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ANIMAL HUSBANDRY

Effect of Supplemental Winter Feeding of Ungulates on Prolificacy

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Abstract—The potential and actual prolificacy of female wild boars and moose depending on supplemental winter feeding was studied under conditions of the cis-Baikal region.

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The result of natural and intensifying anthropogenic factors on the physiological state of wild boars and moose is significantly changing their prolificacy and other indices on which depend the development of young animals and reproduction. In the past decade specialists and scientists have devoted attention to a study of biotic and abiotic factors influencing the prolificacy of ungulates and their intrapopulation structure. The choice of wild boars and moose for supplemental feeding in the winter is due to objective factors: wild boars (*Sus scrofa sibiricus* Staffe) are multiparous and rapidly growing animals, and moose (*Alces alces*) are the largest ungulates in the Irkutsk oblast and two districts of the Republic of Buryatia. These animals are less demanding on choosing and eating various plant foods—their digestive tract allows processing food wastes.

In 1991 the Irkutsk State Agricultural Academy began studies to determine the prospects of ungulates for the Irkutsk oblast and Republic of Buryatia and their efficient use in the economy. The purpose of the given studies was to investigate the dynamics of the potential and actual prolificacy of wild boars and moose in the region.

METHODS

The field works and laboratory investigations were conducted in the Irkutsk oblast (southern district, the Baikal National Park; middle district, Usol'e; and northern district, Tulun). In the first period (1986–1990) the animals were not fed additionally in the winter, the use of balanced rations of woody-twig feed was

Effect of supplementary winter feeding on prolificacy of female wild boars and moose

Age of females, years	Number					Embryos out of corpora lutea, %	Indices of embryos at 3 months		Number per female	
	total females	barren	pregnant	corpora lutea per female	embryos per female		weight, g	length, mm	male embryos	female embryos
Wild boar sows without supplementary feeding										
2–3	14	5	9	9.8 ± 0.09	4.10 ± 0.08	41.8	647 ± 18.2	209 ± 3.6	2.50 ± 0.06	1.60 ± 0.02
5–6	15	4	11	13.2 ± 0.11	6.90 ± 0.09	46.9	750 ± 16.9	240 ± 3.9	3.40 ± 0.09	2.50 ± 0.05
Wild boar sows with supplementary feeding										
2–3	8	2	6	14.5 ± 0.13	4.70 ± 0.08	44.8	754 ± 15.4	228 ± 3.8	2.10 ± 0.03	2.60 ± 0.07
5–6	15	3	12	14.1 ± 0.13	8.10 ± 0.12	57.7	905 ± 20.9	256 ± 3.9	3.20 ± 0.08	4.90 ± 0.09
Moose cows without supplementary feeding										
2–3	18	6	12	1.61 ± 0.31	1.16 ± 0.14	72.0	226 ± 3.92	240 ± 4.0	0.65 ± 0.15	0.51 ± 0.29
5–8	24	6	18	1.63 ± 0.32	1.22 ± 0.16	75.0	271 ± 4.10	269 ± 4.2	0.69 ± 0.17	0.53 ± 0.30
Moose cows with supplementary feeding										
2–3	12	3	9	1.67 ± 0.34	1.31 ± 0.19	78.0	269 ± 4.01	294 ± 3.8	0.61 ± 0.13	0.70 ± 0.47
5–8	15	3	12	1.69 ± 0.35	1.46 ± 0.21	86.0	318 ± 3.92	329 ± 4.0	0.66 ± 0.16	0.80 ± 0.51

investigated, and feed hoppers were placed in supplementary feeding areas. In the second period (1991–1998) the boars and moose were additionally fed woody-twig feed and sterilized food wastes. Animals without additional winter feeding were 40–45 km from the supplementary feeding areas.

In 1994–1998, 52 wild boar sows aged 2–6 years and 69 moose cows aged 2.5–8 years were shot. The animals were divided into two groups: group I with supplemental winter feeding (the number of sows and cows was respectively 23 and 27) and group II without supplemental winter feeding (respectively $n = 29$ and 42). The potential prolificacy of the animals was assessed by the conventional methods: the number of ovulated corpora lutea of pregnancy and embryos in the uterine horns was determined. The percent of embryos out of the number of corpora lutea was the main criteria for judging potential prolificacy. During statistical processing of the data, the error of the arithmetic mean with a confidence interval at the 90% significance level was calculated.

RESULTS AND DISCUSSION

The number of barren female wild boars and moose supplementarily fed in the winter was lower than that of those not additionally fed by respectively 17 and 11% (table). For wild boar sows with supplementary winter feeding, the number of embryos per sow was higher than without feeding by 0.6–1.2 and potential prolificacy by respectively 3.0–10.8%. In this case, the number of corpora lutea of pregnancy in animals with supplementary feeding increased by 6.5% and number of mature embryos by 23.5%.

In moose cows with supplementary winter feeding, potential prolificacy was higher than without feeding by 6–11% and the number of embryos per cow by 0.15–0.24 (table). In this case, there were 57% single embryos and 43% double, the number of corpora lutea increased by 3.6%. In cows without supplementary winter feeding, the number of single embryos was 84.5% and double 15.6%.

The live weight of 3-month-old embryos per sow with supplementary winter feeding increased on average by 15% and length by 16.7%, and in the moose cows by respectively 14.5 and 18% (table).

Consequently, supplementary winter feeding makes it possible to artificially correct regulating the numbers of ungulates in a region.