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Ecological Features of the Lepus Tolai Population in the Conditions of the Southern Aral Sea Region

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Abstract: ***The article deals with the study of environmental features of Lepus tolai in the conditions of the southern Aral sea region. Lepustolai is a promising species of Central Asian hunting fauna. The daily activity of its various seasons varies. The food of Lepus tolai is a variety of herbaceous and shrubby plants. The preponderance of fingerlings established by us indicates a satisfactory state of hare populations, and the preponderance of adult males may limit reproduction.***

Keywords: Lepus tolai population, daily activity, nutrition, reproduction, ecological structure, dynamics, southern Aral sea region

1. Relevance

Due to the progressive growth of the population, the anthropogenic impact on ecosystems is increasing. A so-called "cultural landscape" is formed, where some species adapt and expand their range, while others reduce their numbers, and in some places disappear [2]. In the current period of development of population ecology, much attention is paid to the problems of studying, preserving and rational use of wild animal populations in the southern Aral sea region. The focus is on species that are traditionally important for hunting in this region, mainly large mammals: predatory and ungulates, fur-bearing animals. In this regard, gaps in the study of the ecology of mammals, which are of particular importance in the hunting economy of the Aral sea region, are most realistically identified.

Lepus tolai is one of the main animal species of the desert, semi-desert biogeocenoses of Central Asia. Therefore, the study of environmental features of Lepus tolai is of both practical and theoretical interest. Meanwhile, the ecological features of the Lepus tolai population in the southern Aral sea region have not yet been sufficiently studied.

2. Research Methods and Conditions

The collection of field material on the ecology of lepustolai was Performed using standard methods [6, 7]. To identify winter habitats of Lepustolai, the method of snow tracking was used [9]. During the snowless period, the biotopic placement of hares was detected by visual encounters.

The number was taken into account at trial sites [8]. When studying the diet of hares, we used the method of tracking the food trail [9], while determining the type of plant being eaten and the number of parts eaten. In the course of in-house processing of nutrition data, the percentage ratio of groups and types of feed for each of the biotopes and for the entire research area was established. Plant species were determined by employees of the plant ecology laboratory of the Karakalpak scientific research Institute of natural Sciences.

3. Discussion of results

Lepus tolai is a promising species of hunting fauna of Central Asia, the use of resources is quite intensive, and there is not enough information on ecology for its rational use.

Lepustolai, unlike many other species of wild animals, not only exists in conditions of increasing economic activity, but also increases its number [3]. In this regard, it is an ideal object for studying the most pressing issues of the mechanisms of species survival in "anthropogenic disturbed landscapes". In the southern Aral sea region, due to the current environmental situation, the study of the biological basis for the protection and rational use of Lepustolai populations becomes relevant and timely. The lack of special studies of the sex and age structure of the hare populations, its biology in various habitats, survival in conditions of intensive livestock breeding, as well as the impact of fishing on population dynamics, does not allow us to develop a strategy for the protection and use of the species.

In the southern Aral sea region, Lepus tolai is widespread. According to researchers, the most characteristic habitats are tamarisk and vinyl thickets along river valleys, sandy mounds overgrown with shrubs and semi-shrubs near reservoirs, salt marshes, deposits, bamboo strips, and saxaul forests[1, 3].

In the Kyzylkums, Lepus tolai most often lives in bumpy Sands and interbug depressions overgrown with shrubs, among sparse saxaul forests with solyanki and sagebrush, in sandy massifs bordering on irrigated and fallow lands. According to our data on Ustyurt, it is found in depressions, thickets of saxaul, on roads among bushes (about one or two individuals on the 6-7 km route).

Lepus tolai usually concentrates in the summer near reservoirs and springs, where it finds more favorable conditions for existence. Lepustolai is a promising species of hunting fauna in Central Asia. it is a crepuscular animal that feeds in the evening and at night. The daily activity of its various seasons varies. The food of Lepus tolai is a variety of herbaceous and shrubby plants. The analysis of more than 122 stomachs showed that their maximum weight reaches

120-130 g, and the fullness of food ranges from 20 to 80% [1, 3].

According to visual observations noted that the rabbits eat the leaves, stems, flowers and rhizomes of plants. In winter, the remains of fruits and dry shoots of shrubs were found in the stomachs, and in summer - only greens. According to our observations, Lepustolai mainly feeds on both wild and cultivated vegetation, including more than 35 species [3]. The most important and frequently used types of food are twigs and bark of various shrubs and semi-shrubs (saxaul, grebenshchik, chingil, sand acacia, Cherkez, poplar, Solyanka, etc.), and the preferred food includes camel thorn, sedge, wormwood, as well as tubers and bulbs of various ephemera.

Vegetative and generative parts of some agricultural crops (alfalfa, cereals, fruit and ornamental trees) are also eaten, especially during the years of mass breeding of hares. However, the damage to agriculture is small. Severe damage to the saxaul fins was not observed. This issue requires further study.

According to scientists, the period of reproductive activity in Lepus tolai lasts from January to August. The number of active males (testis weight – more than 3.0 g) in July is 84.6%, in August – 28.5%. The average weight of the ovaries is also subject to significant changes depending on their functional state[1, 2]. In late August and early September, there is a change in both the weight of the testes and the size of the ovaries, caused by the degradation of the yellow bodies and the attenuation of reproduction.

As experts correctly note, already in mid – February, yellow bodies with a hemorrhage in the center are found in the ovaries-a sign indicating the beginning of pregnancy [2]. Depending on the specific conditions of the year, rut in Lepustolai usually occurs in late January or early February. In addition, not all individuals start breeding at the same time (first the older individuals with large weight groups, and then the young ones of the previous year) [3, 4].

The average litter size changes markedly from spring to autumn. In April – may, the average number of embryos in a litter is 4.4, and in August -3.0. The fecundity of females depends on their weight: the larger the animal, the relatively larger the size of the brood and the number of the latter. The most prolific females weighing 2200 – 2300 g, they usually bring up to 3 litters per year, the average litter size is 5.0 – 5.5. It should be noted that this group of females in the population is small (about 25 – 30%). The vast majority of overwintered females (70 – 75%) with weight groups of 1700 – 2200 g usually bring 1 – 2 broods (3 – 4 hares in a litter) [2, 4].

According to our data, overwintering females during the spring and summer period usually brought one or two broods, and rarely three. As a rule, the third litter appears in late July and August. Participation in breeding of young animals of the first litter of the current year was not noted, although in July some of them are almost equal in size to adults.The preponderance of fingerlings established by us indicates a satisfactory state of hare populations, and the preponderance of adult males may limit reproduction. Such a mobile sex and age composition of the population allows Lepus tolai to withstand high anthropogenic loads, while remaining in the stage of fading depression.

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