2022 Yukon Delta NWR Refuge Update

Waterfowl Program- Bryan Daniels

Refuge staff participated in 8 waterfowl projects during the 2022 field season from May 14 – August 25, 2022.

Emperor Goose Nesting Ecology and Survival:
This field season is the 6th year of emperor goose nesting ecology research on Kigigak Island. Four crew members searched for emperor goose nests on 8 nest plots; 175 emperor goose nests were found and monitored. Nest effort was low in 2022, and apparent nest success was low at 68% hatching at least 1 egg. The crew successfully recorded 93 band resights and captured and banded 85 nesting females to further efforts to estimate survival, which is calculated to be declining since 2016. The crew assisted the endangered species program with searching for, monitoring, and capturing spectacled eiders on the nest for mark-recapture survival analyses. Nest effort was extremely low (<30 nests found), and nest success was close to zero.

During this project we collected blood and oral/cloacal swab samples from 50 adult female emperor geese and 6 spectacled eiders for avian influenza monitoring, and to determine current and past avian influenza infections.

Emperor Goose transmitter deployment:
On June 10 and 11, 2022 we partnered with Alaska Department of Fish and Game to deploy 12 internal transmitters in female emperor geese to calculate annual and seasonal survival and seasonal movements.

On July 26-28, we deployed 6 backpack transmitters to determine more fine scale movements and habitat use of adult females with broods and test the method for future survival and fitness of emperor geese as an alternate method to internal transmitters that require surgery. As of September 23, 2022 all emperor geese outfitted with transmitters of both types are still alive and starting to migrate to wintering grounds (Aleutians and Kodiak).

Avian Influenza Sampling and monitoring:
Highly Pathogenic Avian Influenza has been a large concern and topic in 2022. Yukon Delta sampled and sent in carcasses from multiple individual birds and mammals in May and June from field camps. As of July 20, 2022, species that tested positive from the Yukon Delta for Highly Pathogenic Avian influenza were: black brant, cackling goose, raven, sandhill crane, dunlin, sabines gull, glaucous gull, short billed gull, parasitic jaeger, arctic tern, mallard, and northern pintail. If you see birds acting abnormal or dead, report them to the sick/dead bird hotline at 1.866.527.3358.

Coastal Waterbird Nest Plot Surveys:
Waterbird nest plot surveys, coordinated by Migratory Bird Management – Anchorage, were surveyed for this 37th field season on the central coast of the Yukon-Kuskokwim Delta. These nest surveys provide annual information on phenology, egg production, nesting effort, habitat use, and predation for waterfowl, cranes, loons, gulls, and terns. The Spectacled Eider Recovery Team has also identified annual nest surveys as the primary method to assess the population status for the Yukon-Kuskokwim Delta subpopulation of spectacled eiders. In 2022, the Refuge waterfowl crew surveyed 3 waterbird nest plots on Kigigak Island utilizing new methods for migratory bird management.

Environmental Monitoring and habitat Sampling on Kigigak Island:
Baseline environmental monitoring began on Kigigak Island in 2013 as a Western Alaska Landscape Conservation Cooperative project. Data logger devices were deployed again in 2022 to monitor water levels, salinity, and tidal dynamics of ponds used by waterfowl.

The Alaska Sea Life Center was conducting environmental sampling at several potential reintroduction sites for the Steller's eider to determine if a site is suitable for the reintroduction of Steller's Eiders. Currently, they are continuing monitoring for spectacled eider habitat studies. This sampling includes assessment of salinity levels and habitat. The Refuge waterfowl crew contributed to this study by conducting one round of sampling at Kigigak Island on June 16 and 17 2022.

Black Brant, Cackling Goose, and Emperor Goose Banding:
Yukon Delta NWR waterfowl crew of 4, assisted the University of Alaska-Fairbanks Tutakoke crew with the capture and banding of molting and flightless families of black brant from July 11- 19.

The crew participated in multiple drives that herded black brant into moderate size groups (20-200) into catch pens. Overall, they captured approximately 500 black brant including recaptures.

The Yukon Delta NWR is required by the Pacific Flyway to band a minimum number of cackling geese (500) to effectively monitor their harvest and distribution. This year's cackling goose banding effort was combined with the Tutakoke crew for multi-species drives as well as a helicopter effort. Over the course of 8 days (July 11-19, 2022), the crew captured 456 cackling geese, and between July 20-25, the Refuge captured and banded 312 cackling geese for a total of 768.
During this project we also 63 blood and swab samples for avian influenza monitoring of cackling geese and 60 samples from black brant.

On July 26-28, a helicopter was used to capture emperor goose juveniles to deploy 92 new lifetag bands to track juvenile movements and survival.

