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ANALYSIS OF THE FLORISTIC COMPOSITION AND FODDER SPECIES OF PLANTS, EATEN BY SAIGAS

Abstract

The article presents the results of a study of the vegetation cover of the lambing site of the Ural population saigas in the areas of the two regions of the West Kazakhstan region, Kaztalov and Zhanibek.The species composition of the flora of the study area is represented by 75 species from 57 genera and 22 families.

Key words: *saiga feeding, flora and vegetation cover, species, families, genus.*

Among the modern ungulates of steppe zone, saiga is a «living fossil», a representative of the mammoth fauna, which observed 50-70 thousand years ago. Like the mammoth, he lived in the Pleistocene in an open landscape on a vast area from modern Britain in the west to Alaska in the east and from the Novosibirsk islands in the north to the Caucasus and Karatau in the south [1].

The abundance of consumed plant species and large general stocks of phytomass exceeding the needs of herbivorous animals in the feed give an impression of unlimited food supply to animals and independence of the dynamics of their populations from feed resources. At the same time, it is known that the most important role in animals feedingis played not so much by the quantity of food in the pastures as by its quality (nutritional value) [2].

The main goal was to study the vegetation cover of the lambing site of Ural population saiga. The studies of the vegetation cover of the lambing site of Ural population saiga covered the territories of the two regions of the West Kazakhstan region, Kaztalov and Zhanibek.

The initiator and customer of field research is the Republican Public Association «Kazakhstan Association for Biodiversity Conservation».

Flora and vegetation cover were studied by traditional methods.

One of the tasks of floristic research is the flora inventory. Identification of species was carried out by two methods - by the method of selective samples of flora, when the registration of plants was carried out at the same points as the geobotanical descriptions, and by route, during the survey of the boundaries of lambing sites.

The identification of species was carried out using existing floral reports and determinants (Ivanov V.V., 1966, 1989, Flora of Kazakhstan, 1956-1966, Illustrated Plant Identifier of Kazakhstan, 1969-1972, 1988-1997, Flora of Kazakhstan, 1999-2001). The nomenclature of species, genera and families is given by S.K.Cherepanov (1981, 1995).

Species composition of the eaten vegetation was established according to the eating habits. When describing sites and points, saiga damaged plants were taken into account.

Work in the field was carried out according to pre-designed routes on foot and road routes, at the places of saiga concentrations.

A common inventory list of the flora of the surveyed territory was compiled, including 75 species. Two species were identified which included in the Red List of Kazakhstan. 78 herbarium specimens were collected during the expedition work.

The taxonomic analysis of higher plants of the study area is represented by 75 species from 57 genus and 22 families.

An overwhelming majority are angiosperms, of which 116% (12 species) are monocotyledonous, and 84% (63 species) are dicotyledonous. There are 4 families with more than 10 species, only 1 or 19,3%, 8 to 10 species 2 (31,5%), and with a species abundance of 4 to 6 species, representing 36.8% of the species abundance.

The leading families are Poacea, Asteraceae, Chenopodiaceae, Brassicaceae, (table 1), contain in their composition the main part of the species (61,3%) and genus (33,34%) biodiversity of the flora.

Steppe and semi-desert species of plants predominate on the investigated territory. The most numerous are plants of the family of Asteraceae, Poeae, as well as Brassicaceae and Chenopodiaceae.

Table 1 -Systematic characteristics of the flora of the surveyed area

Characteristics of flora	In areas	Percentage %
Number of families	22	100
Number of genus	57	100
Number of species	75	100
Including: gymnosperms	-	-
Angiospermsmonocot	12	16
Angiospermsdicotyledonous	63	84
Average number of species per genus	1,32	2,31
Average number of species per family	3,41	15,5

There are up to 11 (19,3%) plant species, occupies a leading position in the family of Poaceae. The following families are located in decreasing order: the Asteraceae - 10 species (17,5%), the Chenopodiaceae - 8 (14,0%). Such families as Brassicaceae, Boraginaceae, Scrophulariaceae, Lamiaceae predominate both in number of species from 4 to 6, and in a genus ratio, which varies from 2 to 5 (table 2) .

Table 2 - Taxonomic structure of the leading families of the site flora

Family name	Number of genus		Number of species	
	absolute	percentage, %	absolute	percentage, %
Poaceae	9	12,0	11	19,3
Asteraceae	5	6,67	10	17,5
Chenopodiaceae	6	8,0	8	14,0
Brassicaceae	5	6,67	6	10,5
Lamiaceae	5	6,67	6	10,5
Boraginaceae	2	2,67	4	7,0
Scrophulariaceae	3	4,0	5	8,8
Total:	35	40,01	50	77,6

Specific saturation of genus is not high - an average of 1,32 species. The percentage of genera with the number of species above the average is 16 genera (28,01), single-species genera 59,65% (34). The genus of Artemisia, Achillea, and Veronica are represented by 3 species (table 3).

Table 3 - Multiple species of flora of the lambing site

The genus name	Number of species in the genus
Artemisia	3
Achillea	3
Veronica	3
16 generaof 2 species	32
34 generaof 1 species	34
Total	75

The main life forms are perennial grasses, semi-shrubs, annual grasses and shrubs. Semi-shrubs and shrubs of desert communities: *Kochiaprostrate L, Camphorosmamonspeliaca L., Artemisia lercheana Weber ex Stechm, Artemisia pauciflora Weber, Anabasis salsa (C.A. Mey.) Benth. exVolkens.*A large group by the number of species are ephemeroids. The annuals are: *Alýssumdesertórum (Stapf) Botsch, Ceratocephalusorthoceras DC, Lepidiumperfoliatum L., Descurainia Sophia (L.), Webb ex Pranti* and others.

