season length. Additionally, wolves exhibit high resiliency to human harvest and population declines

as evidenced by their population rebound under conservative management since 2014 and high reproductive potential (SERAC 2017, USFWS 2015).

The Federal in-season manager (Craig District Ranger) currently has delegated authority to close, reopen, or adjust the Federal hunting and trapping seasons for wolves in Unit 2. Previously, the Federal in-season manager decided when to close the season based on harvest quotas. If this request is approved, this individual would determine season lengths in cooperation with State managers based on the new harvest management strategy, although maintains the flexibility to close/re-open/adjust Federal seasons at his/her discretion. However, the State will not announce its season length until fall 2019 after the 2018 population estimate is available. While the Federal hunting season opens three months earlier than the State hunting season, the proponent's intent was to maintain the Sept. 1 opening date regardless of the new management strategy to provide subsistence opportunity for wolf harvest while deer hunting.

## OSM CONCLUSION

**Support** Special Action Request WSA19-02.

### Justification

Effective wolf management in Unit 2 depends upon coordination between State and Federal regulations, in-season managers, and users. Approving this special action request aligns Federal and State wolf management strategies, facilitating management and reducing user confusion, which is the desired objective of the proponent. Eliminating the combined State-Federal harvest quota under Federal regulations clarifies in-season management as the State no longer uses harvest quotas. Extending the sealing requirement decreases the regulatory burden on Federally qualified subsistence users and aligns Federal hunting and trapping sealing requirements with State trapping requirements, reducing regulatory complexity.

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# MEMORANDUM

| | | | |
|---|---|---|---|
| TO: | Anthony Christensen, Chair,<br>Federal Subsistence Board | DATE: | May 23, 2019 |
| | | PHONE: | 267-2190 |
| FROM | Ben Mulligan BSM<br>Deputy Commissioner | SUBJECT: | Wildlife Special Action Request 19-02 |

The Alaska Department of Fish and Game (ADF&G) submits the following comments on Federal Subsistence Wildlife Special Action Request 19-02 (WSA19-02). WSA19-02 was submitted by the Southeast Alaska Subsistence Regional Advisory Council and proposes to align federal subsistence hunting and trapping regulations for wolves in Game Management Unit 2 (Unit 2) with changes made by the Alaska Board of Game (Board) to State of Alaska hunting and trapping regulations at the Board's January 2019 meeting.

WSA 19-02 would:

1) Increase the annual bag limit for wolves taken under a hunting license in Unit 2 from 5 to unlimited,

2) Eliminate the reference to the hunting and trapping seasons in Unit 2 being closed when the combined Federal-State harvest quota is reached,

3) Change the sealing requirement for wolves taken under a hunting license in Unit 2 from within 14 days of harvest to within 30 days of the end of the season, and

4) Change the sealing requirement for wolves taken under a trapping license in Unit 2 from within 14 days of harvest to within 30 days of the end of the season.

**Background:**

In January 2019 the Board adopted changes to state wolf harvest regulations in Game Management Unit 2 (Unit 2). Those changes implemented ADF&G's proposal to change the Unit 2 wolf harvest management strategy from one based on a harvest guideline level to one based on a population objective. That change in management strategy required the following changes to state hunting and trapping regulations; eliminating references to the harvest guideline level, establishing a fall population objective of 150-200 wolves, and amending the sealing requirement for wolves taken under hunting or trapping licenses from within 14 days of harvest to within 30 days of the end of the season. Under a separate proposal the Board changed the opening date for the state wolf trapping season in Unit 2 from December 1 to November 15, which aligns with the current opening date under federal subsistence regulations. Those regulatory changes will take effect July 1, 2019.

One difference between state regulations that will take effect in July 2019 and the proposed changes to federal regulations is the change in federal bag limit for wolves taken under a hunting license from 5 wolves per year to unlimited. State hunting regulations for wolves in Unit 2 provides for a 5-wolf bag limit. In most years few wolves are taken during the federal hunting season prior to the opening of trapping season. Over the last ten years more than 90% of wolves taken in Unit 2 were taken under combination (hunting & trapping) or trapping licenses. Because wolves may be taken under a trapping license with a firearm and because the state and federal in-season manager will simultaneously close state and federal hunting and trapping seasons, we believe this change will have little effect on harvest.

WSA 19-02 seeks to align federal regulations with recent changes to state regulations prior to the opening of the fall 2019 Unit 2 wolf hunting and trapping seasons. ADF&G supports these changes because they will help implement the new harvest management strategy, eliminate regulatory conflicts, and reduce confusion among users.

Thank you for considering our comments.

cc: Eddie Grasser, Director, ADF&G, Division of Wildlife Conservation
Lisa Olson, Assistant Director, ADF&G, Subsistence
Cheryl Brooking, Assistant Attorney General, Department of Law
George Pappas, State Liaison, Office of Subsistence Management

## INTERAGENCY STAFF COMMITTEE RECOMMENDATION

The Interagency Staff Committee recommendation is to **Support** Temporary Special Action Request WSA19-02.

**Justification**

Past management of wolves in Unit 2 focused on harvest through the setting of harvest quotas based on a population estimate and not on how many wolves should remain in the population. This strategy had varying degrees of success.

In January of 2019, the Alaska Board of Game removed regulatory language regarding the percentage of wolves to be harvested in Unit 2 and replaced the quota management system with a strategy that maintains a population objective of 150-200 wolves via setting annual season lengths. This new strategy, was which was developed by the Alaska Department of Fish and Game, U.S. Forest Service, Southeast Alaska Subsistence Regional Advisory Council and local users, was designed to ensure a sustainable population and encourage better harvest reporting.

Approval of this request will not align State and Federal hunting season dates or sealing requirements; however, the trapping season dates and sealing requirement would be aligned. The vast majority of wolves are taken by Federally qualified subsistence users during trapping season.

The Federal in-season manager (Craig District Ranger) currently has delegated authority to close, reopen, or adjust the Federal hunting and trapping seasons for wolves in Unit 2. If this request is approved, the in-season manager would determine season lengths annually in cooperation with State managers based on population estimates. Early closures of seasons would likely not happen as harvest reports would not be known until post season.

Wolf populations in Unit 2 are primarily influenced by harvest. The success of this new management strategy will depend upon coordination of State and Federal management, regular communication between State and Federal managers, active involvement of user groups, accurate harvest reporting, and regular monitoring of wolf populations.

Managing for a population objective and announcing pre-determined season lengths ahead of time provides predictability, which allows trappers to plan and prepare for the season and may improve harvest reporting. While managing harvest through season length may initially result in more or less wolves harvested than expected, State and Federal managers can fine tune season lengths over time once relationships between season length, harvest and population estimates are better established. Shifting the strategy of managing by harvest quotas to predetermined season lengths based on a population objective makes the requirement for in-season sealing unnecessary.

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# STAFF ANALYSIS
# TEMPORARY SPECIAL ACTION
# WSA19-04

## ISSUES

Wildlife Special Action WSA19-04, submitted by the Northwest Arctic Subsistence Regional Advisory Council (Council), requests closure of the cow moose season in Unit 23 for the 2019/20 regulatory year.

## DISCUSSION

The proponent is concerned about declines in the Unit 23 moose population. The Council states that they would like to eliminate the cow moose season to conserve cows and, in turn, help the Unit 23 moose population recover. The Council also mentions that this request would align State and Federal harvest seasons and harvest limits, which would reduce user confusion in the area.

The applicable Federal regulations are found in 50 CFR 100.19(b) (Temporary Special Actions) and state that:

*"...After adequate notice and public hearing, the Board may temporarily close or open public lands for the taking of fish and wildlife for subsistence uses, or modify the requirements for subsistence take, or close public lands for the taking of fish and wildlife for nonsubsistence uses, or restrict take for nonsubsistence uses."*

### Existing Federal Regulation

**Unit 23—Moose**

*Unit 23—that portion north and west of and including the Singoalik River drainage, and all lands draining into the Kukpuk and Ipewik Rivers—1 moose*

| | |
|---|---|
| *Bulls may be harvested* | *July 1 – Dec. 31* |
| *Cows may be harvested* | *Nov. 1 – Dec. 31* |
| *No person may take a calf or a cow accompanied by a calf* | |

*Unit 23, remainder—1 moose*

| | |
|---|---|
| *Bulls may be harvested* | *Aug. 1 - Dec. 31* |
| *Cows may be harvested* | *Nov. 1 – Dec. 31* |
| *No person may take a calf or a cow accompanied by a calf* | |

**Proposed Federal Regulations**

**Unit 23—Moose**

*Unit 23—that portion north and west of and including the Singoalik River drainage, and all lands draining into the Kukpuk and Ipewik Rivers—1 ~~moose~~ **bull***

| | |
|---|---|
| *~~Bulls may be harvested~~* | *July 1 – Dec. 31* |
| *~~Cows may be harvested~~* | *~~Nov. 1 – Dec. 31~~* |
| *No person may take a calf ~~or a cow accompanied by a calf~~* | |

