

EFFICIENCY OF COLLECTIVE MOOSE HUNTING IN A FOREST-TAIGA ZONE OF RUSSIA

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ABSTRACT: We discuss results of hunting moose by coordinated drives by various-sized hunting groups in the Kirov region. We report the optimum size of a hunting brigade, its advantages over hunting by individuals or by small groups, and the opportunity for selective harvest by sex and age classes.

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In the forest-taiga zone, the major problem with moose management is the selective harvest of the optimum number of moose rather than the population as a whole. Vast forested hunting grounds in the northern regions of Russia and, especially, roadless portions of Siberia make it extremely difficult to manage moose for sustained yield. Access by helicopters to remote moose hunting grounds has been considered in the press by conservation and game management organizations, but is cost-prohibitive.

The Kirov region is situated in central and southern taiga and broad-leaved forest zones. Only small islands of forests occur in southern portions of the Kirov. Moose hunting is more successful there than in the northern areas, in part, because of better habitat and forest roads. In the northern regions, moose numbers are greater, but access is difficult and harvest quotas are not achieved. In the forest and forest-taiga zone of Russia, moose hunting is one of the most prestigious and favorite activities.

Besides the sporting interest, hunting provides an opportunity to make money and harvest quality meat. Moose are hunted under sporting and commercial licenses. A

sporting license costs 150 rubles (1 US\$ \approx 29 Russian rubles) for hunting a bellowing male and 75 rubles for any moose after 1 October. A commercial license costs 40 rubles for an adult moose and 20 rubles for a calf.

All age groups of animals are hunted and calves compose 20% of the harvest. Meat of moose taken under sporting licenses belongs to the hunter. Under a commercial license, moose meat is delivered to a trading network at a price of 1.5–1.7 rubles per kg. In certain regions, a hunter may sell meat at the retail price of 3.5 rubles per kg. Those terms are very attractive to hunters, especially for urban ones because meat is scarce in Russia. A single hunter or small groups of 2–3 hunters get 1–2 licenses for moose hunting. It appears that such an approach makes moose hunting accessible to most hunters but leads to undesirable harvest selection. Most hunters with 1–2 licenses attempt to take large animals, especially healthy adult females. If there is no license to take calves, then 1 or even 2 orphaned calves may not survive. Glushkov (1985) estimated that every year after a hunting season in the Kirov, at least

400 moose calves were orphaned and most had died by the end of winter.

Hunters use private or rented vehicles for transportation to moose hunting areas. All-terrain vehicles are necessary because it is often impossible to reach hunting grounds by car. Hunters usually use vehicles like "Niva," "LuAZ," "UAZ," or "GAZ-66" and "Ural" for brigades. When traveling along snowy areas, hunters use "Buran" and "Icar" snowmobiles.

STUDY AREA

Our study area was located at the research-experimental hunting grounds (65,800 ha) of the All-Union Research Institute of Game Management and Fur Farming in Kirov. There are 60 members of our institute's hunters collective. During the hunting season, an average of 300–400 moose inhabit our hunting ground. An average of 61.7 animals are taken per season; approximately 1 moose per 1,000 ha. On our hunting ground there are 40,000 ha of forested areas suitable as moose habitat and approximately 5,000 ha of brushwoods in the river flood plain.

A forest area is divided into quarters of 1 x 2 and 2 x 2 km in size. The hunting grounds are crossed by 2 highways: one of them for timber trucks is covered with ferroconcrete slabs, the other one a partially asphalted earth road that becomes almost impassable in autumn. Dirt roads and roads for timber trucks that branch from these highways become impassable for motor transport in deep snow.

Hunting seasons typically ran from 1 October to 15 January (188 days). Over 9 years, 556 moose were taken (range 46–80 per year). Hunters were transported by a "GAZ-66" truck and by tractor. They hunted in 1–2 brigades, which ranged in size from 9 to 55 persons.

METHODS

Hunting is carried out on permanent sites. Most hunters are set up as shooters and several people (4–6) drive moose to the shooters. As a rule, shooting lines are invariable. Hunters use smooth-bore guns or carbines of 7.62 and 9 mm caliber. Shooters with guns stand near overgrown moose paths with little field of vision. Hunters with carbines hunt in open sites, clearings, glades, small meadows, and fields. They may shoot only in the fixed sectors following strict accident prevention rules. Moose drivers wear orange waistcoats.

Of course, not every drive is successful. Sometimes there are no moose. At other times, moose pass through open areas in the drivers' chain, rush between shooters, or run where there are no hunters. In view of this, it seems that the larger the brigade, the greater the probability of shooting a moose. However, the best results were in brigades of 9–15 (an average of 12) hunters. When hunter numbers approached the maximum, moose harvest fell 1.2–1.5 times because a small brigade is more mobile and can make more drives per day. Control of a large brigade is a problem and takes more time for every drive because the size of the area covered increases. The advantages of dressing and loading harvested animals do not compensate for lost hunting time. Since daylight is limited, hunters in smaller brigades may use twilight hours for dressing, loading, and transporting carcasses.

The highest number of moose is taken in November (198 moose per 38 days of hunting). It takes 11 man-days to shoot 1 animal. Although the indices of man-days for taking moose do not greatly differ during the other months (13.3–14.1), November is the preferred month for hunting moose in the Kirov region. Shallow snow depth and frozen ground permit hunters to use transport vehicles successfully. In October hunt-

ing is hampered by the lack of moose tracks, and in December to January by deep snow, hard frosts, and disturbance from previous hunting.

DISCUSSION

A brigade is preferred over individual hunters or hunting by small groups in the forest-taiga part of the country. Using a brigade makes it possible to join the hunters' collective, strengthens cooperative spirit among hunters in the forest, serves to acquire hunting skills, regulates the harvest of age and sex groups, and makes renting transport vehicles easier. With this style of hunting, we harvest 22–32% calves, compared to a 20% average in the Kirov region. That permits us to maintain post-harvest moose numbers at a level of 300–400 individuals and a steady high yield of moose per area.

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