

Conservation of wild reindeer in Kamchatka

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Abstract: The wild reindeer of Kamchatka were never numerous and probably did not exceed 15 000 in number because of the restricted amount of winter and summer range, and the characteristically deep snow of the peninsula. Before 1960, biologists believed there was 1 population with 3 major wintering areas. The inaccessibility of the interior of the peninsula provided natural protection for wild reindeer and other wildlife. After 1960, the road system was expanded for the benefit of the logging and mining industries, and poorly regulated commercial hunting of wild reindeer expanded. The wild reindeer population declined rapidly, and became fragmented into 3 herds by the early 1970s. The herds in southern and northeastern Kamchatka were reduced to a few hundred animals, but the herd in eastern Kamchatka that was largely protected by the federal Kronotskii Biosphere Reserve recovered. Poorly regulated hunting and competition with domestic reindeer continue to be the major conservation issues facing wild reindeer in Kamchatka.

Key words: herd fragmentation, industrial development, logging, mining, *Rangifer tarandus phylarchus*.

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Introduction

Wild reindeer (originally classified as *Rangifer tarandus phylarchus* by Hollister, 1912, but later lumped with *R. t. fennicus* by Banfield, 1961) are indigenous to the Kamchatka Peninsula. These wild reindeer were never numerous, and probably did not exceed 15 000 in number (Baskin, 1968). Before 1960, biologists believed there was a single population (referred to as the "great herd of the Parapol'sky Dol", but in winters with particularly deep snow the wild reindeer concentrated in 3 separate areas (Baskin, 1968) (Fig. 1). The total population was probably limited by the amount of suitable winter range, the characteristically deep snow of Kamchatka, and a lack of alpine-tundra summer range.

During the 1960s and early 1970s, the domestic reindeer industry was expanded and logging roads were built in the valley of the Kamchatka River. These developments resulted in increased hunting that was poorly regulated, and the wild reindeer population declined (Vershinin, 1972; Vershinin *et al.*, 1975). By the early 1970s the population was fragmented into 3 separate herds totaling about 8500 wild reindeer. In this paper, I review the history of these 3 herds and discuss factors that influ-

ence their population size and conservation. Information for this review came from records of the Game Department of Kamchatka, the Institute of Ecology and Environment of the Kronotskii Biosphere Reserve, and occasional aerial surveys by reserve personnel.

Southern herd.

The Southern herd numbered about 3000 animals in the mid-1970s, and it occupied the best wild reindeer range on the peninsula (Fil, 1973). The population was highly productive with a potential increase of about 350 animals per year, the wolf population was low, and there was little mortality to wild reindeer. However, from 1975 to 1980, the development of roads for gold mining and over-hunting by commercial hunting companies resulted in a population decline. About 600 wild reindeer were being killed by hunters annually. By 1985 hunting was restricted, but the herd continued to decline from legal and illegal hunting (Mosolov, 1990a) (Table 1). At that time both winter and summer pastures were affected by industrial development (road construction), and the caribou no longer formed large herds, even in winter. In 1995 caribou hunting was completely stopped, and a new territorial reserve (nature park) was established to