*Unit 23, remainder—1 ~~moose~~**bull***

| | |
|---|---|
| *~~Bulls may be harvested~~* | *Aug. 1 – Dec. 31* |
| *~~Cows may be harvested~~* | *~~Nov. 1 – Dec. 31~~* |
| *No person may take a calf ~~or a cow accompanied by a calf~~* | |

**Existing State Regulation**

**Unit 23—Moose**

| | | |
|---|---|---|
| *Unit 23, north of and including Singoalik River drainage* | | |
| *Residents—One antlered bull by permit available in person at license vendors within Unit 23 villages June 1-July 15 or* | *RM880* | *July 1–Dec 31* |
| *Residents—One bull with 50-inch antlers or antlers with 4 or more brow tines on at least one side* | *HT* | *Sept 1–Sept 20* |
| *Nonresidents* | | *No open season* |
| *Unit 23, remainder* | | |
| *Residents—One antlered bull by permit available in person at license vendors within Unit 23 villages June 1-July 15 or* | *RM880* | *Aug 1–Dec 31* |
| *Residents—One bull with 50-inch antlers or antlers with 4 or more brow tines on at least one side* | *HT* | *Sept 1–Sept 20* |
| *Nonresidents—One bull with 50-inch antlers or antlers with 4 or more brow tines on at least one side by permit* | *DM872/874 -876/885* | *Sept 1–Sept 20* |

**Extent of Federal Public Lands**

Federal public lands comprise approximately 71% of Unit 23 and consist of 40% National Park Service (NPS) managed lands, 22% Bureau of Land Management (BLM) managed lands, and 9% U.S. Fish and Wildlife Service (USFWS) managed lands (**Figure 1**).

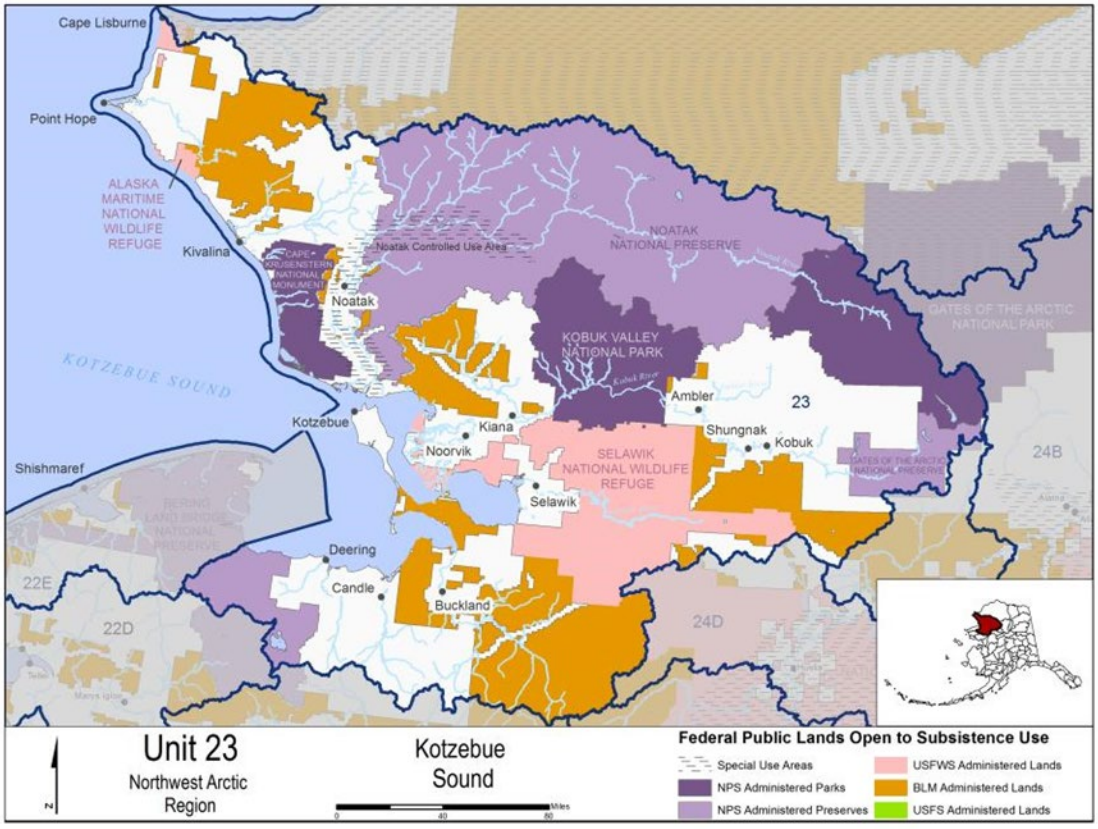


**Figure 1.** Federal public lands in Unit 23.

**Customary and Traditional Use Determinations**

Residents of Unit 23 have a customary and traditional use determination for moose in Unit 23.

**Regulatory History**

In 1994, the Federal moose hunt in Unit 23 consisted of three hunt areas: Unit 23 north and west of and including the Singoalik River drainage, and all lands draining into the Kukpuk and Ipewik rivers (Unit 23 NW), Unit 23 within the Noatak River drainage, and Unit 23 remainder. The harvest limit in each hunt area was one moose with a prohibition on the take of cows accompanied by calves. The season in the Unit 23 NW hunt area was July 1–Mar. 31; the season in the Noatak River drainage hunt area was Aug. 1–Sept. 15 and Oct. 1–Mar. 31, although antlerless moose could only be taken Nov. 1–Mar. 31; the season in Unit 23 remainder was Aug. 1–Mar. 31.

State moose regulations became more restrictive in 2003 when Alaska Board of Game (BOG) approved amended Proposal 15 (effective starting with the 2004/05 regulatory year), making it more difficult for nonlocal residents to hunt moose, creating four registration hunts in the unit with permits (RM880) only available in person at licensed vendors in Unit 23 villages from June 1–July 15. This early availability of permits occurred before most of the seasons opened, requiring nonlocal hunters to make a special trip to a Unit 23 village in order to receive a permit. These permits also allowed for better tracking of harvest.

In 2005, Proposal WP05-18, submitted by the Council, requested prohibiting the harvest of calves, shortening the season for moose in most of Unit 23 from July 1 (or Aug. 1)–Mar. 31 to Aug. 1–Dec. 31 (five month season), combining the Noatak drainage and remainder hunt areas, and allowing antlerless moose to be harvested only in November and December. The Federal Subsistence Board (Board) tabled this proposal in response to a Council recommendation to provide time for residents of local villages to review the proposal and provide their input due to differing viewpoints related to the moose population and local subsistence needs (FSB 2005).

In 2006, Proposal WP06-54 was submitted by the Council to replace WP05-18, requesting the harvest of moose calves be prohibited and that the two week seasonal closure (Sept. 16–30) in the Noatak River drainage hunt area be rescinded. The Board adopted WP06-54 under its consensus agenda.

In January 2017, the BOG adopted amended Proposal 36, changing the antlerless moose season in Unit 23 to one antlered bull due to conservation concerns (ADF&G 2017a). Of note, nonresident drawing permits had been reduced from 50 permits in 2016/17 to 34 permits in 2017/18 and, later in 2017, the Alaska Department of Fish and Game (ADF&G) cancelled the 2017/18 nonresident moose hunt in Unit 23, voiding all issued permits (ADF&G 2017a, 2017b, NWARAC 2017a, Saito 2017 pers. comm.).

In April 2017, the Board rejected Temporary Special Action WSA17-02, which requested that Federal public lands in Unit 23 be closed to moose harvest by non-Federally qualified users during the 2017/18 regulatory year. The Board stated that they wanted to allow time to assess the effects of recent State actions prior to considering a unit-wide closure.

During the 2018/2020 regulatory cycle, the Council (WP18-41) and Louis Cusack (WP18-42) submitted similar proposals requesting changes to the Unit 23 moose season, including shortening the cow and overall moose seasons and aligning Federal and State hunt areas. Specifically, WP18-41 requested combining the Noatak River drainage and remainder hunt areas, changing the closing date of the bull season from Mar. 31 to Dec. 31, and restricting cow harvest to Nov. 1–Dec. 31. The Board adopted Proposal WP18-41 to protect the declining moose population and took no action on WP18-42.

In 2018, Emergency Special Action WSA18-04, which requested closing the cow moose season in Unit 23, was submitted to the Board. The Board approved with modification to close the Federal winter cow moose season and close moose hunting in Unit 23 except by Federally qualified subsistence users for the 2018/19 regulatory year. ADF&G also closed the non-resident moose season in Unit 23 and planned to continue the nonresident closure until moose populations rebound (NWARAC 2018a).

