THE STATE of ALASKA
GOVERNOR MICHAEL J. DUNLEAVY

Department of Fish and Game

OFFICE OF THE COMMISSIONER
Headquarters Office

1255 West 8th Street
P.O. Box 115526
Juneau, Alaska 99811-5526
Main: 907.465.6136
Fax: 907.465.2332

MEMORANDUM

TO:	Anthony Christianson, Chair Federal Subsistence Board	DATE:	April 28, 2022
		PHONE:	(907) 267-2190
FROM:	Ben Mulligan BJM Deputy Commissioner	SUBJECT:	Wildlife Special Action WSA22-02

The Alaska Department of Fish and Game (ADF&G) has reviewed Wildlife Special Action (WSA) 22-02 requesting the closure under the provisions of Title VIII of the Alaska National Interest Lands Conservation Act (ANILCA), of Dall's sheep harvest in Unit 24A and the portion of 26B west of the Sagavanirktok River. The proposed closure area includes National Park Service (NPS); Park and Preserve lands, National Wildlife Refuge lands (FWS), and Bureau of Land Management lands (BLM). This proposed closure primarily targets hunting opportunity for a specific group of hunters (walk-in/archery hunters), but it will not result in a sheep population response because most of the sheep population range is outside the proposed closure area. ADF&G agrees sheep abundance in the Central and Eastern Brooks Range has declined in recent years due to weather. However, as outlined below, the proposed closure will not facilitate a population recovery. Because the population continues to provide a sustainable harvestable surplus that exceeds the average annual harvest, AFD&G **OPPOSES** the proposed closure for any portion of this sheep population. The current population numbers do not meet the closure criteria found in ANILCA Section VIII.

Congress enacted ANILCA Title VIII to ensure the continued opportunity for subsistence uses by rural residents of Alaska. Congress also clarified in ANILCA Section 815(3) that Title VIII is not intended to restrict non-subsistence uses of fish and wildlife generally permitted on public lands (other than national parks and park monuments) unless necessary for the conservation of healthy populations of fish and wildlife and as necessary pursuant to Sections 804 and 816. We believe that the population of Dall sheep within the Central and Eastern Brooks Range is both healthy and viable in accordance with Title VIII provisions, and that the sheep in the proposed closure area of Units 24A and 26B west of the Sagavanirktok River are a component of that population.

Congress was very clear in ANILCA of its intent to preserve continued opportunities for subsistence uses by rural residents; however, Congress was also very clear that it intended ANILCA to strike an appropriate balance between" scenic, natural, cultural and environmental values" and "economic and social needs of the State of Alaska and its people." ANILCA Section 101(d). This intent has been confirmed in Ninilchik Traditional Council v. U.S., 227 F.3d. 1186, 1192-93 (9th Cir. 2000) and in two recent court cases, one settled by the United States Supreme Court in *Sturgeon v. Frost*, 139 S. Ct. 1066 (2019) and another just recently in *Friends of Alaska National Wildlife Refuges v. Haaland*, 20-35721 (9th Cir. 2022).

In considering closures of substantial quantities of public lands managed by multiple different agencies with different management purposes, the Federal Subsistence Board (FSB), in addition to considering the substantial evidence requirement found in Section 805(c), needs to consider the purposes Congress had in establishing various land management designations. Congress established several national preserves, administered by the NPS, specifically to allow the continuation of all forms of hunting – sport, subsistence, and guided hunting, as well as trapping.[1] Preserve boundaries were carefully delineated *to meet the concerns of sport hunters*, provide some ecologically sound wildlife sanctuaries, and accommodate other Park System uses.[2] [emphasis added] BLM lands in the area proposed for closure serve as the true multiple use lands in the area and are managed on the basis of "multiple use and sustained yield". As outlined in the Ninilchik Traditional Council case referenced above, if in the course of this consideration, it becomes clear that the recommendation will cause a restriction of non-subsistence uses (i.e., hunting of Dall sheep under State regulations), we ask the Board to provide ADF&G with an explanation as to why they disagree with the information presented in this memo and that the restriction is necessary to serve a purpose listed in Section 815(c) and that less restrictive measures will not achieve this purpose.

