

INTERIOR MOOSE...

why the decline?

SINCE their arrival in Alaska more than 175,000 years ago, moose, like all species, have fluctuated in numbers and, the status of moose populations during the early 20th century is uncertain. However, historical records and comments by early hunters and trappers suggest that moose existed in at least low to moderate numbers throughout most of Interior Alaska although there were some unexplained voids in their range. In the late 1940s, 1950s and early 1960s, moose gradually increased in abundance, reaching maximum numbers around 1965 (Figure 1). Since that time moose populations have generally declined to the present low levels.

POPULATION GROWTH

The increase of moose populations during the 1940s and 1950s was due to a combination of events. The most important factor was probably a large increase in moose habitat caused by a high number of natural and man-caused fires, and developments such as homesteading, mining and construction. Regrowth of shrubs in these disturbed areas greatly expanded the available food supply. Moose on a high quality diet frequently have high reproductive success and during the years between 1956 and 1964, for example, the ratio of calves per 100 cows during the fall in Game Management Unit 20A ranged from 42 to 55, which is high.

Two other factors contributed to the growth in moose populations from the late 1940s to the early 1960s. First, extensive predator control by the federal government reduced wolf populations and minimized predation upon moose. Poisons were used until the early 1960s and aerial hunting and

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Leonard Lee Rue III photo

bounties on wolves continued throughout the period. Second, relatively mild winters during this interval contributed to high overwinter survival of calves and adults during most years.

Although moose populations throughout most of Interior Alaska continued to increase during the late 1940s and 1950s, these increases probably slowed and the populations eventually stabilized during the early 1960s. Moose were then extremely abundant and an estimated 10,000 to 12,000 animals existed in Unit 20A alone. It appears that moose numbers had approached, and perhaps exceeded, a critical balance with the available food supply during the 1960s.

POPULATION DECLINE

The winter of 1965-1966 was probably the turning point for moose populations throughout much of Interior Alaska. There were too many moose for the available food supply, and this problem was aggravated by two successive severe winters (Figure 1). Perhaps 50 per cent of the moose population in Unit 20A and in other areas of Interior Alaska died during the winter of 1965-66 alone.

Winters were relatively mild between 1967 and 1970, and the moose populations in Unit 20A and adjacent areas began to slowly increase. Calf survival through summer to fall sharply increased during this period, and yearling overwinter survival more than tripled between 1967 and 1970.

Disaster struck the moose populations in Interior Alaska again during the winter of 1970-71 (Figure 1). Snow conditions that winter were as severe as those during the 1965-66 winter, and again the winter mortality of moose apparently approached 50 per cent. In the spring of 1971, a record low of six yearlings per 100 cows was seen in Unit 20A. This indicated that virtually all calves had died during the winter. This time the moose populations in Unit 20A and adjacent areas did not begin to increase, but instead they continued to decline.

The reasons for the steady decline of moose populations since 1971 are clear: a continuous and

unavoidable mortality among adults and a low recruitment of new animals, or yearlings, into the breeding adult population. However, the ultimate factors behind these declines are less clear. Hunting is one obvious source of adult mortality in many areas of Interior Alaska. For example, reported hunter harvest increased from 298 in 1970 to 710 in 1973, but in 1974 and 1975 the hunting season was sharply reduced, and the harvests were 341 and approximately 40, respectively. Thus, hunting during 1970 through 1974 was certainly a mortality factor which contributed to the eventual decrease in total moose numbers in Unit 20A.

Although hunting may have been a significant cause of mortality in certain heavily hunted areas, it was probably not a major factor contributing to the widespread and generally synchronized decline of moose throughout Interior Alaska. Moose populations in lightly hunted and even unhunted regions have experienced similar population declines.

Poor range conditions have probably not been a major factor contributing to moose declines in recent years in Interior Alaska. Although quantity and quality of moose range is probably lower today than during the 1950s and 1960s, it appears to be capable of supporting considerably more than it is at present. A two-year study of Unit 20A moose habitat and browse use conducted by the Alaska Department of Fish and Game concluded that neither food nor habitat were limiting moose numbers.

The influence of disease on moose mortality has not been closely examined. However, observations from Alaska and western Canada suggest that disease

is probably not a significant mortality factor among either calves or adults in these areas.

With the exception of severe winters, predation may well have been the most significant and widespread cause of moose mortality during the past several years. Predator control during the 1950s probably facilitated the large increase in moose numbers during that period. With a decrease in the intensity of predator control beginning about 1959, wolves probably responded to the abundant moose populations by increasing in abundance.

Even as moose populations began to decline in 1966, there were still adequate numbers of prey to support high predator populations. Further, wolves may have compensated for declining moose populations by heavily utilizing snowshoe hares, which reached the peak of their cycle during the late 1960s and early 1970s. When hares declined in 1972 or 1973, abundant wolf populations were again forced to rely primarily on declining moose populations for food.