Controlled Use Areas

In 1988, the BOG established the Noatak Controlled Use Area (CUA) in part, "to help reduce harvests on a declining moose population" (ADF&G 1988:47, Alaska Board of Game 1995: 1). In 1990, the Noatak CUA was adopted under Federal subsistence regulations. The Noatak CUA is closed to the use of aircraft in any manner for big game hunting, including transportation of big game hunters, their hunting gear, and/or parts of big game from Aug. 15–Sep. 30. Currently, the Noatak CUA under State regulations consists of a corridor extending five miles on either side of, and including, the Noatak River beginning at the mouth of Agashashok River, and extending upstream to the mouth of the Nimiuktuk River. Currently, the Noatak CUA under Federal regulations consists of a corridor extending five miles on either side of the Noatak River beginning at the mouth of the Noatak River and extending upstream to the mouth of Sapun Creek.

In 2011, Selawik National Wildlife Refuge designated refuge lands in the northwest portion of the refuge as closed to big game hunting by commercial guides and transporters through their comprehensive conservation plan (FWS 2011, 2014). These refuge lands are intermingled with private lands near the villages of Noorvik and Selawik. The purpose of this closure was to minimize trespass on private lands and to reduce user conflicts (FWS 2011).

**Current Events**

Tribal and Alaska Native Claims Settlement Act (ANSCA) consultations were held on July 1, 2019, via teleconference. No Tribal or ANSCA representatives called in to provide comment.

A public hearing was held on July 11, 2019, in Kotzebue to provide members of the public an opportunity to comment on Temporary Special Action WSA19-04. Approximately five individuals attended the public hearing while another seven individuals listened to the hearing via teleconference. Three people provided testimony in person or via teleconference during the meeting. Of those that provided testimony, all three were in support of the Temporary Special Action.

An elder of Kotzebue mentioned that warmer temperatures and deep snow in the area are taking their toll on the moose population. It was mentioned that moose get stuck in deep snow and are vulnerable to predators and hypothermia. The elder said that he likes the idea of giving the cow moose a break and supports this request.

Likewise, a hunter from Anchorage mentioned that he was in support of this request to conserve moose in the area. He mentioned that he has noticed a shift in harvest by locals, from caribou to moose, due to low caribou numbers and that this request would help to preserve the moose population into the future.

A local Kotzebue resident commented that that this Special Action is a good idea and will give moose populations the chance to recover.

The State of Alaska submitted written comments in support of WSA19-04 (Appendix 1). The State mentioned that the moose population has declined from an estimate of 7,500 moose in 2017 to a current population estimate of 5,600. Composition counts have also demonstrated a continued trend of poor recruitment. The State mentioned that antlerless moose harvest should not occur in Unit 23 until the

moose population increases. It was also mentioned that WSA19-04 would align State and Federal moose hunting regulations in Unit 23.

The Council also submitted Proposal WP20-47 to mirror this Special Action Request and to require the use of a registration permit. This proposal will be taken up by the Board at the April 2020 meeting.

**Biological Background**

Moose first appeared in eastern Unit 23 during the 1920s, expanding their range from the east. Over the next several decades, moose spread northwest across Unit 23 to the Chukchi Sea coast (**Figure 2**) (LeResche et al. 1974, Tape et al. 2016, Westing 2012). The Unit 23 moose population grew through the late-1980s (Westing 2012). This rise in population was followed by severe winters and extensive flooding from 1988-1991 which, in conjunction with predation by brown bears and wolves, reduced the population and overall moose density (Westing 2012).

State management objectives for moose in Unit 23 include (Saito 2014):

- Maintain a unit-wide adult moose population of 8,100–10,000 moose
    - Noatak River and northern drainages 2,000–2,300 moose
    - Upper Kobuk River drainage 600–800 moose
    - Lower Kobuk River drainage 2,800–3,400 moose
    - Northern Seward Peninsula drainages 700–1,000 moose
    - Selawik River drainage 2,000–2,500 moose
- Maintain a minimum fall ratio of 40 bulls:100 cows, except in the Lower Kobuk where bull:cow ratios are skewed by its disproportional use by maternal cows. The higher bull:cow ratio goals are due to the low densities and wide distribution of moose throughout Unit 23 (Saito 2014).

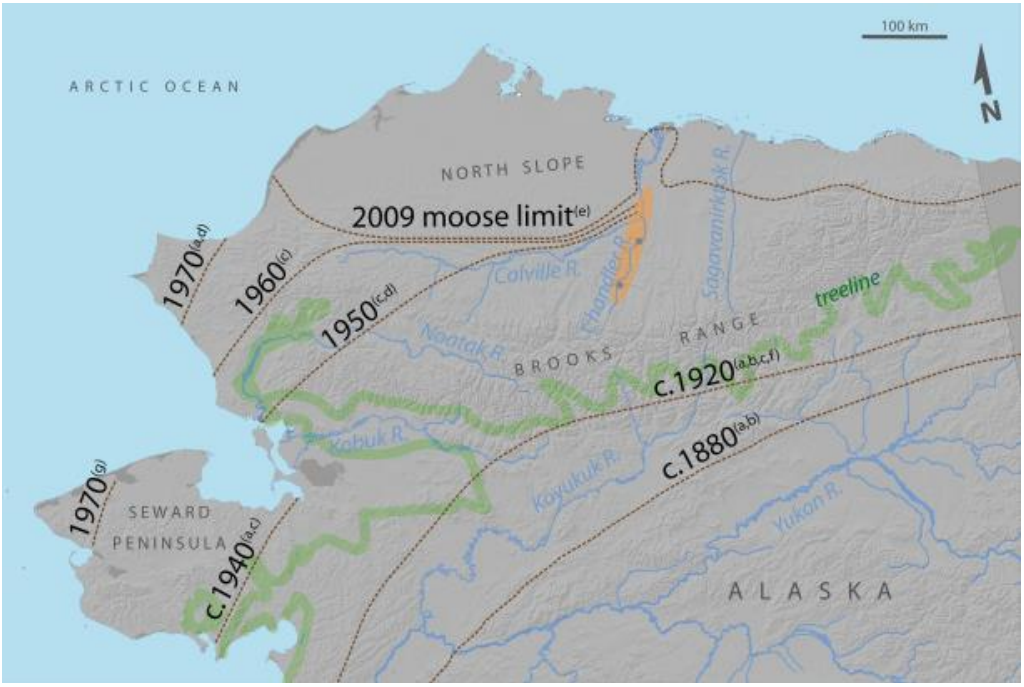


**Figure 2.** Temporal moose distribution changes in northern Alaska (figure from Tape et al. 2016).

ADF&G, in cooperation with Federal partners, conducts spring population and fall composition surveys for moose in Unit 23. Surveys are conducted within census areas on a rotating basis with each census area being surveyed approximately every five years (**Figure 3**) (Alaska Board of Game 2017). Census areas have fluctuated throughout the years due to time and financial constraints as well as evolving survey techniques (Saito 2017, pers. comm.). In 2012, the Squirrel River drainage was moved from the Lower Noatak census area to the Lower Kobuk census area (Saito 2014). In 2014, the Upper Kobuk census area was expanded to include previously unsurveyed areas (Saito 2017, pers. comm.). Current census areas are static for the foreseeable future.

Moose density is primarily influenced by local factors such as snow depth, fire frequency, forage availability, and predators (Gasaway et al. 1992, Stephenson et al. 2006, Boertje et al. 2009, Street et al. 2015). Therefore, moose in Unit 23 are not evenly distributed across the landscape, with some drainages experiencing higher densities of moose than others. Between 2001 and 2017, total moose densities ranged across census areas from 0.03-0.7 moose/mi² while adult moose densities ranged from 0.03-0.59 moose/mi² (**Table 1**) (Saito 2014, 2016a, pers. comm., Robison 2017).