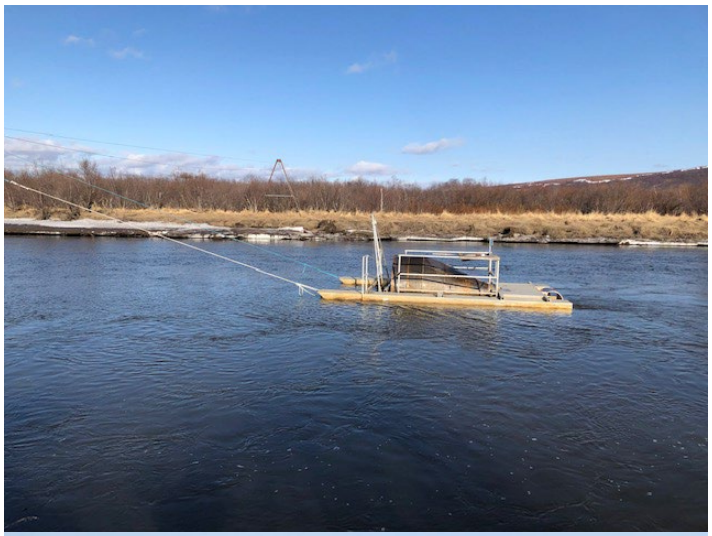
Tule Goose Telemetry:
California Department of Fish and Wildlife (CDFW) and Oregon Department of Fish and Wildlife (ODFW) annually deploy neck collar mounted VHF-transmitters on geese belonging to the Tule Greater White-Fronted Goose subspecies. This subspecies has been monitored on the Refuge since discovery of their presence in 2004 by conducting flights to detect the radio-tagged birds and provide ADF&G, CDFW and ODFW with information on numbers of failed and non-breeding individuals. In 2022, Kyra Neal, and pilot Robert Sundown flew from Bethel to the Muddy Lakes region of the Refuge on July 12 to conduct telemetry flights. Seven frequencies were detected in the northwest region of Muddy Lakes.

Kgun Lake Duck Banding:
Waterfowl banding data is used to inform the annual harvest regulation-setting process for duck hunting seasons in the Pacific Flyway. Banding data from the Yukon Delta Refuge is one site that contributes data to determine the statewide harvest goal for the Pacific Flyway. The Pacific Flyway Council uses both banding data and aerial waterfowl survey data to establish duck hunting frameworks each year. Since 1990, YDNWR has conducted a late summer banding program at Kgun Lake. YDNWR crew banded 50 mallards, 219 northern pintail, and 33 American green-winged teal.

YDNWR staff also collected Avian Influenza samples from 225 ducks at Kgun Lake, and preliminary analyses show some mallards and northern pintail had Highly Pathogenic Avian Influenza

Fisheries Program- Aaron Moses and Spencer Rearden

Kwethluk Freshwater Production Survey



The Kwethluk Freshwater Production Survey is a cooperative study between the Kuskokwim River Intertribal Fish Commission and the US Fish and Wildlife Service to understand the relationships between smolt abundance, adult returns, and environmental drivers. Understanding environmental factors, especially in times of rapid climate change, can help managers understand factors that affect salmon productivity.

Methods involve utilizing a rotary screw trap to capture juvenile salmon out-migrating in Spring (end of April - the end of June), to mark, and then recapture to estimate the number of smolt. The study is a continuation of work done in 2015-2018, where brood year fall water temperature was correlated with smolt production; As brood year fall temperatures increased the condition and production of migrating juvenile salmon decreased (Boersma et al. 2019). This project is planned to continue in year 2023 and possibly longer pending funding and support.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Big Game Program

In November 2021, we did a composition survey in Unit 18 zone 2: in the survey we observed 340 cows, 112 calves, and 187 bulls for a total of 639. This is not a population estimate, but a minimum count. We thus recorded a bull to cow ratio of 55:100 and a calf to cow ratio of 33:100.

In March 2022, we conducted a population estimate using a helicopter and distance sampling method in Unit 18 zone 2. We estimated a population of 759 moose. We believe the moose population is healthy and growing in Zone 2. We have the capability of implementing a antlered only winter moose hunt in Zone 2 that would be intended to allow us to meet our current bull harvest quota of 110. The most bulls in a season that we have seen harvested in Zone 2 is 90. We intend to watch closely this fall to see if additional harvest could occur.

We experimented with a new method of distance sampling using fixed wing aircraft instead of helicopter to estimate moose abundance in Zone 2 and are currently looking to see if this method will be useful for our needs. Helicopter use is extremely expensive and being able to do this particular survey using fixed wing aircraft could significantly decrease costs and allow us to estimate moose more frequently in zone 2.