Therefore, throughout much of Interior Alaska at this time, we are faced with high wolf populations. Department of Fish and Game biologists estimated from aerial surveys in 1975 that approximately 200 wolves and 3,000 moose are present in Unit 20A during most of the year. This ratio of approximately 1 wolf to 15 moose represents considerably higher wolf numbers than the moose population can support, and probably reflects the cause of declining moose populations in recent years.

In spite of relatively mild winters since 1971, overwinter calf survival in Unit 20A declined to a ratio of eight yearlings per 100 cows in the spring of 1975.

Observations of biologists, hunters and trappers,

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Figure 1. (number of moose/yearlings per 100 cows) Estimated moose abundance and yearlings per 100 cows in Unit 20-A moose populations. Severe winters caused sharp declines in moose populations. Note that periods of population growth have relatively high yearling survival, while periods of population decline correspond to low yearling survival.

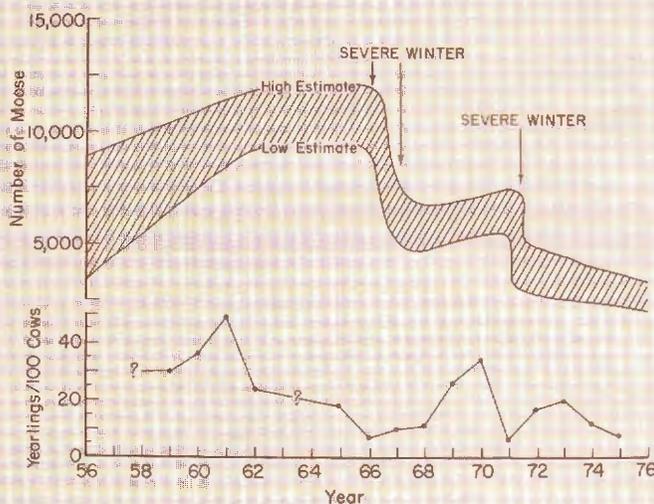
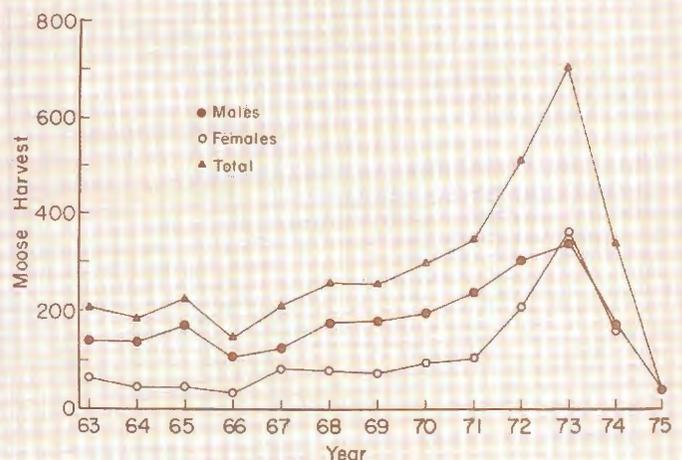


Figure 2. (moose harvest) Unit 20-A moose harvest from 1963 to 1975. Note the abrupt increase in harvest in the early 1970s and rapid decline (to about 40 bulls) in 1975.



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Photo by Mary Hendrickson

as well as results of extensive moose collaring studies conducted by the Department of Fish and Game in Unit 20A, suggest that a large number of calves are killed by wolves during their first year of life. Further, of 40 adult moose radio-collared during 1973 and 1974, approximately 25 per cent were proven or are strongly suspected of having been killed by wolves. Therefore, in Unit 20A wolves appear to be responsible for a very high mortality among both calf and adult moose. An imbalance between wolves and moose also may be causing the low calf survival and declining moose populations observed in many other areas of Interior Alaska as well.

FUTURE

The eventual recovery of moose populations in Interior Alaska is assured. However, the prospects for a significant increase in moose abundance and improved hunting in the near future are not good. Although wolf populations in Unit 20A may be declining, they will continue to further depress moose populations until a normal balance between predator and prey is restored, and moose can begin to increase. This process could take several years, depending upon the rate of wolf population declines, severity of winters, etc. If wolf numbers are reduced by control programs in selected areas, the recovery rate of moose populations should be increased. However, this recovery will still require several years. Meanwhile moose hunting must be sharply restricted and limited only to males to assure that it does not further depress populations.

Moose population fluctuations will continue to occur in response to ecological and management changes. Certain factors influencing moose abundance, such as winter weather, cannot be controlled. However, other factors can be influenced, and an awareness of these factors can help us avoid the extreme population fluctuations that have occurred during the past 10 years.

As management of land in Alaska becomes more intense, it is unlikely that fires or development will create vast areas of new moose habitat resulting in extensive population growth as that which occurred during the late 1940s and 1950s. Also, indiscriminate predator control will not be practiced as it was in the 1940s and 1950s.

Therefore, as moose populations increase in response to local habitat improvement or development, we will attempt to maintain a suitable balance between prey and predator. Moose populations will be more intensively managed by liberalizing or restricting seasons and bag limits in response to population trends and publicly accepted management goals. ◉

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