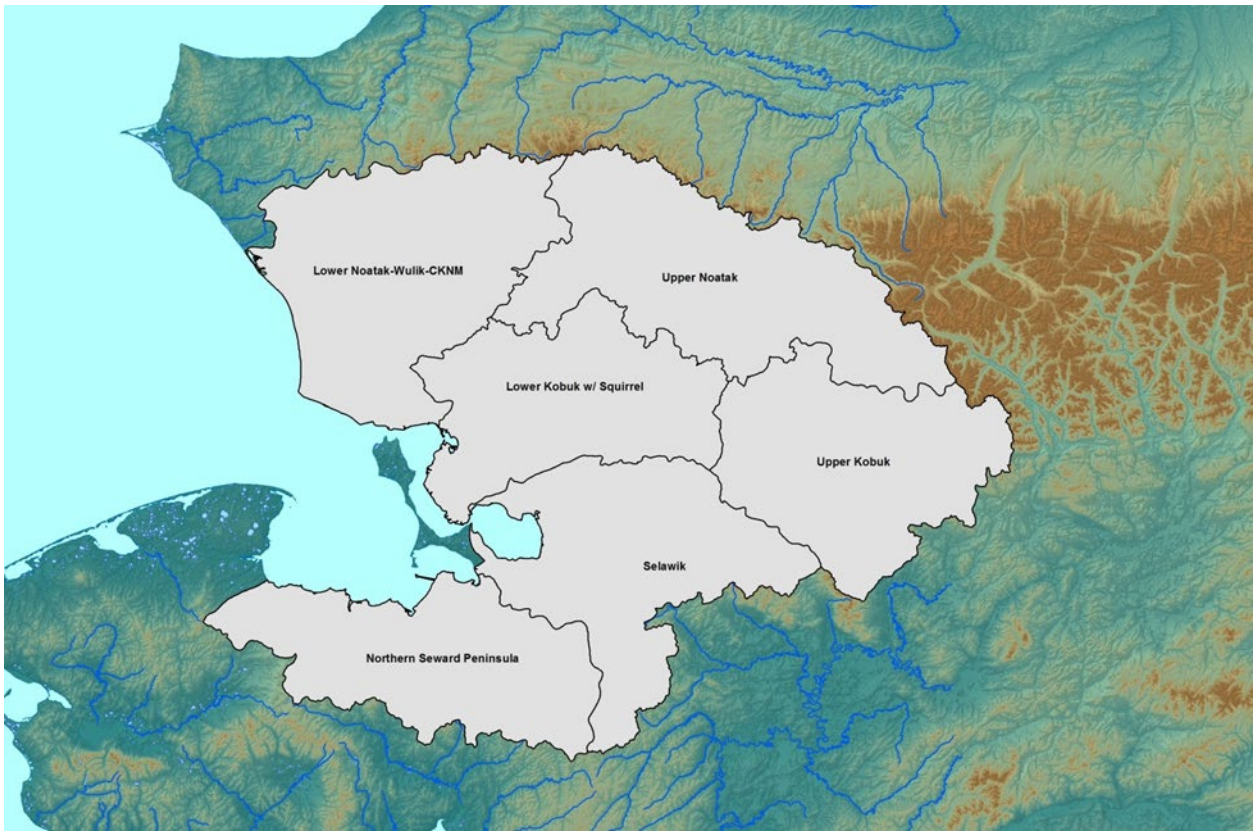


**Figure 3.** ADF&G moose census areas in 2017 (figure from Saito 2017, pers. comm.).

**Table 1.** Moose population data collected during spring population census surveys in Unit 23 since 2001. The Upper Kobuk was surveyed in 2014 using both the older census area and the updated census area (Saito 2016a pers. comm., 2018 pers. comm., Robison 2017, NWARAC 2019).

| Census Area | Year | Moose Observed | Total Moose Estimated | Census Area ($mi^2$) | Area Surveyed ($mi^2$) | Total Density (/$mi^2$) | Adult Density (/$mi^2$) | Calves :100 adults |
|---|---|---|---|---|---|---|---|---|
| Lower Noatak-Upper Squirrel | 2001 | 709 | 1731 | 5230.2 | 832.0 | 0.33 | 0.30 | 10 |
| | 2005 | 575 | 1838 | 5349.7 | 915.5 | 0.34 | 0.30 | 13 |
| | 2008 | 596 | 2008 | 5349.7 | 1510.4 | 0.38 | 0.33 | 13 |
| Lower Noatak-Wulik | 2008 | 685 | 2273 | 6404.5 | -- | 0.35 | 0.31 | 14 |
| | 2013 | 413 | 1478 | 6404.5 | 1310.2 | 0.23 | 0.21 | 11 |
| | 2018 | -- | 866 | -- | -- | -- | -- | -- |
| Upper Noatak | 2010 | 100 | 153 | 4485.6 | 1972.1 | 0.03 | 0.03 | 12 |
| N. Seward Peninsula | 2002 | 520 | 612 | 5888.5 | 1220.7 | 0.10 | 0.10 | 7 |
| | 2004 | 610 | 810 | 5882.9 | 1934.3 | 0.14 | 0.12 | 12 |
| | 2009 | 293 | 966 | 5773.2 | 1271.2 | 0.17 | 0.16 | 8 |
| | 2014 | 264 | -- | -- | -- | -- | -- | 12 |
| | 2015 | 310 | 617 | 5767.8 | 1791.2 | 0.11 | 0.09 | 15 |
| Upper Kobuk | 2003 | 252 | 856 | 4001.5 | 895.4 | 0.21 | 0.19 | 12 |
| | 2006 | 219 | 737 | 4001.5 | 973.7 | 0.18 | 0.16 | 15 |
| | 2014 | 136 | 538 | 3990.8 | 839.2 | 0.13 | 0.13 | 7 |
| | 2014 | 186 | 727 | 5056.8 | 1082.5 | 0.14 | 0.13 | 7 |
| | 2019 | -- | 601 | -- | -- | -- | -- | 23 |
| Lower Kobuk | 2006 | 1532 | 3398 | 4870.5 | 1457.6 | 0.70 | 0.59 | 15 |
| | 2012 | 789 | 2497 | 4870.5 | 1457.6 | 0.51 | 0.48 | 8 |
| Lower Kobuk-Squirrel | 2012 | 789 | 2546 | 5338.0 | 1290.8 | 0.48 | 0.44 | 8 |
| | 2017 | 796 | 1346 | 5338.0 | -- | 0.25 | -- | 15 |
| Selawik | 2007 | 678 | 2319 | 6580.1 | 1845.2 | 0.35 | 0.32 | 10 |
| | 2011 | 448 | 1739 | 6559 | 1289.1 | 0.27 | 0.24 | 11 |
| | 2015 | 532 | -- | -- | -- | -- | -- | 14 |
| | 2016 | 520 | 940 | 6559 | 2273 | 0.14 | 0.13 | 14 |

Since 2009, the estimated moose population in every census area has declined (**Figure 4**) and the most recent population estimates are well below population objectives in every area except the Upper Kobuk, which just meets its lower population objective (**Table 2**) (Saito 2014, 2016a, pers.comm., Robison 2017, NWARAC 2019). An estimated 70% of the Unit 23 moose population is found in the Selawik, Lower Kobuk, and Lower Noatak River census areas (NWARAC 2018a). All three of these areas have experienced >40% population declines since 2011. (Note: Both the old (smaller) and new (larger) Upper Kobuk census areas were surveyed in 2014. The old census area data is depicted in **Figure 3** for better comparability across years while the new census area data is listed in **Table 2**).

In 2016 and 2017, ADF&G provided a unit-wide population estimate of 7,500 moose (ADF&G 2017a). In 2018, ADF&G estimated the Unit 23 moose population at 6,300 moose, representing a 16% decline in the unit-wide population estimate (NWARAC 2018a). The Council and the public have also repeatedly reported at recent meetings that there are noticeably less moose than in the past (NWARAC 2017b, 2018a).

ADF&G conducts composition surveys in the fall to estimate bull:cow and calf:cow ratios. In 2008, ADF&G changed the methodology of fall composition surveys, and data are not comparable between survey methods (Saito 2014). From 2004–2007, Unit 23 bull:cow ratios averaged 39 bulls:100 cows. Since 2008, bull:cow ratios have ranged across survey areas from 34–54 bulls:100 cows, although composition surveys are conducted sporadically (**Table 3**) (Saito 2014, 2016a pers.comm., 2018 pers. comm.). However, in all census areas with multiple composition surveys since 2008, bull:cow ratios have declined and are below or near the State management objectives (**Table 3**).

Fall calf:cow ratios of < 20 calves:100 cows, 20–40 calves:100 cows, and > 40 calves:100 cows may indicate declining, stable, and growing moose populations, respectively (Stout 2010). Since 2008, calf:cow ratios have ranged across survey areas from 4–24 calves:100 cows (**Table 3**) (Saito 2014, 2016a pers. comm., 2018 pers. comm.). These low ratios indicate the Unit 23 moose population is declining with the possible exception being the Lower Kobuk survey area, which has a larger percentage of maternal cows, where fall calf:cow ratios suggest a stable population while population estimates indicate a severely declining population (**Table 3**). During spring population surveys, ratios of calves:100 adults are also estimated as a measure of recruitment. Between 2001 and 2019, ratios ranged across survey areas from 7-23 calves:100 adults (Saito 2016a, pers. comm., 2018, pers. comm., Robison 2017, NWARAC 2019). No clear trend is detectable with ratios increasing over time in some survey areas and decreasing or fluctuating in others.