Background

The proposal rationale argues that weather is the primary cause of the decline of sheep in the area, but also claims harvest of mature rams and wounding loss contributed to the decline. High ram: ewe-like ratios from trend count surveys conducted within the proposed closure area do not support the claim of significant undocumented wounding loss. Additionally, 65% of rams are harvested at greater than 8 years of age, which refutes the claim of excessive mature ram harvest. The rationale of the proposed closure fails to demonstrate how a closure would mitigate the decline or facilitate growth, because wounding loss or an absence of mature rams are claims not supported by the harvest and survey data. For the mitigation to be effective, it must address the cause of the decline. For the Central and Eastern Brooks Range sheep population, the decline was not harvest related and harvest that does occur is likely mostly compensatory (Burnham and Anderson 1984). Therefore, the proposed closure will be ineffective at mitigating weather caused declines or promoting growth.

Full-Curl Ram, Harvest Management Strategy Allows Harvest Without Impacting Population Growth

Dall's sheep in this area are managed using the full-curl ram harvest management strategy. The full-curl strategy is a conservative strategy because it delays harvest of rams until they are among the older age classes. Because rams aged 8 years old or older have higher mortality rates than younger rams (Deevey 1947), we know that the full-curl strategy is a mostly compensatory harvest strategy. Advantageously, the full-curl strategy is deliberately conservative but simultaneously diminishes the need for annual survey counts and subsequent harvest rate assessments from annual population estimates. This is suited to the practical limitations of obtaining annual aerial survey data consistently in the Brooks Range. Additionally, we can demonstrate that harvest fluctuates proportional to the number of full curl rams in the population with the full-curl strategy, and harvest of each cohort is proportional to the recruitment of each respective cohort (Figure 1). Therefore, we have high confidence that harvest is dependent on cohort abundance. Furthermore, harvest data (Brooks Range, 1987-2021; n = 7,476) demonstrates that only 35% of legal rams harvested are harvested the first year they are legal (full-curl or 8 y.o.), whereas 65% of rams are harvested greater than 8 years of age. This gives us confidence that social structure tends to remain similar across a range of abundances with the full-curl management strategy.

Fundamental to the full-curl strategy is the concept that the older ram age classes that are targeted are also numerically few. Numerically few animals result in minimal harvest. Practically speaking, full curl

[1] ANILCA Legislative History, Volume 35, page 307/581
[2] *Id.*, page 381/655

rams are also identifiable by hunters, therefore it is a useful observable metric for hunters to identify legal animals, which simultaneously coincides with the small demographic of the population. Because they are a numerically small demographic and because that particular age/sex demographic is known to have higher rates of mortality, it results in a mostly compensatory harvest that is numerically small and fluctuates in proportion to availability. Harvest data reinforces the assessment that few rams are harvested from small cohorts, proportionally more rams are harvested from relatively more abundant cohorts, and rams greater than 8 years old are present among both numerically strong and weak cohorts. The ADF&G uses a combination of cohort assignment from harvested rams and survey counts of lambs to monitor the strength of each cohort and harvest sustainability.

