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## THE DELTA CARIBOU HERD, 1950 through 1982: Caribou-Wolf Relationships

Dramatic fluctuations have occurred in many of Alaska's caribou herds in recent and historic times. Causes of these fluctuations have been the center of controversy among caribou biologists for many years, and several possible explanations have been suggested including emigration/immigration, weather changes, hunting, changes in food supplies, predation, disease, catastrophe, poor estimates of herd size, or a combination of these factors. Poor caribou management has resulted, at times, from misunderstandings surrounding the relative importance of factors limiting caribou populations.

One herd, the Delta, has been the subject of investigation. Over the past decade, concern for the herd's low numbers made it the center of attention in a study of the role wolves play in caribou population changes in Interior Alaska. These investigations have centered in an experimental wolf control area encompassing the Delta caribou herd's



range approximately 65 miles south of Fairbanks in the foothills and adjacent lowlands along the north face of the Alaska Range (Fig. 1). Reductions in wolf numbers in this area were made primarily to increase moose numbers, secondarily to increase caribou numbers. Study of the Delta caribou herd will remain a relatively high priority of the Alaska Department of Fish and Game (ADF&G), because of the herd's high appeal for hunting and wildlife appreciation and concern over the herd's previous low numbers.

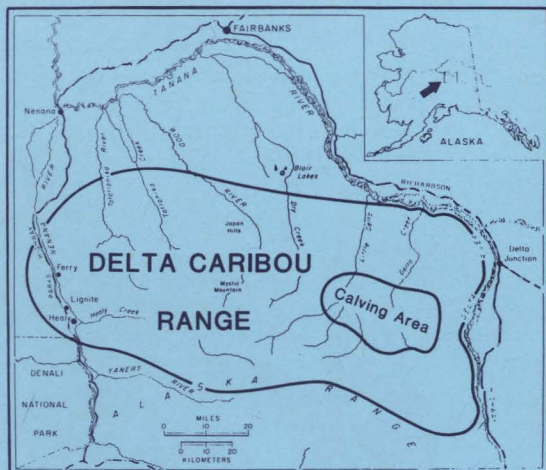


Fig. 1. Range of the Delta caribou herd.

## Fluctuations in Caribou Numbers, 1930's-1975

Numbers of caribou in the Delta caribou herd have fluctuated greatly during the past 30 years (Fig. 2). From the mid-1930's until the early 1950's, the herd numbered only about 500 to 1,000 animals. The herd's rapid increase in the late 1950's and early 1960's (Fig. 2) to about 5,000 animals in 1963 is thought to have resulted primarily from Federal predator control between 1954 and 1960. This control was achieved through widespread poisoning of all species of predators. Because records of numbers of wolves killed during this time were poor, little was learned concerning caribou-wolf relationships.

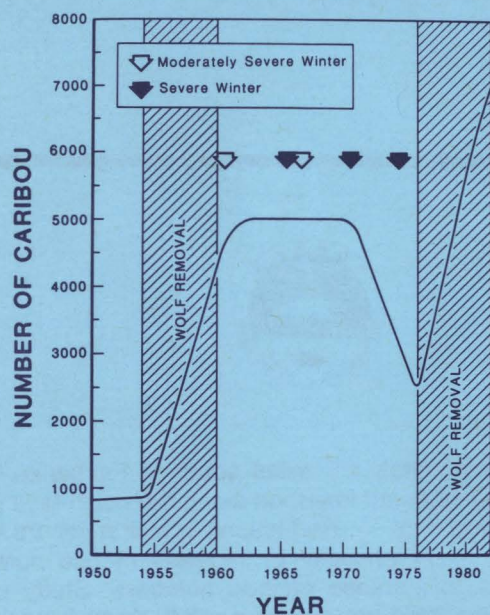


Fig. 2. Numbers of caribou in the Delta caribou herd, 1950-82.

From 1963 to 1970, the herd maintained a high level of about 5,000 caribou. Why further increases failed to occur is unknown, but indications are that a build-up in the predator population, with hunting by man (Fig. 3), prevented further increases.

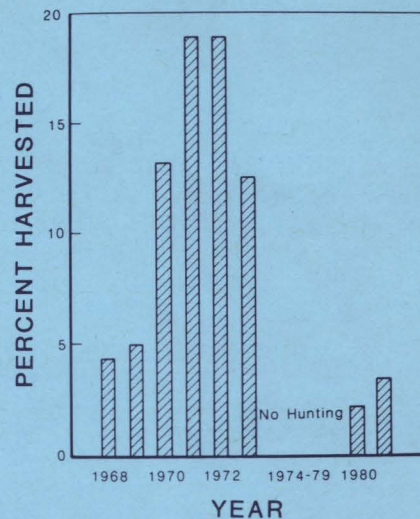


Fig. 3. Percent of Delta caribou herd harvested annually by hunters, 1968-81.