While predation by brown bears, black bears, and wolves affects moose population dynamics in Unit 23, the relative importance of predators in relation to other factors such as weather, snow depth, disease, and human harvest is unknown, although deep snow and icing events limit moose movements, increasing their susceptibility to predation (Saito 2014, Fronstin 2018 pers. comm.). Relatively high moose densities and calf:cow ratios in the Kobuk River delta, where predator populations are lower due to its proximity to year-round human travel routes, suggest predators may be affecting moose in the more remote portions of the unit (Saito 2014). However, preliminary results from the first 6 months of a 3-year calf survival study in the Lower Kobuk drainage indicate 60% (46 out of 77) of collared calves died from bear predation, which is comparable to other moose populations in Alaska (Hansen 2018 pers. comm., NWARAC 2018b).

As humans primarily harvest bull moose and bull:cow ratios have not substantially declined across years despite substantial population declines, human harvest may not be a limiting factor (NWARAC 2017a).

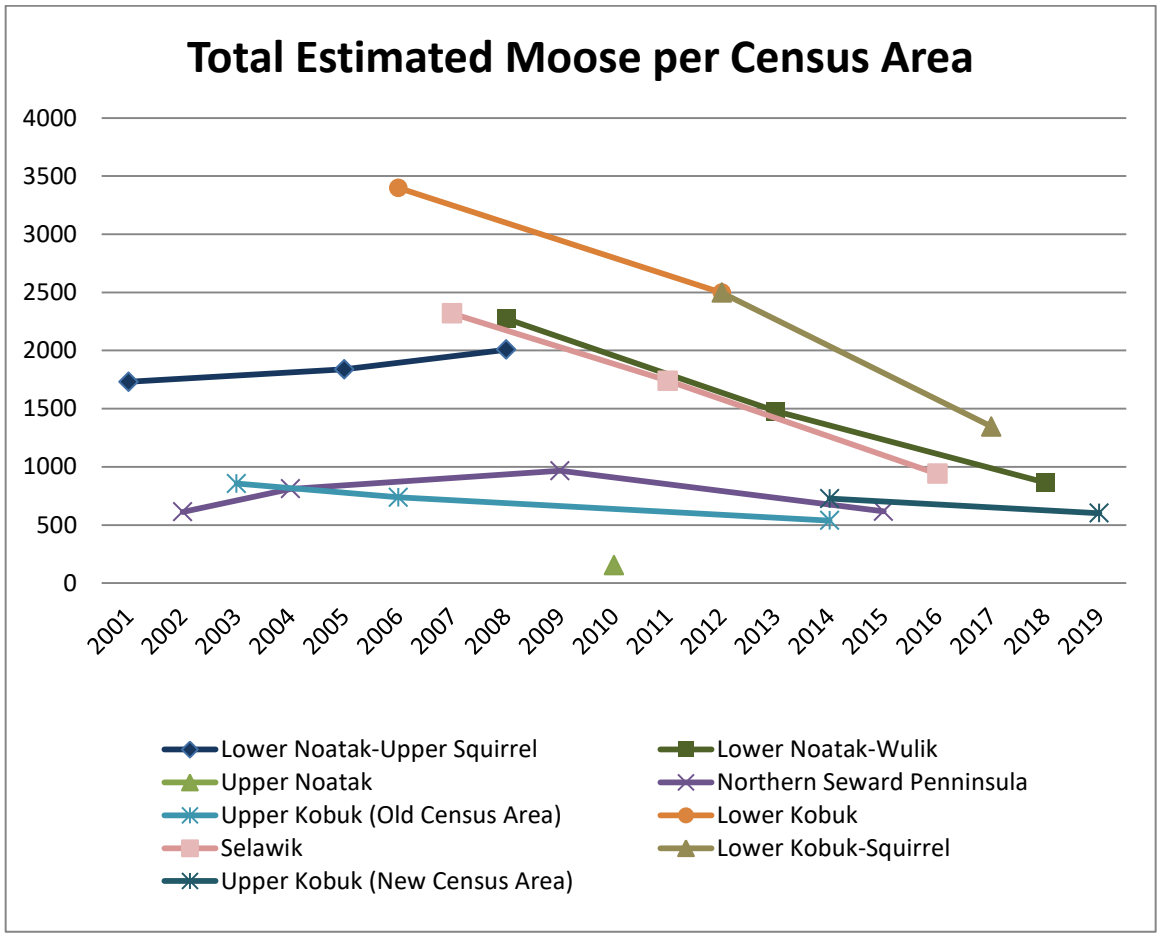


**Figure 4.** Total moose population estimates from 2001 to 2019 by census area. The old Upper Kobuk census area population estimates are shown here due to improved comparability across years (Robison 2017, Saito 2016a, pers. comm., NWARAC 2019).

**Table 2.** Comparisons across Unit 23 study areas of the most recent moose population estimates, population objectives, and harvestable surpluses. The harvestable surplus is calculated as 6% of the population. The Upper Kobuk census area represents the updated census area that was created in 2014. The spring 2017 and 2018 surveys in the Lower Kobuk and Lower Noatak-Wulik survey areas, respectively are incorporated in the table, but not into the extrapolated population total. Extrapolated total incorporates estimated populations in non-surveyed portions of Unit 23 (Robison 2017; Saito 2016a pers. comm., 2018 pers. comm.; NWARAC 2018a, 2019).

| Unit 23 Study Area | Most Recent Survey Year | Population Estimate | Population Objective | % Below Population Objective | Harvestable Surplus |
|---|---|---|---|---|---|
| Noatak River Drainages | 2010 (Upper)<br>2018 (Lower) | 1,019 | 2,000-2,300 | 49 | 61 |
| Lower Kobuk River Drainage | 2017 | 1,346 | 2,800-3,400 | 52 | 81 |
| Upper Kobuk River Drainage | 2019 | 601 | 600-800 | 0 | 36 |
| Selawik River Drainage | 2016 | 940 | 2,000-2,500 | 53 | 56 |
| Northern Seward Peninsula | 2015 | 617 | 700-1,000 | 12 | 37 |
| **Total** | | **4,523** | | | **271** |
| **Extrapolated 2017 Total** | | **7,500** | | | **450** |
| **Extrapolated 2018 Total** | | **6,300** | | | **378** |

**Table 3.** Bull:cow and calf:cow ratios in fall composition surveys conducted after 2007 (Saito 2014, 2016a pers. comm., 2018 pers. comm.).

| Survey Area | Year | Bulls:100 Cows | Calves:100 Cows |
|---|---|---|---|
| Selawik | 2008 | 54 | 18 |
| | 2010 | 47 | 19 |
| | 2015 | 43 | 20 |
| Lower Kobuk | 2011 | 45 | 15 |
| | 2017 | 38 | 24 |
| Lower Noatak | 2013 | 53 | 4 |
| | 2018 | 41 | 17 |
| Northern Seward Peninsula | 2009 | 53 | 4 |
| Seward Peninsula | 2014 | 34 | 16 |

Habitat is not thought to be a limiting factor (NWARAC 2018a). Moose rely on willow and shrub habitats for browsing and for cover from predators. Shrub and willow productivity, height, and cover have increased and expanded in Unit 23 in response to rising average temperatures (Tape et al. 2016). Taller vegetation provides more suitable cover and increased available forage above the snowpack (Tape et al. 2016). Wildfire (the primary driver of boreal forest succession) frequency and shrub habitat is also forecasted to increase in Northern Alaska as the Arctic climate warms, resulting in more moose habitat in Unit 23 (Joly et al. 2012, Swanson 2015). During a 2005 habitat survey in Unit 23, willows did not appear to be over-browsed by moose (Westing 2012). A 2017 browse survey, completed in the Lower Kobuk,

suggested that winter forage in not a limiting factor for moose populations (NWARAC 2018a). Twinning rates are another indicator of habitat and food limitations. In 2016, 41% of cows surveyed in Unit 23 had twins, further suggesting food is not a limiting factor and the population is not experiencing a density-dependent response (NWARAC 2018a).

**Cultural Knowledge and Traditional Practices**

Unit 23 encompasses the Northwest Arctic Borough, which was established in 1986 and is home to 7,523 residents from 11 communities (NAB 2016). Approximately 86% of the residents identify as Alaska Native or part Native, with the majority of these identifying as Iñupiat Eskimo (NAB 2016). The borough comprises approximately 39,000 $mi^2$ on which subsistence activities are a vital part of the lifestyle for local residents (NAB 2016).

Historically, the people of the Northwest Arctic lived in small family clusters that were spread widely across the landscape (Burch 1980: 265). It was not until the 20th century that most residents of the region became centralized in more permanent winter villages (Georgette and Loon 1993: 3). Kotzebue became the largest community in the region and is currently considered the hub of economic activity in the area. In 1985, Kotzebue was more than eight times larger than the average community in the region by population (2,633 individuals), and four times larger than the second largest community – Selawik (Georgette and Loon 1993: 3). In 2010 the population of Kotzebue was recorded as 3,201 individuals (DCCED 2016). The community is near the mouth of several major river systems. It is surrounded by the marine waters of Kotzebue Sound, and the original village was named "Qikiqtagruk" (Georgette and Loon 1993: 4).