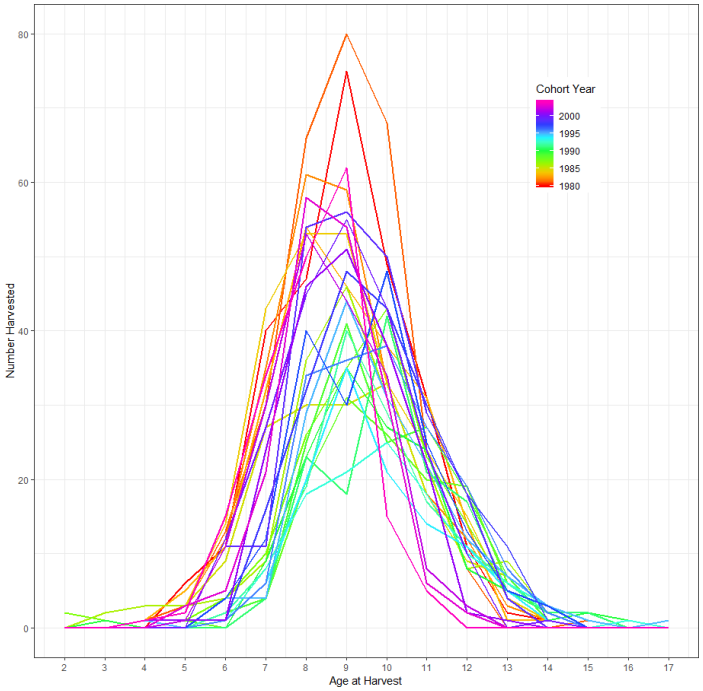

Figure 1. Cohort assessment of sheep harvested in the Brooks Range from 1987 through 2021. Cohort year is determined using harvested sheep ages and year of harvest. Numerically weak cohorts of the 1990s are lower than numerically strong cohorts of the 1980s and 2000s.

The Area Affected is Small and is Already Restricted to Hunting Methods and Means

The affected area of the proposed closure includes 3,282 mi^2 of federal lands, which constitutes 7.5% of the 43,506 mi^2 of sheep range in the Central and Eastern Brooks Range (Figure 2). Furthermore, 1,606 mi^2 of the proposed closure area is already highly restricted as an archery-only/non-motorized vehicle hunt or within the Gates of the Arctic National Park (GAAR). Therefore, the proposed regulation would primarily affect only 1,676 mi^2 of federal lands, or 3.9% of the Central and Eastern Brooks Range sheep range. The proposed regulation would be ineffective as management action at the landscape level. The area of implementation assessment is relevant, because hunters would easily redistribute themselves within the huntable sheep range. Including federally qualified users (FQU) in the closure, is not meaningful mitigation because the harvest from those two communities is very small (< 3 sheep annually) and because they can easily access and hunt sheep in the GAAR portion of 24B.