Beginning about 1970-71, the herd declined from 5,000 animals to about 2,000 to 2,500 by 1975 (Fig. 2). Caribou birth rates remained high throughout this period, but high early calf mortality (Fig. 4), resulting largely from

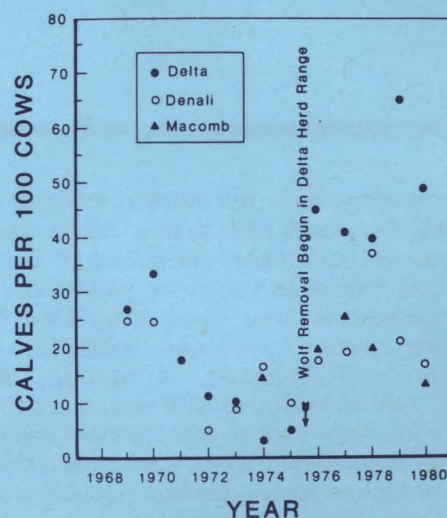


Fig. 4. Calves per 100 cow caribou in the Delta, Macomb, and McKinley herds, autumn 1969-80. Wolf removal took place only in the Delta herd range.

wolf predation, was a major cause of the herd's decline from 1971 through 1975. Overhunting from 1971 through 1973 (Fig. 3) hastened the herd's decline by lowering the number of caribou available per wolf. The impact of predation increased because wolf demands remained high while caribou numbers dropped. Hunting seasons were closed from 1974 through 1979, so hunting was not a factor in the continued declines in 1974 and 1975.

## **Caribou Response to Wolf Control, 1976-82**

Because the caribou population continued to decline following the closing of hunting seasons, the Department began a program of wolf control. The Delta caribou herd has since increased from about 2,300 animals to a present level of 6,500 to 7,500. The herd's average annual rate of increase since 1976 has been about 20 percent.

The wolf population was reduced by ADF&G personnel and public hunting and trapping using aerial shooting and conventional trapping techniques. Approximately 70 (60 percent) of 117 wolves were taken from the Delta herd's range prior to calving in 1976. Most of these wolves were taken in the eastern portion of the herd's range in the vicinity of the calving ground (Fig. 1), up to 80 percent of the resident wolves were removed in this area. Additional wolves were removed through the spring of 1982, maintaining wolf numbers at a relatively low level. Department personnel suspended wolf removal in the Delta caribou's range following May of 1982.

The sudden sixfold increase in Delta caribou calf survival in 1976, immediately following wolf control, was particularly notable when compared to the continued low calf survival in adjacent herds (the Macomb and McKinley herds, Fig. 4). These two herds presumably experienced environmental conditions similar to those experienced by the Delta herd, but wolf populations were not reduced in their ranges. The Delta caribou herd has tripled in size since 1976, while the Macomb and McKinley herds have remained at low stable levels since 1976.

## **Will Wolf Control Continue?**

There are natural mechanisms which allow predator-diminished caribou populations eventually to increase. Current information, however, strongly indicates that where wolves occur at natural densities, increases in moose, deer, and caribou populations are short-lived and infrequent. Contrary to the "balance of nature" concept, wolf populations often remain high for extended periods following declines in prey populations, resulting in further, sustained declines in prey (see Gasaway et al. *Wildlife Monographs*, in press). The eventual result is a low caribou density which could last for decades. Clearly, this situation existed during the early 1970's in the Delta herd's range.

When wolf predation is the primary reason for undesirably low caribou numbers, a wildlife manager is left with two choices. He can either wait, perhaps decades, for a natural recovery of caribou while lowering or eliminating

man's harvest, or he can reduce the numbers of wolves. Considering the long time period required for caribou populations to increase naturally, reducing the wolf population is often most practical, however distasteful it may be to some people.

Wolf population management may involve periodic intensive efforts to kill specified numbers of wolves, more intensive public trapping and hunting, or a combination of these methods. Periodic major reductions in wolf numbers by ADF&G may be required in certain areas, although public participation is preferable. In the Delta herd's range, continued periodic wolf removal likely will be necessary to meet caribou and moose harvest demands.

Wolf population control does not imply the wholesale elimination of wolves. Wolf control is simply one way of managing wolves to produce long-term vigorous caribou and wolf populations. The higher numbers of caribou and moose resulting from occasional predator reduction can sustain higher numbers of wolves than low density prey populations. Wolves should always be considered an essential component of Alaska's wilderness.



Leonard Lee Rue III

## **The Herd's Future**

The Delta herd's recent spectacular increase to between 6,500 and 7,500 caribou has surpassed the Alaska Wildlife Management Plan's goal of 4,000 caribou for the herd. Consequently, steps to decrease herd size likely will be implemented in the near future. The public and ADF&G

currently are reviewing management options concerning the herd's future. At the present herd size, productivity, and mortality levels, hunters can harvest about 1,000 caribou annually without causing a decline in the herd. This likely will satisfy the present demands of hunters.

The Department expects to control future fluctuations of the herd by regulating caribou harvest and managing wolves. Habitat degradation, weather, disease, or catastrophe, however, could exert unforeseen influences on the herd's future. Managing wolves will involve periodic wolf surveys and wolf control to maintain acceptable wolf numbers relative to caribou harvest demands. Meanwhile, the Department will continue to monitor productivity and

mortality of the Delta herd to learn more about factors causing fluctuations in caribou herds. Results of these studies will be used to improve status of area caribou herds.

For a more detailed account of the study summarized in this leaflet, see the Alaska Department of Fish and Game Technical Bulletin entitled, "**Wolf-Prey Relationships in Interior Alaska.**"

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