Reindeer Herding in the Northeastern USSR

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Domesticated reindeer herding makes up an important part of the socio-economic lifestyle of the indigenous people in the northern regions of the world. In Alaska, much of the range management technology has been obtained from other northern regions outside the United States. The USSR has been a world leader in tundra and taiga management and reindeer production. The Soviet Far East climatic, soil and vegetation and some research and management programs are directly applicable to Alaska conditions. In the summer of 1990, the authors traveled to the Magadan Province, a portion of the Soviet Far East, USSR, as guests of the Magadan Agricultural Institute (Fig. 1). Funding was provided by the International Conservation Division, USDA, Soil Conservation Service (SCS). The information presented here is drawn mainly from conversations with scientists and reindeer herders in the Magadan Province, and from a recent summary volume on the reindeer industry of the Magadan Province by the Magadan Agricultural Institute (Sistema vedeniya olenovodstva v Magadanskoy oblasti, 1986).

Over half a million reindeer live in the Magadan Province of the northeastern USSR. This thinly populated, mountainous region of arctic tundra and subarctic forests has much in common with neighboring Alaska. The indigenous people of the Magadan Province and other parts of northern USSR have herded reindeer for centuries and continue to do so today. Domesticated reindeer (Rangifer tarandus), known simply as reindeer in North America (Fig. 2), are of the same species as Eurasian wild reindeer and their North American counterpart, the caribou. There are approximately 2 million domesticated reindeer in the Soviet Union and they are distributed across the northern part of the country, near or above the Arctic Circle (66° 30'N Latitude). Reindeer domestication probably originated in southern Siberia, east of Lake Baykal (Banfield 1961), then spread across northern Asia and Europe during prehistoric times. Reindeer husbandry arrived in North America during 1891, when 16 animals from Siberia were brought to Unalaska Island, Alaska (Churchill 1906).

The Tundra and Taiga Environment

The Magadan Province encompasses both treeless arctic tundra and northern coniferous forests known as taiga. The tundra lies in the northern and eastern parts of the Province. Most of this tundra is in the region known as Chukotka. Taiga occurs in the Kolyma region in the more southerly and continental portion of the Province.



Fig. 1. Shaded area on map shows extent of the Magadan province, which is a portion of the Soviet Far East. Note locations of Magadan, Yubileyniy State Farm, Anadyr and Kanchalan State Farm.

Tundra vegetation is low-growing, and from a distance resembles prairie (Fig. 3). However, unlike the prairie, level tundra soils are usually wet due to the perching of water on top of permafrost (permanently frozen ground). The most important plants are cottonsedges (*Eriophorum*), sedges (*Carex*), a few grasses, a variety of forbs, mosses, fruticose lichens (*Cladina, Cladonia, Cetraria,* and *Stereocaulon*) and shrubs such as willow (*Salix*), dwarf birch (*Betula*), blueberry, and lingonberry (*Vaccinium*). Snow covers the tundra from October through May, and Mean January temperatures range from -4 to -31° F. Summers are cool, with mean July temperatures of 41 to 54° F. Total annual precipitation is light, 8 to 20 inches, but fog, clouds, and drizzle are frequent (Yershov 1989).

Much of the tundra is lush and green during the summer, but total forage productivity is low due to the short, cool growing season. Although lichens abound in some areas, only about half the land area is suitable for reindeer grazing; the remainder is comprised of barren to sparsely vegetated mountains, gravel bars, open water, and other non-grazing land. In this area, about 170 acres of tundra grazing land is needed to support a reindeer for a year.

The taiga of the Magadan Province has warmer summers (July mean temperatures 54 to 61° F) and colder winters (January mean temperatures -22 to -40° F), and sunnier weather than the tundra. Soils are generally dry

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Fig. 2. Small herd of USSR reindeer moving across a meadow in the taiga zone, southern portion of the Magadan Province on the Yubileyniy State Farm.

and gravelly, but permafrost is still present nearly everywhere. The vegetation is sparse larch (*Larix*) forest, with an understory of shrub birch, lingonberry, and fruticose lichens (Fig. 4). In places, the lichens form mats over 5 inches thick. Willow shrubs, grasses, and sedges are found along streams and pine (*Pinus pumila*) shrubs occur near treeline. The dry soils of the taiga zone support a lower reindeer density than the tundra ranges; about 220 acres are needed for a reindeer per year.

Reindeer State Farms

The domesticated reindeer herds of the Magadan Province are divided among 39 state farms, and most farms manage between 10 and 35 thousand reindeer. The largest state farms are over 10 million acres. Within each farm, the reindeer are divided into herds of about 2,500 deer for tundra and 2,100 deer for taiga ranges. Each herd is looked after by a brigade of about 10 herders. We visited the Kanchalan State Farm in the tundra and the Yubileyniy State Farm in the taiga of the Magadan Province (Fig. 1).

The Soviet Far East reindeer industry has traditionally

been oriented toward meat production. Reindeer meat is in very high demand and essentially all reindeer meat produced in the Magadan Province is consumed locally. Slaughtering is done mainly in the fall after temperatures fall below freezing, so that mean can be preserved. Domesticated reindeer adult cows weigh about 200 pounds and bull 220–240 pounds. Herders slaughter about half of the current-year calves, plus older cull animals. Calves gain weight rapidly during the first summer, and slaughter of calves before winter reduces the need for winter range.