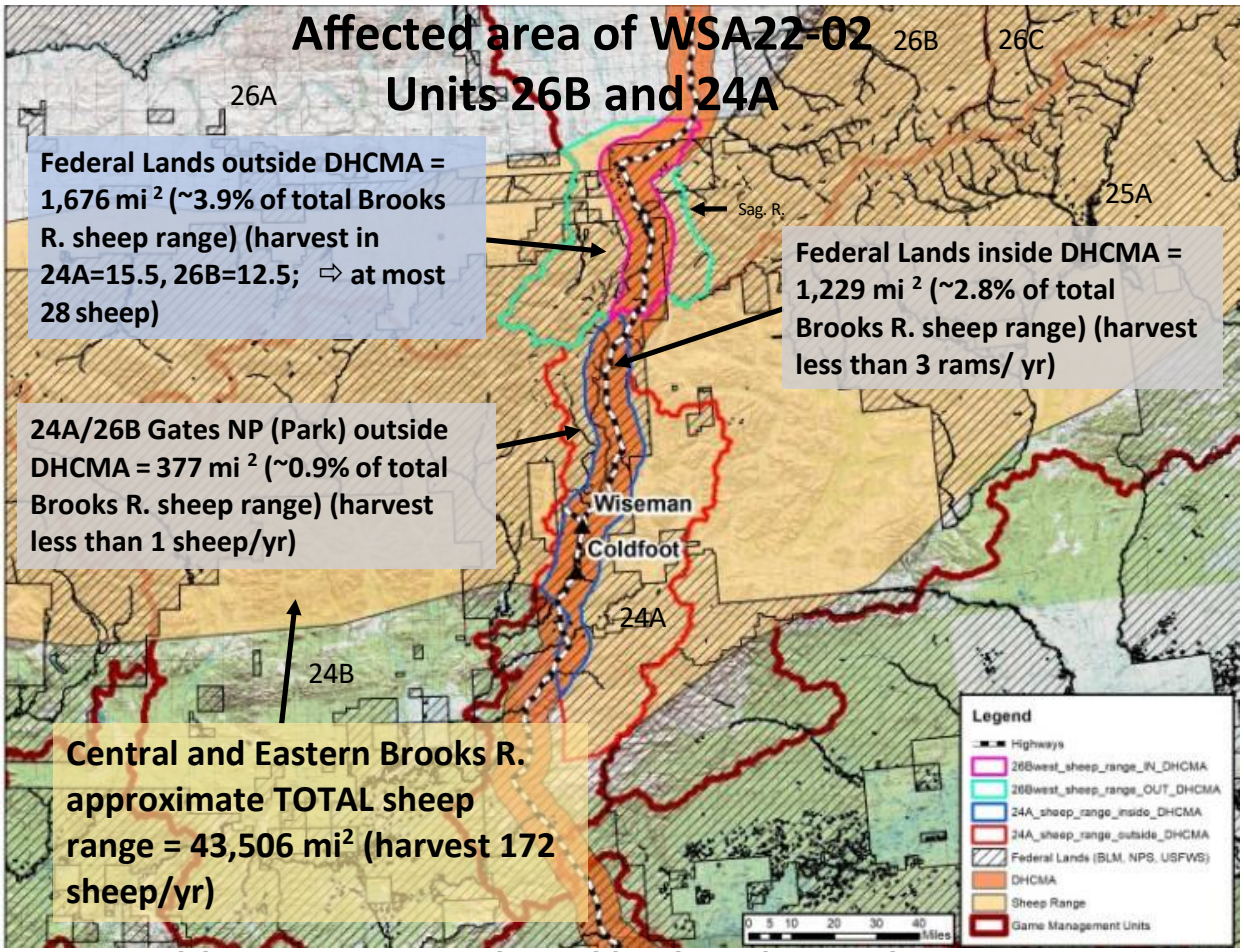

Figure 2. Proposed closure area in Units 26B and 24A and the Dalton Highway Corridor Management Area (DHCMA).

A Closure Would Not have a Meaningful Biological Population Effect

The Central and Eastern Brooks Range sheep range is managed by the Department as a functional population; therefore, assessment of any proposed management action requires an assessment of the potential effect at the population level. It is important to recognize that the proposed closure area does not constitute a distinct biological sheep population, separate from the Central and Eastern Brooks Range sheep population. Because the proposed closure would only affect approximately 3.9%-7.5% of the Central and Eastern Brooks Range sheep range, lacking more specific distribution data, we infer that it would only have the potential to affect a small portion of the sheep population. However, the effectiveness of proposed closure assumes sheep are only on federal lands and that hunters would not redistribute themselves to other areas within the Central and Eastern Brooks Range sheep range. To the latter point, historical statewide harvest data demonstrates hunter redistribution is a common response to regulation changes and to the former point survey data has clearly documented sheep on non-federal lands within the proposed closure area. Regardless, the potential effect of the proposed regulation is not biologically meaningful.

This sheep population assessment is relevant for two reasons, because the potential effect of the closure is insignificant at the population level and because hunters (federally qualified and non-federally qualified) would simply redistribute themselves within the huntable sheep range. More importantly, the population of sheep in the Central and Eastern Brooks Range continues to be viable and the population continues to provide a harvestable surplus that exceeds the average annual harvest.