The resources of the Northwest Arctic region are relatively rich and varied despite its high latitude (Burch 1984: 306). A variety of animal species are available and utilized for subsistence including marine mammals, terrestrial mammals, birds, and fish (Burch 1984: 306). Caribou has been a staple in the diet of many Iñupiat peoples for centuries (Georgette and Loon 1993: 78). In many parts of the Northwest Arctic, however, shifts in herd migration and size often causes variability in the availability of this resource, with the use of caribou and harvest strategies often changing accordingly over time (Georgette and Loon 1993: 78).

Despite the diversity of resources in the region, moose are a relatively recent addition, especially in lowland and coastal areas (Georgette and Loon 1993: 83). Archaeological sites in tundra and northern tree-line areas of Alaska have reported few moose remains until the mid-20th century and this is consistent with historical accounts and minor representation in Iñupiat culture (Hall 1973, Coady 1980, Tape et al. 2016). Reports of nineteenth century explorers also lacked observations of moose along the Kobuk, Noatak, or Colville Rivers, as well as along the Arctic coast (Coady 1980).

Moose were present in the tributaries of the upper and middle Noatak River in the 1940s and became more common downriver after 1960 (Georgette and Loon 1993: 83). In the upper Kobuk River, moose did not appear until the 1920s but soon thereafter populated the entirety of the drainage (Georgette and Loon 1993: 83). Uhl and Uhl (1977) reported that residents of the Cape Krusenstern area lacked historic traditions that included moose. By the 1980s, moose were present in suitable habitat throughout northwest Alaska (Georgette and Loon 1993: 84).

According to Georgette and Loon (1993), residents of Kotzebue continued to consider moose as secondary to caribou in their importance and desirability as a subsistence food; they were taken to add dietary variety. Residents hunted moose in the fall, but moose were also harvested throughout the winter as need necessitated (Georgette and Loon 1993: 84). The relative size of moose made them more difficult to butcher and pack than caribou, and hunters often preferred to harvest the species as close as possible to the edge of a river or a lake in proximity to their boat (Georgette and Loon 1993: 84). Moose were generally prepared and preserved by similar means as caribou, most often aged and frozen (Georgette and Loon 1993: 84). The cartilaginous parts of the nose were the only part of the heads used. Because moose hides were not generally smoked or tanned, they were rarely salvaged (Georgette and Loon 1993: 84). Although much of this information was collected more than 25 year ago, much of this still holds true today.

The average per capita harvest of moose in Kotzebue in 1986 was 13 pounds, accounting for only 3% of the average household harvest (Georgette and Loon 1993: 84). Approximately 8% of Kotzebue households harvested moose (compared to 45% harvesting caribou), but 18% indicated that they hunted for moose but were unsuccessful (Georgette and Loon 1993: 84). Despite the small percentage of households harvesting moose, sharing of this resource was widespread with approximately 42% of households using it (Georgette and Loon 1993: 84). The use and harvest of moose by Kotzebue residents was similar in 2012 with approximately 13 pounds of this resource harvested per capita, 9% of households harvesting moose, and 37% of households using moose (ADF&G 2012).

The harvest and use of a resource in regional hubs may be different than that of a rural village since the former tends to be more heterogeneous in "culture, birthplace, education, employment, and length of residency" (Georgette and Loon 1993: 4). In 1992, the rural northwest arctic community of Kivalina harvested approximately 26 pounds of moose per capita, with 23% of the households harvesting the resource and 47% of households using the resource (ADF&G 1992). In 2010, residents of Kivalina harvested approximately 19 pounds of moose per capita with 13% of household harvesting the resource and 16% using the resource (ADF&G 2010).

Changes in harvest and use patterns may be attributable to many factors including the availability of moose and other resources in a given a year. Georgette and Loon (1993) suggested that future declines in caribou availability in the region could result in increased reliance on moose to meet the subsistence harvest demands of Kotzebue residents. Given recent declines in the Western Arctic Caribou Herd (Dau 2015), moose may already be becoming a more prominently sought after resource for meeting subsistence needs in the region.

**Harvest History**

Harvest data is derived from State harvest reports and community household surveys. Community household surveys are used, in part, as a method to determine whether harvest is being reported accurately in State harvest reports. Harvest reports provide data on an annual basis. Community household surveys gather data from local communities pertaining to subsistence harvest on an irregular basis, with many communities only being visited once over a five year time span. In Unit 23, community household surveys show that moose harvest is underreported by local users, but nonlocal user harvest can be assumed accurate

based on the requirement of registration permits and drawing permits in some areas. This section will discuss State harvest report data prior to reviewing community household survey data.

Between 2005 and 2018, total reported moose harvest in Unit 23 ranged from 55-189 moose, averaging 137 moose (**Table 4**) (ADF&G 2016, 2018a, 2019). The lowest reported harvest was in 2018, after ADF&G cancelled the nonresident moose season and Federal public lands were closed to moose harvest except by Federally qualified subsistence users (WSA18-04). Local resident (residents of Unit 23), nonlocal resident, and nonresident reported harvest averaged 73 moose (54%), 42 moose (31%), and 21 moose (15%) per year, respectively (**Table 4**) (ADF&G 2016, 2018a, 2019). Cows comprised 7% of the annual reported harvest on average, with 1-21 cows being harvested each year, although the actual cow harvest is likely double what is reported (Alaska Board of Game 2017). The vast majority of moose are harvested in September (**Figure 5**) (WINFONET 2017). Since 2006, more moose have been harvested from the Kobuk River drainage than from other drainages within Unit 23 (**Figure 6**) (ADF&G 2017a).

**Table 4.** Reported moose harvest in Unit 23 for 2005-2018 from ADF&G harvest ticket and permit reports (ADF&G 2016, 2018a, 2019).

| Year | Local Resident Harvest | Nonlocal Resident Harvest | Nonresident Harvest | Total Harvest | Male | Female | Unknown Sex |
|---|---|---|---|---|---|---|---|
| 2005 | 65 | 41 | 41 | 148 | 137 | 10 | 1 |
| 2006 | 79 | 49 | 30 | 159 | 150 | 7 | 2 |
| 2007 | 64 | 29 | 25 | 123 | 116 | 7 | 0 |
| 2008 | 62 | 48 | 40 | 151 | 143 | 7 | 1 |
| 2009 | 80 | 50 | 23 | 155 | 144 | 10 | 1 |
| 2010 | 102 | 63 | 22 | 189 | 169 | 17 | 3 |
| 2011 | 72 | 45 | 26 | 144 | 133 | 11 | 0 |
| 2012 | 75 | 57 | 24 | 156 | 146 | 10 | 0 |
| 2013 | 88 | 53 | 21 | 164 | 151 | 12 | 1 |
| 2014 | 74 | 40 | 10 | 124 | 109 | 14 | 1 |
| 2015 | 85 | 59 | 20 | 165 | 144 | 21 | 0 |
| 2016 | 63 | 18 | 11 | 95 | 90 | 4 | 1 |
| 2017 | 66 | 18 | 0 | 84 | 78 | 5 | 1 |
| 2018 | 42 | 13 | 0 | 55 | 54 | 1 | 0 |
| **Average** | **73** | **42** | **21** | **137** | **126** | **10** | **1** |