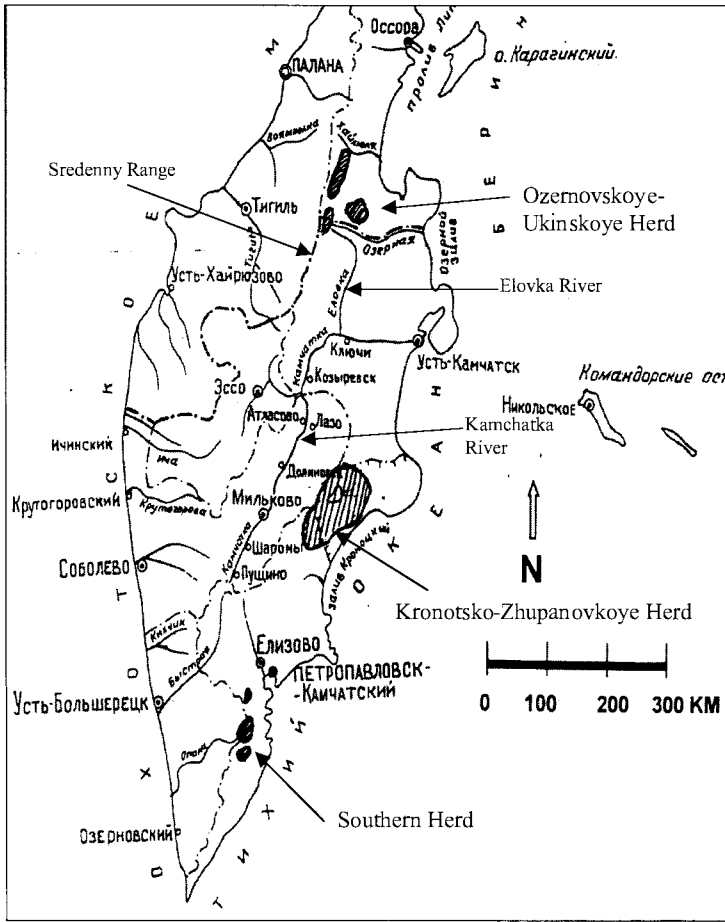


Fig. 1. Present distribution of caribou in Kamchatka.

protect the herd. At the present time the number of caribou in the Southern herd is stable at 300-350 animals.

Ukinskoye-Ozernovskoye herd

The northernmost of the 3 herds, this population was initially less influenced by human activity (Vershinin, 1972; Mosolov, 1990a). This area was largely roadless and inaccessible, especially the mountain tundra along the Sredynny Range, which runs from north to south in the central part of the peninsula. However, areas used by this herd to the west of the Sredynny Range had been used for domestic reindeer herding for a long time in summer, and hunting on the winter range was gradually causing a reduction in caribou numbers. The population decline was much slower than in the south until the sawmill industry was developed in the valley of the Elovka River (a northern tributary of the

Kamchatka River). The increased access resulted in more, uncontrolled, hunting pressure, and the herd's rate of decline increased (Table 1).

Kronotsko-Zhupanovskoye herd

Wild reindeer in eastern Kamchatka had also been gradually reduced by hunting, from a high of 4500-5000 in the 1940s to about 800 in 1968 (Averin, 1948). Beginning in the early 1900s, a large part of the area had been protected as a national reserve (Zapovednik), where all hunting was prohibited. However, in 1945 the size of the reserve was reduced, and wild reindeer numbers in the area declined. Fortunately, in 1968, the reserve (Kronotskii) was reestablished within the area it had previously occupied, and the reestablished reserve included about 40% of the range used by the reduced population of 800 wild reindeer. Up to 60% of the wild reindeer pastured outside the reserve, but the protection provided by the reestablished reserve allowed the Kronotsko-Zhupanovskoye herd to recover.

Unfortunately, domestic reindeer husbandry was encouraged in eastern Kamchatka in the 1970s, and the Kronotsko-Zhupanovskoye herd faced a new threat. Reindeer husbandry was relatively new in eastern Kamchatka and reindeer had never been herded east of the Valaginsky Range until 1976. The mountain areas of eastern Kamchatka were traditionally winter pastures for wild reindeer that had been preserved and carefully hunted by the aboriginal tribes. In winter, most of the Kronotsko-Zhupanovskoye herd moved to the mountain tundra of the Zhupanovsky Dols, which was reportedly the best winter pasture for caribou on the Kamchatka Peninsula. By the end of winter, animals from all over eastern Kamchatka, including animals from the reserve, used the area. However, in low-snow winters up to 15% of the caribou from the Kronotsko-Zhupanovskoye herd stayed in the central part of the Kronotskii Reserve on coastal plain tundra (Averin, 1948; Baskin, 1968).