A Closure Would have a Minimal Effect on Harvest

For the proposed closure area, the ten-year average sheep harvest for Units 24A and 26B (west of Sag. R.) combined is 28 sheep (15.5 sheep in 24A and 12.5 sheep in 26B west of Sag. R.). The 28 sheep average harvest represents 16% of the total harvest (172 sheep harvested) of Central and Eastern Brooks Range sheep range. However, because most or all the 24A harvest occurs on state managed lands despite being a small portion of the area [26% of 24A and 16% of 26B (W. of Sag R.) sheep range is State or Private lands], the actual mitigation effect of the proposed closure would be far less than 28 sheep harvested.

We estimate the combined average annual harvest rate of the Central and Eastern Brooks Range sheep range to be 1-2% (compare to moose and caribou harvest rates at 5%) and that the proposed closure would only reduce that harvest rate by 10-15%. The current harvest rates are very conservative, and the proposed closure effect would not be measurable or biologically significant at the population level. It is important to recognize two key strategic inferences of the proposed closure: one is that none of the sheep within the closure area would be harvested outside of the closure area, in other portions of the Brooks Range. The second is that hunters will not redistribute themselves. It is likely that both inferences are false because historical harvest records inform us those hunters will simply move to the areas with open seasons, and the sheep will not be isolated within the closure areas. Therefore, we conclude that the current harvest rates are very low, and the harvest rate of the proposed closure would be inconsequential.

The conclusion that the current harvest level and management strategy is conservative, is corroborated by rams:100 "ewe-like" ratios observed in areas where the harvest is limited to full-curl rams. Sheep trend count surveys conducted from 2002 to 2021 in a portion of Units 24A and 25A counted an average of 42 rams:100 "ewe-likes" (Figure 3). Which is comparable to averages of ram:100 ewe-likes estimates from 2009-2021 in the Itkillik R. (42.9 rams:100 ewe-likes; CV range = 13% to 27%), from 2014-2021 near Anaktuvuk Pass (49.9 rams:100 ewe-likes; CV range = 13% to 31%) and from years 2010, 2015, 2021 in the GAAR total area (54.7 rams:100 ewe-likes; CV range = 8% to 10%). These rams:100 ewe-likes average values were based on abundance estimates using distance sampling methodology (conducted by NPS). Due to classification errors (e.g., small immature rams misclassified as ewes), we expect the *actual* ram:100 ewe ratio to be even higher if ewe-like rams were moved from the denominator to the numerator. Age estimates derived from growth annuli from rams harvested since 1987 in the Brooks Range indicated 65% of rams harvested were greater than 8 years of age (Figure 4). The age estimates also indicate a mature ram age structure is perpetuated annually and that harvest is not having a significant effect on the population. In other words, where we document high male:female ratios and older age-at-harvest in other big game populations, it consistently indicates that harvest is low, sustainable, and likely having little biological effect on the population. Because the weather-related decline impacted the entire population, it is likely male and female lambs sustained similar levels of mortality.

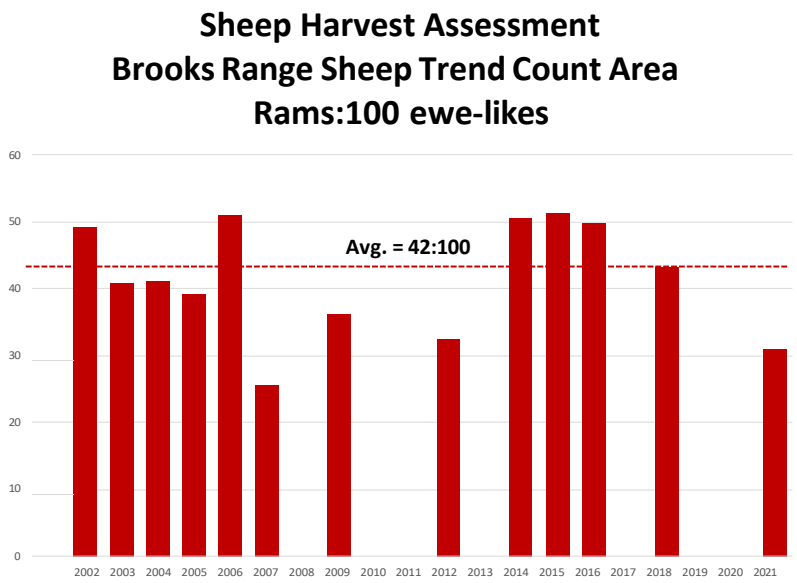

Figure 3. Ram:100 ewe-likes from trend count surveys conducted from 2002-2021 in Units 24A and 25A.