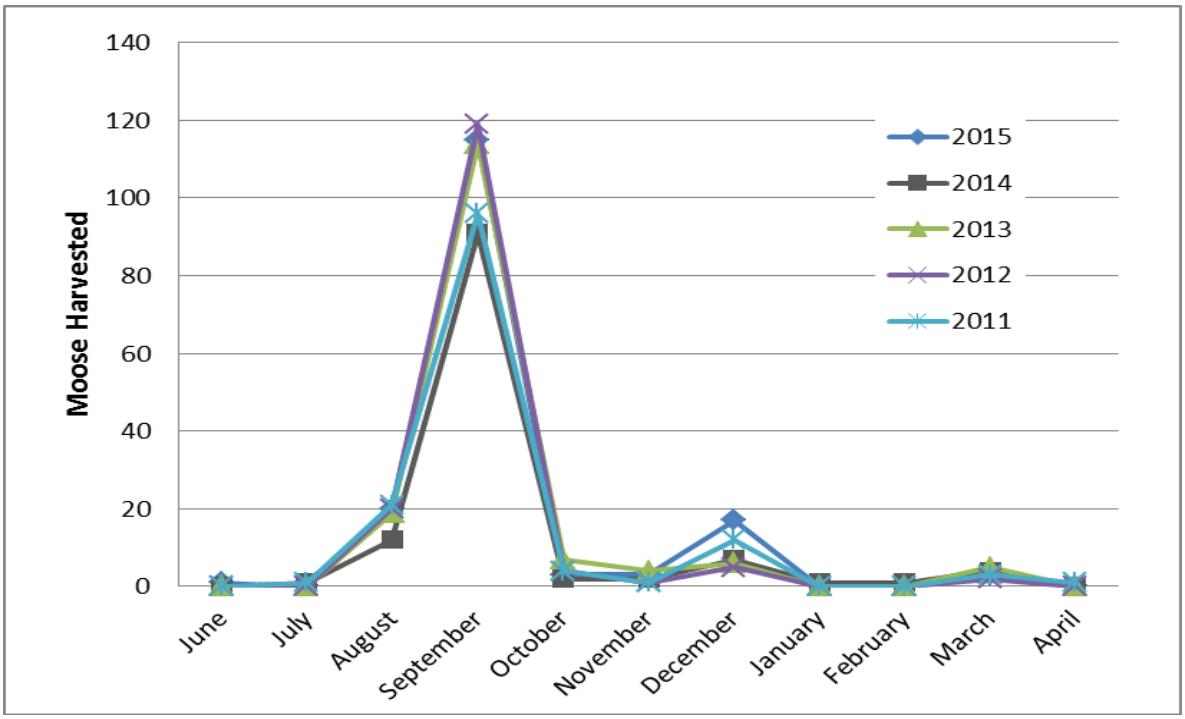


**Figure 5.** Moose harvest, by month, for Unit 23 from 2011-2015 according to State harvest reports (WINFONET 2017).

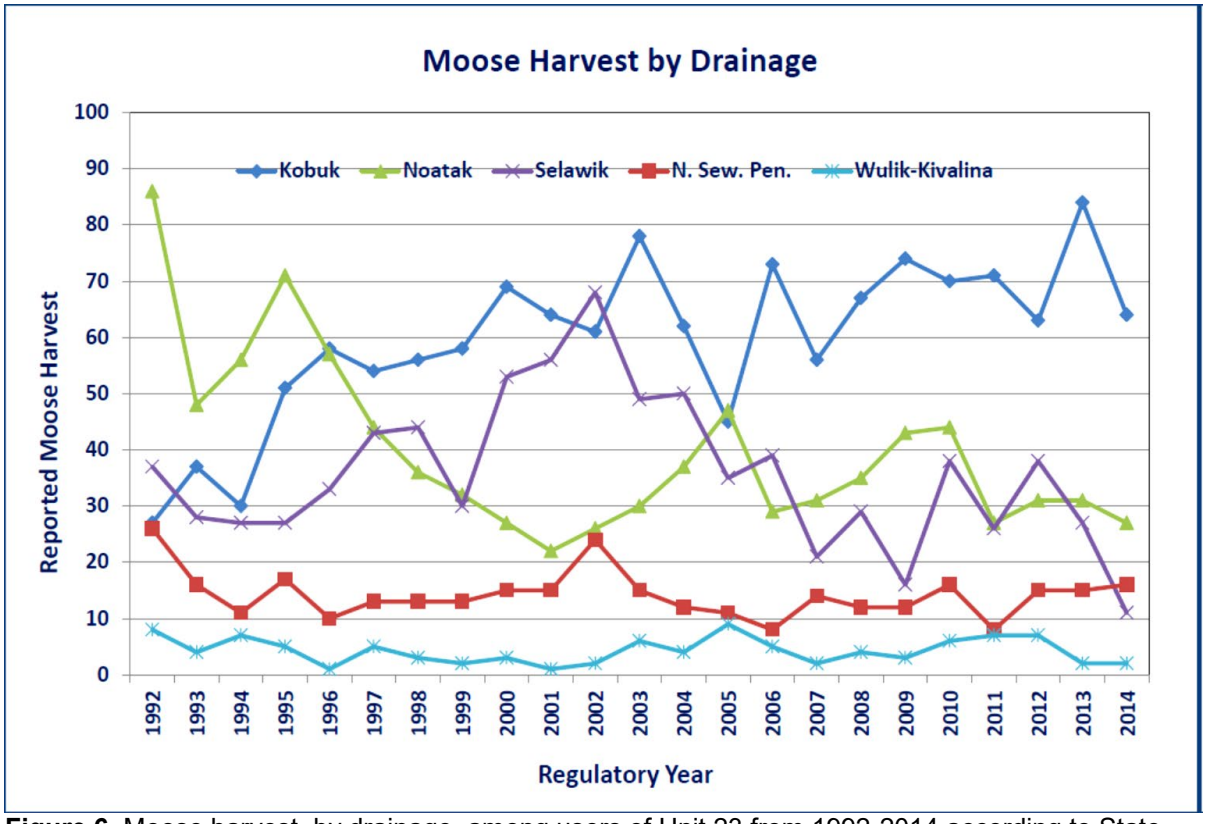


**Figure 6.** Moose harvest, by drainage, among users of Unit 23 from 1992-2014 according to State harvest reports (figure from ADF&G 2017a).

Since 2000, community household survey data has indicated 350–450 moose are harvested each year by local residents (Saito 2014). In regulatory year 2012/13 specifically, ADF&G estimated moose harvest by local residents as 342 moose (**Table 5**) (Saito 2014). The only community household survey data available for the number of cow moose harvested by local residents are for 2008 and 2009 in the villages of Noorvik, Shungnak, Ambler, Buckland, Kiana, and Kobuk. These data indicate 3 out of 67 total moose harvested were cows, although 6 moose were of unknown sex (ADF&G 2018b).

**Table 5.** Estimated moose harvest in Unit 23 villages from community harvest estimates 1991-2013 (Saito 2014).

| Village | Year of Survey | Mean human population in survey years | Mean number of moose reported harvested | Per capita moose harvest | Estimated village population in 2012 | Estimated annual moose harvest in 2012-2013 |
|---|---|---|---|---|---|---|
| Ambler | 2002, 2009, 2012 | 271 | 10 | 0.04 | 283 | 11 |
| Buckland | 2003, 2009 | 421 | 13 | 0.03 | 421 | 13 |
| Deering | 1994, 2007 | 159 | 8 | 0.05 | 153 | 8 |
| Kiana | 1999, 2006, 2009 | 387 | 13 | 0.03 | 378 | 13 |
| Kivalina | 1992, 2007, 2010 | 380 | 11 | 0.03 | 367 | 11 |
| Kobuk | 2004, 2009, 2012 | 135 | 6 | 0.04 | 164 | 7 |
| Kotzebue | 1991, 2013 | 3,362 | 154 | 0.05 | 3,076 | 154 |
| Noatak | 1994, 1999, 2001, 2007, 2010, 2011 | 481 | 7 | 0.02 | 545 | 11 |
| Noorvik | 2002, 2008, 2012 | 621 | 35 | 0.06 | 585 | 35 |
| Point Hope | 1992 | 685 | 14 | 0.02 | 674 | 14 |
| Selawik | 1999, 2006, 2011 | 797 | 50 | 0.06 | 856 | 51 |
| Shungnak | 1998, 2002, 2008, 2012 | 258 | 12 | 0.05 | 275 | 14 |
| **Unit 23 Total** | | | | | **7,777** | **342** |

ADF&G calculates the harvestable surplus of moose in Unit 23 as 6% of the population (Saito 2016a, pers. comm.). As the 2018 unit-wide population estimate is 6,300 moose, 378 moose is the estimated harvestable surplus. Reported harvest by nonlocal residents and nonresidents (~67 moose/year) combined with community household survey harvest estimates for local residents (350–450 moose/year) indicate that total Unit 23 moose harvests likely exceed the harvestable surplus. While the State has closed the nonresident season, and nonlocal resident reported harvest declined in 2016 and 2017 (**Table 4**), harvest estimates by local residents alone may still exceed the harvestable surplus (Saito 2014).

Harvest within individual drainages may be particularly high or have disproportionate effects on the population. For example, ADF&G estimates that approximately 70 moose are taken from Selawik drainage each year, which translates to a 7% harvest rate (**Table 2**) (NWARAC 2016). During winter months, large congregations of moose have been observed near villages, which can make these moose highly susceptible to harvest (Alaska Board of Game 2017). The Lower Kobuk River drainage hosts a

disproportionate number of maternal cows, possibly because this area appears to support fewer large predators due to its proximity to human travel corridors (Saito 2014). More moose are also harvested from the Kobuk River drainage than any other drainage (**Figure 6**). This suggests cow moose in the Kobuk River drainage are particularly susceptible to harvest, although the taking of cows with calves is prohibited under both State and Federal regulations. While recent restrictions to State regulations have decreased reported moose harvest, decline of the Western Arctic Caribou Herd has likely increased moose harvest by local residents trying to meet their subsistence needs (Saito 2014, NWARAC 2017b, 2018a). During recent Council meetings, subsistence users have commented on the importance of moose as a subsistence resource, particularly when caribou are scarce (OSM 2017, NWARAC 2017b, 2018a).