Table 1. Population dynamics of wild reindeer in Kamchatka, 1980-1997.

Herd	Year							
	1980	1983	1985	1987	1990	1992	1995	1997
Southern	1450	800	550	300	220	150	170	200
Kronotsko-Zhupanovskoye	880	1000	1360	1700	1910	2520	2700	2800
Ozernovsko-Ukinskoye	2100	1700	1150	900	650	450	300	350
Total on the peninsula	4430	3500	3060	2900	2560	3120	3170	3350

Reindeer husbandry began to displace wild reindeer and forced a change in the winter and summer distribution and migration patterns of the Kronotsko-Zhupanovskoye herd within 2 to 3 years after it began. Five years later the winter distribution of the Kronotsko-Zhupanovskoye herd changed significantly, and by 1985, 80% of the herd was pasturing in the Kronotskii Reserve (Mosolov, 1990a; b; Table 2). Part of the problem was that reindeer herders shot at wild reindeer to deliberately disturb them and keep them away from domestic herds.

Discussion

Wild reindeer in Kamchatka have been adversely affected by 2 major factors; unregulated hunting, and competition and displacement by domestic reindeer. Before 1960, when much of Kamchatka was inaccessible to people, wild reindeer were protected by natural refugia. As roads were built for logging, mining and the expansion of reindeer herding, hunting of wild reindeer reached unsustainable levels. Hunting was not easily regulated by authorities because of the profit-motive, the large area involved, and because of politics. As the peninsula was developed and natural refugia were eliminated, the necessity for formal reserves increased, and the protection provided by the federally protected Kronotskii Reserve became more critical. Territorially protected reserves (Nature Parks) are still subject to the influence of local politicians, and may not always provide protection if other valuable resources are found within their boundaries.

Reindeer herding has also been a major conservation problem for wild herds in Kamchatka and other areas of the Far East, and in Siberia as well (Baskin, 1968). Two problems have arisen in connection with reindeer husbandry. Reindeer herders often shoot wild reindeer for food, to sell the meat, or to chase wild herds away from domestic stock, and domestic reindeer compete with wild reindeer

for food. Stock protection has been viewed as a legitimate reason for shooting wild reindeer in the past, and domestic reindeer herding has explicitly or implicitly been given priority over the protection of wild reindeer.

From our studies on the Kronotsko-Zhupanovskoye herd, we arrived at the following conclusions about the influence of domestic reindeer on wild reindeer (Mosolov, 1990a; b):

- After 3 to 5 years' competition, caribou can be expected to leave their traditional winter pastures and may be forced to feed on less accessible parts of the mountain pastures, including the steeper slopes of volcanoes. This leads to higher mortality in young animals.
 - The relatively poor mountain pastures that comprise most caribou range in Kamchatka can be completely destroyed by large herds of domestic reindeer within about 2 to 3 seasons, and it takes 12 to 15 years to restore some parts of the lichen tundra.
- The high level of disturbance (i.e., shooting and chasing) on winter ranges resulted in decreased group size and in structural changes in the population (percentage of male, female, etc.).
- The presence of domestic reindeer herds on spring and summer ranges results in destruction of the spatial structure of the caribou population (calving and breeding areas, and seasonal migration passages are shifted).

In the Kronotsko-Zhupanovskoye herd, access to winter range is critical because of the typically deep snow in the area. Mortality is highest during winter, and up to 45% of calves and 30% of yearlings can die. The main winter ranges of the herd are within the Kronotskii Reserve in the mountain tundra zone, and up to 80% of the herd winters there (Fig. 2). In winter, it is important for wild reindeer to be able to feed undisturbed by hunting and domestic reindeer.