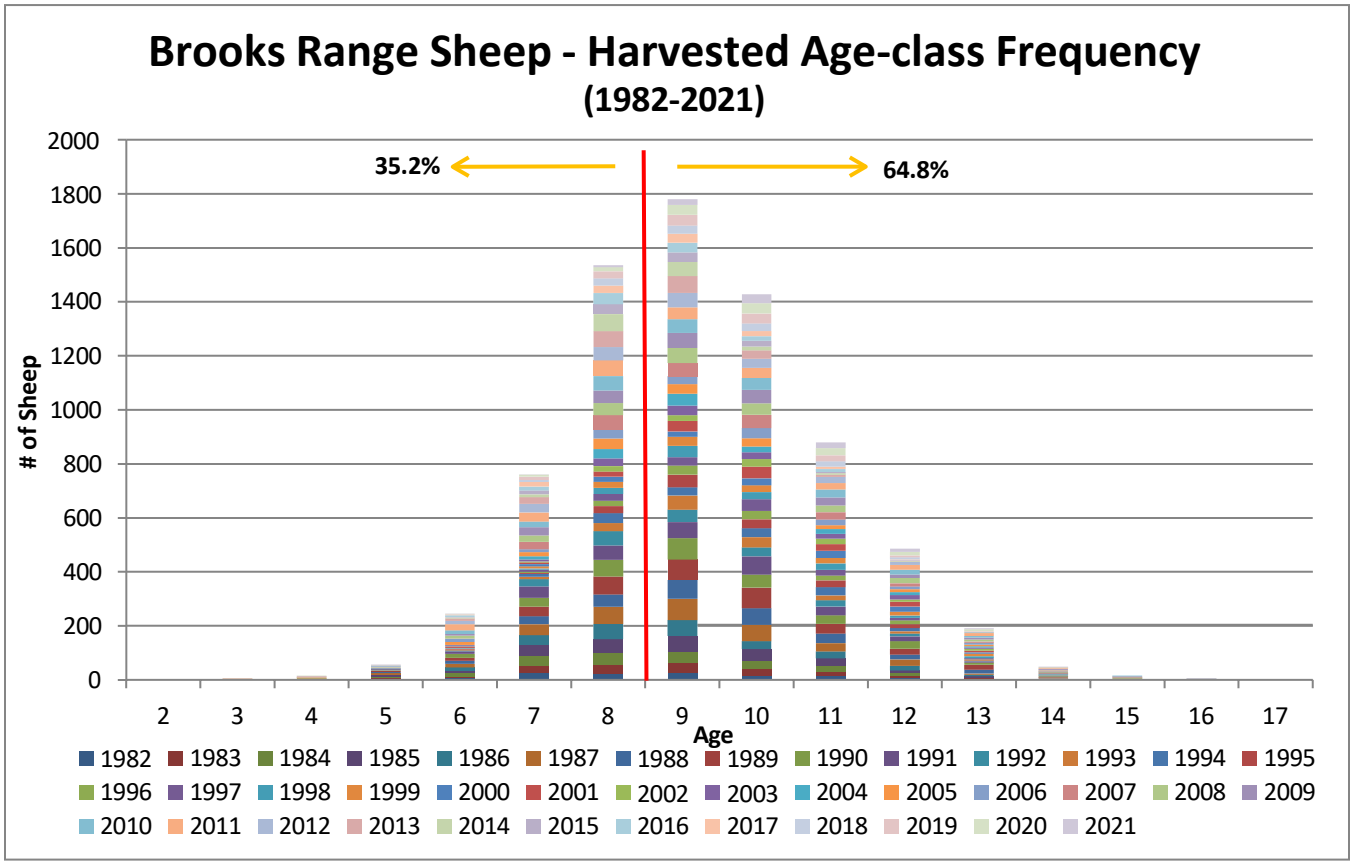

Figure 4. Age class frequency from sheep harvested in the Brooks Range from 1982 to 2021.