**Other Alternatives Considered**

One alternative considered is, in addition to closing the cow moose season to Federally qualified users, closure of Federal public lands in Unit 23 to moose hunting by non-Federally qualified users may be warranted for the continuation of subsistence uses. The estimated 2018 harvestable surplus is 378 moose. As harvest estimates for Federally qualified subsistence users (local residents) are 350-450 moose per year, the harvestable surplus may be met or exceeded by local resident harvest alone. Additionally, bull:cow ratios have declined in all census areas (**Table 3**).

Due to recent declines in the Western Arctic Caribou Herd population, local subsistence users are depending more on moose to meet their subsistence needs (NWARAC 2017b, 2018a). Therefore, moose harvest by Federally qualified subsistence users has likely increased in recent years. Local residents have also emphasized that non-Federally qualified and Federally qualified subsistence users should share the burden of restricted moose harvest; this burden should not be put upon Federally qualified subsistence users alone who depend on moose to increase their food security (NPS 2016, OSM 2017, NWARAC 2017b, 2018a).

While the State closed the non-resident moose hunt in Unit 23, starting in the 2017/18 regulatory year, nonlocal residents still harvest approximately 44 moose from Unit 23 each year. While nonlocal resident harvest comprises only 12% of the harvestable surplus, ANILCA mandates a rural subsistence priority and indicates restrictions to non-Federally qualified users are necessary if resources are limited.

Due to comments shared by the Council at their April 2019 meeting, this alternative was not considered further. At this meeting, the Council shared their apprehension about closing Federal public lands due to the possibility of concentrating non-local hunters on State lands near the villages.

A second alternative could be to modify the harvest limit to “one antlered bull” rather than “one bull”. This alternative could further limit cow harvest, as well as cow harassment by hunters, by ensuring that a cow is not inadvertently harvested when the user believes they are targeting an antlerless bull in December, after antlers have dropped. However, this alternative would limit Federally qualified subsistence users from harvesting antlerless bulls during a month when moose harvest is important to users who were not able to harvest a moose in the fall. Due to December serving as an important month for moose harvest by Federally qualified subsistence users in Unit 23, and the fact that Council and public input on such a modification was not possible during this special action process, this alternative was not further considered.

**Effects of the Proposal**

If this Special Action is approved, the Federal subsistence cow moose season in Unit 23 will be closed for the remainder of the 2019/20 season. This would decrease opportunity for Federally qualified subsistence users as fewer moose would be available for harvest. However, Federally qualified subsistence users would still be able to harvest bull moose during the winter season under either Federal or State regulations. Approval of WSA19-04 would also align State and Federal moose seasons in Unit 23 for the 2019/20 regulatory year, which could decrease user confusion and regulatory complexity.

Approval of WSA19-04 could also aid in the recovery of the Unit 23 moose population. There are substantial conservation concerns that threaten the viability of the population. Surveys indicate substantial declines in almost every survey area (**Figure 3**), population estimates are below State objectives, and calf:cow ratios are below 20:100, which indicates a declining population. The Selawik, Lower Noatak, and Lower Kobuk census areas, where most of the moose in Unit 23 reside, have experienced > 40% population declines since 2011. Moose densities vary by drainage and winter populations can be highly concentrated near villages, making them more susceptible to harvest. While most of the land immediately surrounding villages are Native lands that are already closed to cow moose harvest under State regulations, Federal lands are within 10-15 miles of every village in Unit 23.

Additionally, the harvestable surplus has likely been exceeded. While harvest data show relatively few cows are harvested, conserving cows is particularly important in maintaining a healthy moose population as cow moose are the engine of population growth (NWARAC 2017a). Typically, cow moose harvest is only permitted in populations showing signs of nutritional stress and/or to limit a growing population (ADF&G 2008). Cow harvest is not advised in areas with low or declining moose populations (ADF&G 2008) such as Unit 23. Closing the cow season would help the population recover more quickly and curtail further declines, especially in drainages where moose congregate during winter months. As the cow moose season is closed under State regulations, approving this request would result in no legal harvest of cow moose in Unit 23 for the remainder of the 2019/20 regulatory year.

**OSM CONCLUSION**

**Support** Wildlife Special Action WSA19-04.

**Justification**

There are serious population viability concerns for the Unit 23 moose population due to substantial declines in population estimates, low calf:cow ratios, and likely exceedance of the harvestable surplus. Actual cow moose harvest is likely double what is reported. Since cow moose are the keystone to population growth, conserving cows is essential to maintaining a healthy moose population. Cow moose harvest is not recommended in a low density, declining population. Closing the cow season should help the Unit 23 moose population recover more quickly and prevent further declines. While approval of this special action reduces opportunity for Federally qualified subsistence users to harvest cow moose, they will still be able to harvest bulls during the winter season under both Federal and State regulations.

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**APPENDIX 1**

THE STATE of ALASKA
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# MEMORANDUM

| | | | |
|---|---|---|---|
| TO: | Anthony Christianson, Chair<br>Federal Subsistence Board | DATE: | July 17, 2019 |
| | | PHONE: | 267-2190 |
| FROM: | Ben Mulligan BJM<br>Deputy Commissioner | SUBJECT: | Wildlife Special Action Request 19-04 |

The Alaska Department of Fish and Game (ADF&G) appreciates the opportunity to provide comments on Wildlife Special Action request 19-04 (WSA19-04). WSA 19-04 was submitted by the Northwest Arctic Subsistence Regional Advisory Council to close the cow moose harvest season in Unit 23.

ADF&G supports this change that would align state and federal moose hunting regulations in Unit 23. During the January 2017 Board of Game meeting the Department requested the Board not reauthorize the antlerless moose hunts in Unit 23 due to the widespread declines in moose abundance in Unit 23. At that time the Department estimated that there were about 7500 moose in the unit. Since then, additional abundance estimates have been calculated and a downward trend in moose numbers has continued. The current population is estimated at about 5600 moose.

Composition counts have been conducted in several parts of Unit 23 in the past few years (2014-2018). These counts demonstrate a continued trend of poor recruitment. Calf to cow ratios have been in the mid-teens for many of the count areas and some areas have been as low as 7 calves per 100 cows. The only time the ratio has been above 20 calves per 100 cows is in the Upper Kobuk count area in 2018 when the calf to cow ratio was 27 calves per 100 cows. Poor recruitment and the downward trend in the moose population indicates the taking of cows is not warranted at this time.

| Year | Area | Calves per 100 Cows |
|---|---|---|
| 2014 | N. Seward Peninsula | 16 |
| 2015 | Selawik | 7 |
| 2016 | Lower Kobuk | 15 |
| 2017 | Lower Noatak | 17 |
| 2018 | Upper Kobuk | 27 |

Antlerless moose harvest should not occur in Unit 23 until moose abundance increases. Ongoing browse utilization research focused on browse removal rates; and surveys to determine twinning rates, and calf survival will inform managers as to at what level the population should increase to before antlerless hunts again occur.

cc: Eddie Grasser, Director, ADF&G, Division of Wildlife Conservation
Lisa Olson, Assistant Director, ADF&G, Subsistence
Cheryl Brooking, Assistant Attorney General, Department of Law
George Pappas, State Liaison, Office of Subsistence Management

## INTERAGENCY STAFF COMMITTEE RECOMMENDATION

**Support** Wildlife Special Action WSA19-04.

The OSM staff analysis provided a thorough and accurate evaluation of the Temporary Wildlife Special Action Request. The moose population in Unit 23 is in decline and there are serious concerns for its viability. Elimination of the cow moose season is necessary to address these concerns. Closing the cow season is likely to help the Unit 23 moose population recover more quickly and prevent further declines. Approval of this special action reduces opportunity for Federally qualified subsistence users to harvest cow moose. However, they will still be able to harvest bulls during the winter season under both Federal and State regulations

In 2018 the Federal Subsistence Board (Board) approved Emergency Special Action WSA18-04 with modification to close the Federal (Nov. 1 – Dec. 31, 2018) winter cow moose season and close moose hunting on public lands in Unit 23 except by Federally qualified subsistence users. Closure to non-Federally qualified users may again be warranted due to the limited harvestable surplus, to allow for continuation of subsistence uses, and to provide a priority for Federally qualified subsistence users as mandated by ANILCA. However, the Northwest Arctic Subsistence Regional Advisory Council (Council) stated concerns at its spring 2019 meeting that a closure to non-Federally qualified users could be detrimental to Federally qualified subsistence users due to the potential for this action to concentrate non-Federally qualified users on State-managed lands in Unit 23. For this reason, the ISC is not recommending a modification to include a closure for moose hunting by non-Federally qualified users hunting on Federal public lands in Unit 23. The Board will have an opportunity to consider further action when deliberating Proposal WP20-47 which requests closure of the cow moose season and to require the use of a State registration permit (RM880) to harvest moose in Unit 23. The proposal process will allow for additional input from the public and the Council.

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