

During the past several decades, the vast areas of forest and tundra in northwestern Alaska have supported North America's largest herd of barren-ground caribou (*Rangifer tarandus*). The Eskimos and Indians of this huge region have long used caribou for sustenance and as materials for tools, clothing and shelter. Even today, people of the Arctic are at least partially dependent on the caribou, the sea mammals, the fish and the other components of their environment for their livelihoods.

But caribou, like other wild animals, at times undergo dramatic changes in populations and the Western Arctic herd has been no exception. In 1974, there were indications that the herd had begun a decline. At that time, intensive work was initiated to determine the extent of the problem. This paper, then, will outline what is now known about the herd's past, its present, and looks toward its future.

ABUNDANCE AND DISTRIBUTION

Although historical records are incomplete, it is documented that the herd has experienced periodic population fluctuations since at least the 1800's. Accounts of famine, universal in the lore of Eskimos and Indians of northwestern Alaska, indicate that periodic declines have occurred at several times prior to that. However, there is no evidence to suggest that these fluctuations have been cyclic, and that the herd is now just entering another low part of a cycle. Caribou research has shown that local changes in abundance are caused by exchanges with adjacent herds, changes in range conditions, weather, and mortality through hunting, predation, disease, and the sum of other minor causes. The Western Arctic herd has increased during the period from 1900 until it reached a peak in the 1960's. Major movements of caribou from the south in the 1920's and 1930's and from the east and southeast in the 1930's contributed greatly to the past growth of the herd. A photocensus of the herd in 1970 provided a reliable estimate of 242,000 caribou. A census in 1975 established the maximum number of animals in the herd at about 100,000, but suggested there could be many fewer. An intensive aerial search in July 1976 indicated that the herd had declined to about 50,000 caribou.

The Western Arctic herd has historically occupied a range of about 140,000 square miles (Fig. 1). The size of this range has varied over the years. At its maximum recorded extent, it was bounded on the south by the Yukon River, on the north by the Arctic Ocean, on the west by the Bering and Chukchi Seas, and on the east by the mid-Brooks Range south from Prudhoe Bay.



Fig. 1. Approximate range of the Western Arctic herd in the early 1970's. The range of the herd has contracted somewhat with the decline of the herd.

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Calving has occurred mainly along the headwaters of the Colville, Ketik, Meade and Utukok Rivers. After calving, these animals have traditionally formed progressively larger groups and moved southwest to the high country of the Kukpowruk, Kukpuk, Kivalina and Wulik Rivers, and then eastward through the Delong Mountains and adjacent foothills. As this movement progressed, dispersal began with many animals shifting north to their summer range on the Arctic coastal plain. In autumn, they moved through passes in the Brooks Range to traditional wintering areas from the Waring and Baird Mountains and lower Koyukuk River, east as far as the vicinity of Wiseman.

WHY DID THE HERD DECLINE?

From data that are now evailable, it is apparent this herd has declined to its present size because of excessive use of caribou by humans, in combination with the significant impact of natural mortality including predation, especially by wolves.

Caribou hunting by Alaska natives in this area has been intense. It is the policy of the Alaska Department of Fish and Game to provide seasons and bag limits to accommodate subsistence requirements, where it is the main use. For this reason, there was no closed season, and no bag limit for caribou in northwest Alaska from statehood until 1976. Under these regulations, the nearly 10,000 residents of the region annually took 25,000-30,000 caribou for use in their 30 communities.Because of the region's remoteness, there has been little hunting in the area by conventional recreational hunters....

Because of the region's remoteness, there has been little hunting in the area by conventional recreational hunters. They have accounted for less than four percent of the total harvest each year.

The density of wolves, based on data from the central Brooks Range, is about one wolf per 100 to 120 square miles.

The wolf population on the traditional range of the Western Arctic herd is estimated at between 1,160 and 1,400 animals. Since caribou are the most abundant prey species in the area, they are regularly taken by wolves and constitute about one-half of the annual diet of these wolves. Based on these figures, and a knowledge of the approximate annual food budget of wolves, it is likely that the wolf population is consuming between 10,000 and 15,000 caribou per year.

Because of the coincidence of oil development and the decline of the Western Arctic herd, it seems obvious to place some of the blame for the decline on construction of the Trans-Alaska pipeline. However, there is no evidence that the two events are related. The traditional range of the herd is to the west of the pipeline corridor. Further, its traditional calving area lies 300-400 miles to the west of the pipeline.

WHAT CAN BE DONE TO REVERSE THE DECLINE?

Unless both human harvest and wolf predation are substantially reduced, the decline of the Western Arctic herd will continue. Simply eliminating or reducing one or the other would be insufficient to halt the decline.

The caribou appear to have the potential for increase if the two major mortality factors are reduced. Initial phases of an intensive range study in the area indicate that range is probably not a limiting factor. Likewise, although relatively little is known about the possible influence of disease, gross indicators suggest that it was not a major factor in the decline.



of the Western Arctic herd.



Bob Stephenson

Present production of calves is normal in comparison to past records and data from other healthy populations. Postcalving surveys in July 1975 showed that for the herd as a whole there were 57 calves per 100 cows. However, for each 100 cows only 14 yearlings were counted. This indicates high calf mortality through the fall and winter, which is characteristic of wolf predation.

Computer simulation models using currently available data have suggested that the annual loss of caribou to men and wolves must not exceed 1,500 adult females before the 1977 calving season if the herd is to stabilize. As caribou are polygamous, a somewhat higher loss of bulls can be tolerated.

Clearly, human harvest and wolf predation must be reduced.

In spite of hardships to people in northwest Alaska, major reductions in human takings of caribou have been imposed. The Alaska Board of Game has provided for a very limited harvest in the area, in an attempt to provide for genuine need. The total take should be well below that level which would limit this herd's increase.

....it seems obvious to place some of the blame for the decline on construction of the Trans-Alaska pipeline. However, there is no evidence that the two events are related.... It is now recognized that wolves alone can limit ungulate populations like moose, caribou and deer, in some situations. Clearly, this is one of those situations. Even without human harvest, wolves could take enough animals from this severely depressed population that the herd could continue to decrease. For this reason, limited wolf control will be necessary in order to improve the herd's status.

THE FUTURE

1976 could be just another year in the precipitous decline of the Western Arctic herd. Or, it could be the year in which the decline was arrested and turned around. Which it will be depends in large measure on people.

People must agree to limit their use of caribou for the long-term benefit of the herd; and for many Alaska natives for the long-term necessities that the caribou represent.

People must then agree on the need to reduce the impact of wolves by decreasing their numbers in the range of the Western Arctic herd, however distasteful that might be to some.

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If these steps are taken there is no known reason for this herd not growing a little larger each year. In time, the herd would grow to the point where it could once again support both human harvest and all the physical and cultural needs it satisfies; as well as normal wolf populations, which must never become an unknown component of the Alaska wilderness.

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