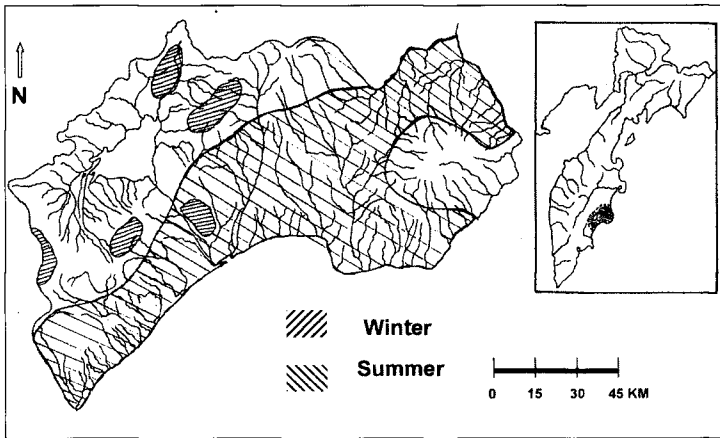


Fig. 2. Seasonal caribou range in Kronotskii Reserve.

Table 2. Proportion of wild reindeer in Kronotskii Biosphere Reserve compared to the total number in eastern Kamchatka (Kronotsko-Zhupanovskoye Herd), 1980-1997.

Year	Caribou in eastern Kamchatka	Caribou in Kronotskii Reserve (% of total)
1980	880	620 (70)
1983	1000	740 (74)
1985	1360	1080 (79)
1987	1700	1460 (86)
1990	1910	1650 (86)
1992	2520	2200 (87)
1994	2650	2300 (87)
1997	2800	2650 (95)

Management Recommendations

Preservation of wild reindeer on the Kamchatka Peninsula, to a large extent, depends on the condition of their largest population—the Kronotsko-Zhupanovskoye herd. The Kronotskii Reserve is key to protecting this herd, but some winter pastures are located outside the reserve, and caribou are vulnerable in these areas. A complete ban on caribou hunting in eastern Kamchatka should be implemented to protect the herd in winter.

In the near future, protection and restoration of wild reindeer in other areas of Kamchatka will be difficult. A more effective system of regulated hunting needs to be developed, and a higher priority will have to be given to maintaining wild herds.

However, as long as 1 viable population exists in eastern Kamchatka, wild reindeer from this herd could be used for reintroduction to other areas when chances for the survival of other herds improve.

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References

- Averin, Y. V. 1948. Land vertebrates of eastern Kamchatka. — *Annals of Kronotskii Reserve* 1: 3–223.
- Banfield, A. W. F. 1961. *A revision of the reindeer and caribou, Genus Rangifer*. National Museum of Canada Bulletin Number 177, Biological Series Number 66. Canada Department of Northern Affairs and Natural Resources, Ottawa.
- Baskin, L. M. 1968. Distribution of mammals on the isthmus of Kamchatka. — *Biological Science* 1: 27–33.
- Fil, V. E. 1973. Ecology of caribou in southern Kamchatka. *Regional Notes*, Vol. 4. Kamchatka Department of Far East Publishing. Petropavlovsk-Kamchatkii, pp. 179–185.
- Hollister, N. 1912. *New mammals from Canada, Alaska, and Kamchatka*. Smithsonian Miscellaneous Collection, 5 (35): 1–8, Washington.
- Mosolov, V. I. 1990a. Wild reindeer of Kamchatka: numbers, distribution and conservation. — *Quotations of the Geography of Kamchatka* 1990: 16–29.
- Mosolov, V. I. 1990b. Material on the ecology of caribou in Kamchatka. *Ecology of game mammals of northeastern Russia*. Far East Science Center. Vladivostok, pp. 24–43.
- Vershinin, A. A. 1972. Distribution and numbers of wild ungulates in the Kamchatka Region. — *Hunting*, Vol. 1. Moscow, pp. 109–127.
- Vershinin, A. A., Vyatkin, P. C., Fil, V. I. & Kaimenov, A. D. 1975. Caribou in Kamchatka. — In: E. E. Syroechkovskii, (ed.). *Wild reindeer of the Soviet Union*. Moscow, pp. 215–225.

THERE ARE SOME BEAR HUNTING PROBLEMS IN KAMCHATKA