During the spring period, the feeding of saigas of the Ural population is quite diverse. In the surveyed area, 27 species are recorded, damaged by animal feeding. Table 4 shows the structure of fodder flora of saigas and the degree of food consumption by animals for the period of research.

Analysis of fodder plants shows that this group consists of plants from different families. According to our observations, according to the frequency of recurrence (eating) in various plant communities, the leading place is occupied by species of cereals such as Poaceae, *Elytrigia repens (L.) Nevski, Agropyron pectinatum (Bieb) Beauv, Festuca valesiacaGaudin.*

Table 4 - Structure of fodder flora and degree of eating by saigas

Species name	Degree of eating of plants
Ferula caspica	+
Asparagussp.	+
Linosyrisvillosa	+++
Linosyristatarica	++
Artemisia pauciflora	+
Tanacetum achilleifolium	+++
Jurinea multiflora	++
DescurainiaSophia	+
Lepidiumperfoliatum	+
Lepidium ruderale	++
Atriplex cana	+
Kochiaprostrata	+++
Salsolafoliosa	+
Ornithogalum Fisherianum	++
Phlomistuberose	+++
Phlomis pungens	++
Salviastepposa	+
Tulipa Schrenkii	+
Limonium gmelinii	++
Elytrigia repens	+++
Agropyron pectinatum	+++
Festuca valesiaca	++
Poa bulbosa	+
Galiumverum	+++
Galium rutenicum	+++
Verbascumphoeniceum	+
Veronicalongifolia	+

Note: + - insignificant, ++ - average, +++ - much

The next group consists of species from the family of Asteraceae: *Crinitariavillosa L.*, *Jurineamultiflora L.*, *Pyrethrumachilleifolium M.B.*, from the Chenopodioídeae*:Kochia prostrata*, which are the main fodder plants. From the family of the Lamiaceae, three species are noted in varying degrees of eating.

In addition,*Galium rutenicum Willd* from Rubiaceae family (Figure) eat almost everywhere. The remaining species in the diet of the saigas were from medium to low nutritional status.

Preference in the nutrition of these plant species is possible, due to the fact that they grow mainly *Elytrigia repens- Agropyron pectinatum, Linosyrisvillosa -Tanacetum achilleifolium, Artemisia pauciflora* and *Festuca valesiaca - Poa bulbosa -Agropyron pectinatum - Artemisia pauciflora* communities, where the greatest concentrations of animals during lambing are noted.

Figure - *Galium rutenicum*

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ТҮЙІН

Мақалада Орал популяциясы ақбөкендерінің мекендеу жерлері Батыс Қазақстан облысы, Казталов және Жәнібек аумағындағы өсімдіктер жамылғысын зерттеу нәтижелері берілген. Зерттеу аумағының флорасы 75 түр, 57 туыс және 22 тұқымдасқа жатады.

РЕЗЮМЕ

В статье представлены результаты исследования растительного покрова места окота сайгаков уральской популяции на территориях Казталовского и Жанибекского районов Западно-Казахстанской области. Видовой состав флоры исследуемой территории представлен 75 видами из 57 родов и 22 семейств.

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ГИДРОЛОГО-ГИДРОХИМИЧЕСКАЯ ХАРАКТЕРИСТИКА РЕКИ УРАЛ В ПРЕДЕЛАХ ЗАПАДНО-КАЗАХСТАНСКОЙ ОБЛАСТИ

Аннотация

В данной статье представлены материалы по современному состоянию гидролого-гидрохимического режима реки Урал, в пределах Западно-Казахстанской области. Приводятся гидрографическая сеть водосборного бассейна, годовые колебания уровня реки, результаты гидрохимического анализа воды.

***Ключевые слова*:** *река Урал, гидрология, гидрография, гидрохимия, нерестилище.*

Введение. Река Урал, берущая начало с предгорий Уральского хребта в Учалинском районе Башкортостана, протекает по территории двух стран: Российской Федерации (Оренбургская, Челябинская области и Республика Башкортостан) и Казахстана (Западно-Казахстанская, Актюбинская и Атырауская области), впадает в Каспийское море. Река имеет статус межгосударственного, трансграничного водного объекта. Истоки реки Урал расположены на высоте 637 м над уровнем моря у подножья горы Нажимтау и хребта Уйташ в Учалинском районе Башкортостана. Это пять постоянных ключей, которые сливаются в единый поток. Урал является третьей по протяженности рекой Европы уступая по этому показателю только Волге и Дунаю. Общая длина – 2428 км, в пределах Республики Казахстан протяженность 1084 км, общая площадь бассейна – 231 тыс. км^2 [1].

Река является уникальным природным объектом – единственным естественным нерестилищем многих видов рыб Каспийского бассейна. В низовьях реки, а также поднимаясь до среднего течения в границах Западно-Казахстанской области (ЗКО) заходят на нерест проходные и полупроходные виды рыб, так как здесь расположено более одной тысячи гектаров нерестилищ осетровых, и около 5 тыс. га частиковых рыб.

Материалы и методы. Материалы для исследований собирались в 2017 году, по пяти станциям отбора проб на реке Урал в границах ЗКО. Сетка из 5 станций была установлена с учетом возможности более полного охвата изучаемого участка реки. Географические координаты станций отбора проб представлены в таблице 1.