Additional Information

Like other sheep populations in Alaska, the current weather-related decline of the sheep population in the Central Brooks and Eastern Brooks Range was significant. ADF&G continues to assess the situation using GAAR population estimates, trend count surveys, and harvest data. ADF&G also plans to deploy satellite-collars in the Central Brooks and Eastern Brooks Range sheep population to further understand this population and evaluate hunting effects on sheep population dynamics beginning in 2022.

However, although the decline is real, lambs continue to be counted in annual aerial surveys and a representative age structure of rams continue to be harvested each year, even from the smaller (numerical) cohorts of the early 2010s. Additionally, providing a harvestable surplus from big game populations with small herds (e.g., 500-1,000) is not unprecedented (e.g., Wolf Mtn. Caribou, 21C Moose, Nunivak Island Muskox, etc.), while the Central Brooks and Eastern Brooks Range sheep population is likely 10,000-20,000 sheep, based on extrapolations of recent population estimation surveys from the GAAR. ADF&G has consistently demonstrated with sheep and other big game populations, that it is not necessary to conduct an annual count of a harvested population or enumerate the abundance of each individual cohort, where very conservative management strategies are employed. In fact, because sheep are one of the few big game populations where age structure and cohort data are available from harvest data, it further reduces the imperative for annual survey data.

Additionally, as previously discussed, approximately 28% the Central Brooks and Eastern Brooks Range sheep population resides within the GAAR. With relatively minimal harvest in the GAAR, and harvest that includes any-ram and ewe harvest, the GAAR represents a significant refugia to the sheep population. The presence of that refugia enhances the opportunity for genetic interchange, age, and sex class interchange, sink migration, and escape terrain from hunting pressure.

The Central Brooks and Eastern Brooks Range sheep population declined due to weather, not harvest. Sheep population fluctuations of varying magnitudes and causes are not unprecedented in Alaska, and those populations have recovered under the full-curl strategy. This is further evidence of the compensatory nature of the full-curl harvest strategy. The proposed closure will not accelerate the recovery or mitigate weather-related declines.

While we recognize the proponent has concerns regarding the declines in the area sheep populations over the past decade, ADF&G believes, based on the information we have gathered in our role as the manager of wildlife in Alaska, that the population of sheep in the Central and Eastern Brooks Range continues to be viable and healthy. As a viable and healthy population, we believe existing Dall sheep numbers can provide both continued opportunity for rural residents to engage in a subsistence way of life as required by ANILCA Section 801(1), as well as for existing state Dall sheep hunting as approved by the Alaska Board of Game (BOG) to continue. Current subsistence harvest numbers of the sheep in the proposed closure area are estimated to be very low (< 3 sheep/year and other hunting activities are already highly restricted (GAAR *hard park* or the DHCMA) for more than 41% of the proposed closure area.

Cc: Randy Ruaro, Chief of Staff, Governor's Office
Doug Vincent-Lang, Commissioner, Alaska Department of Fish & Game
Eddie Grasser, Director, Division of Wildlife Conservation
Ryan Scott, Assistant Director, Division of Wildlife Conservation
Lisa Olson, Operations Manager, Subsistence Section
Cheryl Brooking, Assistant Attorney General, Department of Law

Burnham, K. P., and D. R. Anderson. 1984. Tests of compensatory vs. Additive Hypotheses of Mortality in Mallards. Ecology 65:105-112.

Deevey Jr, E. S. 1947. Life tables for natural populations of animals. The Quarterly Review of Biology 22(4):283-314.