

Dall Sheep Research In Alaska: 1981-83

By Francis J. Singer

With passage of the Alaska National Interest Lands Conservation Act (ANILCA) on Dec. 2, 1980, the National Park Service received 13 new administrative units in Alaska. Six areas contain populations of Dall sheep; four of the six have portions in both "park" and "preserve" categories (Lake Clark, Denali, Wrangell-St. Elias, Gates of the Arctic), and two are entirely preserves (Noatak and Yukon-Charley).

Sport hunting is allowed in the preserves and subsistence hunting is allowed in the new parks by local residents who traditionally used the resources. Only previously established portions of Denali NP are totally protected from all human harvests of sheep. Subsistence hunting is limited to ground access (snow machines, foot, boat, all-terrain vehicles), and the sport hunt regulations apply: fall season and 1 bag limit of 7/8-plus curl rams.

As a result, subsistence harvests of sheep are typically light. However, in 1982 the State of Alaska Board of Game established two special sheep subsistence hunts, one in the Noatak and one in Gates of the Arctic, with winter seasons (Aug. 1 to April 30), liberalized limits (three per person but 50 total in both areas), and no sex/age restrictions. The new NPS areas in Alaska include outstanding scenery and mountainous terrain, much of it habitat for Dall sheep. Consequently, Dall sheep have been among the most controversial elements of the new parks, both during Congressional hearings on ANILCA and since its passage.

We report here on sheep surveys and research in Alaska from 1981 to 1983.

Statewide Inventory

A total of 30,455 Dall sheep was recorded in the six NPS areas during 1981-83. The survey required 505 hours of aerial searching by NPS and Alaska Department of Fish and Game (ADF&G) crews. Nearly 60 percent of the work was accomplished by one helicopter pilot on contract to NPS and with NPS Wildlife Biologist F. Singer observing and classifying. It was the largest sheep inventory of its kind ever conducted.

A number of NPS employees were responsible for the massive effort, but particularly Roy Sanborn, Bob Peterson, Al Lovaas, and Dick Ring.

Two major pieces of new information appeared from the inventory. First, the statewide population estimate now has been elevated from 50,000 to 73,000. Many more sheep were found in previously uncounted areas than had been estimated, and 45 percent more were counted in previously counted areas. Prior survey techniques and estimates proved to have been conservative. Second, 40 percent of the sheep were observed in *preserve* and 54 percent in *park* categories. Higher densities of legal rams (2.6 to 4 times higher) were in preserves, and disproportionately more rams were in preserve than in park boundary areas.

Estimates had been made that creation of the new National Parks and Preserves would reduce the Alaska Dall sheep harvest by 29 to 50 percent; this



proved to be an exaggeration. Post-ANILCA harvests (1981-83) have averaged 22 percent lower than the 1977-78 average, but much of this decrease is due to a change in legal size restriction from 3/4-plus curl to 7/8-plus curl horns – a change which took effect in 1979. True reduction of the Alaska sheep harvest as a result of the new NPS areas is probably only 10 to 15 percent.

Brooks Range Studies

Dall sheep populations in the Brooks Range are being closely monitored relative to the new (since 1982) and more liberal subsistence hunts. Two harvested count units near Anaktuvuk Pass (Gates of the Arctic) are being counted along with two similar "control" or remote units. The biological effects of either-sex harvests of Dall sheep are not known from the more northerly and severe Brooks Range. Subsistence harvests of either-sex sheep have been relatively light thus far 32 to 38 per year near Anaktuvuk Pass and 9 to 10 in the Noatak.) Sheep have been more important in the past to local residents, particularly when caribou migrations bypassed communities and prior to 1950 when sheep fur was a major clothing material for northern natives.

Dall sheep occur at the extreme northwestern distribution of their range in the Noatak National Preserve. Sheep numbers there were little known but observations suggested intermittent occupation of certain ranges, low densities, and possible high mobility. The herd is subjected to both sport (ram) and subsistence (either sex) harvests. NPS initiated a study in 1983, primarily funded by the Special Initiative

Parks Account, to completely inventory the sheep herd and to compare Dall sheep densities, productivities, movements, and habitat uses north and south of the Noatak River.

The southern herd is subjected to both sport and subsistence and the northern to sport-only hunting. Densities in the north are 1/3 lower and sheep occupy patches of suitable habitat there, whereas in the south, continuous habitat occupation occurs. Home ranges in the north are much smaller, but lamb productivity there was nearly double in 1983. A total of 17 ewes and rams were radio-collared in 1983 by NPS – 7 in the north, 10 in the south. Lee Anne Ayres, a graduate student from University of California, Berkeley, is following the movements, habitat use, and activities of the two herds of sheep.

Role of Large-Horned Rams in Hunted and Unhunted Herds

Traditional sport harvesting of Dall sheep focuses on the oldest males – the same individuals that are most dominant and influential during the breeding season. In most hunted areas, many of these large-horned rams are not harvested, but in some accessible areas nearly all are taken. Past studies in Alaska have suggested that on a short-term basis, reproductive rates are maintained or even increased when all large-horned rams are removed. However, these prior studies did not explore long-term reproductive effects, possible increases in mortality rates of younger rams, ewe condition and harassment rates, or any role of older rams in teaching home range traditions to younger rams.



***Dall sheep** in Alaska – their rutting behavior, lamb production, and ram dominance interactions in wintering groups, are the object of research in two contrasting herds.*

Singer currently is investigating some of these topics in a comparison between two sheep populations – one in the eastern end of the totally protected Denali NP and one at Usibelli Mine, located only 10 miles to the east in the same mountain range. Rutting behavior, lamb production, and ram dominance interactions in wintering groups are being observed in the two herds, 1983-85.

Ram characteristics are drastically different in the two areas. During the 1983 rut, in the hunted herd, all rams were 3/4 curl or less, and there was only one ram per four ewes, while in the protected herd there was nearly one ram for every ewe and one full (4/4-plus) curl ram for every four ewes. Ram/ram competition appeared much more intense in the unhunted herd and the checking and tending of estrous ewes was much more time consuming.

Other impressions were gathered but must await analysis of the first year's data. Plans for the 1984 field season included continuation of the ram studies, attempting to learn more about "natural and healthy" versus "healthy" wildlife populations, as mandated by ANILCA for parks and for preserves, respectively. The radio-telemetry and range studies in the Noatak are being concluded in the summer of 1984, and evaluation of the sheep subsistence hunt in the Anaktuvuk Pass area will continue.

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