The lucrative wet-velvet antler market has alerted reindeer producers worldwide to the potential economic benefits of antler production. Reindeer antlers are removed in early summer while the antler is still soft and covered with velvet. After processing, it is sold as a medicinal product in eastern Asia. The Soviets dramatically increased wet-velvet antler production in 1990, because of the foreign currency it brings in. The logistical problems of preserving the perishable wet-velvet antlers and bringing them to market has in the past apparently limited the extent to which the Soviets have exploited this market. Presently, some state farms are starting to develop their own on-farm antler drying facilities and it is expected that significant tonnage increases will be added to the world market.

Reindeer hides are also used commercially to a limited degree. The shank portion of the hide is tanned with hair on and used for winter footwear. Leather from reindeer hides with hair removed is used for various products, and the hair is used for mattress stuffing. Reindeer skins are used by herders to make winter clothing and tents. Other high value by-products include: matured hard reindeer antler, reindeer blood, pizzle, and tail glands.

In addition to reindeer, many state farms in the Magadan Province raise fur-bearers (fox and mink) and hunt marine mammals (seals and walrus). Most farms also have a small dairy herd and some hogs and chickens. Potatoes, hay, vegetable crops, and small grains are grown where possible.



Fig. 3. Tundra area north of Anadyr. Much of the reindeer range of the Kanchalan State Farm is made up of this kind of tundra.



Fig. 4. Taiga of the southern portion of the Magadan Province. Note Larch (Larix) with a lichen (Cladina and Cetraria) understory.

The Herders

The indigenous reindeer herders of Chukotka are the Chukchi. These people have a long tradition of nomadism and reindeer herding that continues today, with modifications introduced by industralization and the Soviet economic system.

The Chukchi are very diligent herders. At least one, and usually two herders, often aided by herding dogs, keep watch over each herd 24 hours a day, 365 days a year. This careful herding is needed to prevent predation by wolves and bears, and to prevent straying of reindeer. In the summer, herders generally live in a canvas tent and move to a new campsite every 3 to 5 days. Movements are made using a track vehicle that carries all provisions and the herder's possessions (Fig. 5). Links with the village are limited to radio contact and occasional helicopter resupplies. In the winter, the deer are less active, and camps are occupied for 10 days to a month. During this time the Chukchi live in their traditional dome-shaped tents called "yarangas" (Fig. 6), which are constructed of a light wooden pole frame that is covered by reindeer hides. These efficiently designed shelters contain a fireplace for heat and cooking, inner sleeping tent walled with furs, and space for storage of household items.

Herders use snowmobiles in the winter, but use of draft reindeer to pull sleds and carry packs continues. Roughly 5 percent of all deer in the region, mainly castrated bulls, are trained for draft use.

Before compulsory education and the organization of centralized state farms, all members of Chukchi society accompanied the herds on their migrations. Now the children attend school in the village and live there most of the year with their mothers. Roughly 40 percent of all herders are bachelors. Married herders are separated for long periods from their families. Wives, children, and elderly retired people often live on the tundra in the summer; the majority that we met were staying in yarangas on the winter range, rather than traveling with the herders. The isolation of herders from a normal social life, coupled with the difficulties of year-round outdoor living in a severe arctic climate, make the vocation of a reindeer herder increasingly unattractive to young people. Our hosts were of the opinion that lack of adequate staffing would probably be the main factor limiting future growth of the reindeer industry in the Magadan Province.

The life of herders in the taiga is similar to that of herders on the tundra. The traditional herders of the taiga portion of the Magadan Province are the Evens. Reindeer herding in the taiga is more difficult than on the tundra because tree cover reduces visibility and predation is more of a problem. For this reason, herds are smaller and fences are frequently used to keep reindeer from straying. In the winter, herders locate strays by walking the perimeter of the herd and tracking strayed animals in the snow.

Reindeer Range Mangement

Range scientists have completed surveys of all the rangeland in the Magadan Province. These surveys are used to compute range capacities, plan range rotations and plan herd migration routes. Because plant productivity is low, stocking rates are low and herds must be moved frequently to prevent overgrazing. Each range type has a preferred season of use; for example, cottonsedge range is preferred for its early green forage in the spring; nutrient-rich forbs and low arctic willows are preferred in summer. Insect harassment can be intense during warm, still days in the summer. Herders seek out windy hilltops, seashore, gravel bars, and snow or ice fields. In the winter, reindeer feed on lichens, on the evergreen portions of certain herbaceous plants and on dried leaves of grasses and sedges. Deep snow prevents the use of many areas in late winter.

Herd migration routes are planned to optimize the season of use of the various range types. Routes are designed to properly rest and rotate range, and to bring the reindeer to slaughtering and calving areas at the proper time. These routes can take a herd over 100 miles from the slaughter point and back in a year.

Lichens are rich in carbohydrates year-round, and hence are particularly valued as winter forage. However, lichens are vulnerable to overgrazing due to the slow growth rates. Soviet scientists recommend resting lichen range for 1 to 3 years after 1 year of moderate use (Andreyev 1967). Scientists in the USSR, as well as in Alaska and elsewhere, are studying rates of lichen regeneration after grazing to determine how much grazing such rangeland can sustain (Fig. 4). Throughout the circumpolar regions, range scientists have expressed concern over the reduction of lichen cover due to overgrazing by reindeer, off-road vehicle damage, and air pollution.

Conclusion

The Soviets have a vast amount of experience with reindeer herding that is applicable to North America. In spite of major differences between the economic systems of the USSR and the USA and cultural differences between the herding people in the two areas, the same dilemma faces the reindeer industry in both countries: to properly manage the fragile arctic range while meeting the social needs of herders. How this problem is resolved will determine the future of the reindeer industry in the USSR, as well as Alaska and other nations.

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