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Endemism, Relicts and Invasion Spices of Animals in Structure of the Biodiversity of the Ciscaucasia

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ABSTRACT

Annotation: The fauna of Ciscaucasia was formed under the influence of the special geographic position of the region on the border of Europe, Asia and the long evolution of groups of animals, during which the habitat conditions changed: climate, relief, and degree of human impact. Singles out several time intervals in the development of the animal world of this territory in the second millennium.

Keywords: Ciscaucasia, endemism, relicts and invasion spices of animals

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INTRODUCTION

The Ist period - X-XV centuries. The population of the forest-steppe led a sedentary lifestyle, engaged in beekeeping and hunting. According to reliable information (the results of the excavations), beavers, otters, marmots, moose and noble deer were kept in the forests. During the Mongol-Tatar invasion and until the XVI century. Because of the raids of the Crimean, Kazan khanates and the Nogai horde, the forest-steppe was depopulated, which favored an increase in the number of animals. In the forest-steppe there were extracted marten, ferret, ermine, otter, badger, fox, wolf, lynx, bear, beaver, hare, wild boar, elk, deer, tour, and bison. In the excavations found the bones of swans, cranes, gray goose, curly pelican, black grouse, etc [1].

The IInd period - the XVI century. Cattle breeding, hunting, fishing is the main occupations of the inhabitants of the steppe zone, and the nomads who lived by the rivers have fishing. The greatest extinction was experienced by ungulates and fur-bearing animals. In the shallow steppes, a bison and a wild horse were met by herds. There is information about the habitat here of roe deer, deer, wild boar, bear and fox.

The IIIrd period - the XVII century. The animal world has changed little, in comparison with the second period.

The IVth period - the XVIII century. The main occupation of the population was farming and hunting for quail, wolf, fox, hare, bear and ermine. In 1780, in the southern belt of the forest-steppe, according to the expedition of the Russian Academy of Sciences, tarpan, saigas, marmot, mole rat, dressing, bustard, giraffe, curlew, gray crane and strepet were distributed. In the fauna, species that adapted to life in the fields and near human settlements predominated. There are first references to the dangers of rodents. Aboriginal steppe and forest species declined, and species such as moose, bison, deer and roe deer disappeared almost completely [1].

V period - the XIX century. Information on the distribution and number of animals during this historical period is much richer, which is explained by the official request of the Senate to all voivodship offices in 1860. According to available data [11,12], in the Stavropol region lived a bison, a wild boar, a giant mole rat, a bear and a jackal. Roe deer were common in the vicinity of Georgievsk. Saigas, widely distributed in the steppe zone, were periodically observed in the Ciscaucasia, penetrating to Kislovodsk. Tarpans disappeared from the territory of the steppe Ciscaucasia after 1860. Ground squirrels and groundhogs are known from rodents. They lived in Ciscaucasia between the upper reaches of the rivers Egorlyk and Kalaus, near of Stavropol, Georgievsk and Aleksandrovsk. In the XVIII-XIX centuries beavers met in the Kuban,

the Kuma and the Terek. Leopard was very rare and was seen once in the village. Vladimirovka [11,12]. Occasionally a lynx was observed in the littoral. Of the birds on the virgin steppes of Ciscaucasia in the XIX century ordinary bustard, snake, gray crane and belladonna [19].

By the beginning of the XXI century. In the territory of the Stavropol Territory, about 530 species of vertebrate animals are known to inhabit [17,18]. Invertebrate animals [20] predominate over vertebrates, according to preliminary data; their numbers reach about 37 thousand species (Table 1).

The biodiversity of Ciscaucasia is unique due to the presence of endemics, relicts and invasive species (about 3% of the total number of native species). Unfortunately, the dynamics of the number of species of the first two categories is associated with a decrease [4], whereas for invasive species the XX century is characterized by a sharp increase in abundance, for example, for the Leptinotarsa decemlineata [16], Hyphantria cunea, grape snail, ringed turtledove, channeled catfish, muskrat, etc. [20].

Table 1. Structure of animal biodiversity in Central Ciscaucasia *

Type	Clases	Number of species	
		Marked	Total
Sarkomastigofory	Sarkode	~25	>55
	Flagellates	~30	>80
Sporozoa	Gregarins	~12	>35
	Coccidial	~25	>50
Cnidosporidia	Myxosporidia	>4	>25
	Actinomoxides	?	?
Microsporidia	Microsporidia	~5	>20
Infuzoria	Ciliated	~35	>500
Sponges	Suckers	~2	>20
	Ordinary sponges	2	>4
Coelenterates	Hydrosoa	5	>9
Flat worms	Ciliated worms	~10	>20
	Flukes	>90	>150
	Monogenea	>20	>40
	Tape worms	~50	~100
	Bruiseurs worms	?	?
Roundworms	Nematodes	~300	~900
	Hair loss	4	~15
	Rotifers	~80	~150
Acanthocephala	Acanthocephala	~8	~25
Ringworms	Piggy	~50	~60
	Leeches	10	>15
Arthropods	Crustaceans	>120	>150
	Centipedes	~25	>50
	Insects	~35000	~42000
	Arachnids	~1000	~2000
	Tihodki	?	?
Shellfish	Gastropoda	~90	~120
	Bivalve	10	~15
	Bryozoans	2	>5
	Cyclostomes	2	2
Tentacle Chordata	Bone fishes	~80	>100
	Amphibians	8	8
	Reptiles	23	23
	Birds	334	334
	Mammals	92	92
Total: 15	37	~37549	~47170

* note: ~ - about,> - less,? - The species composition has not been studied.

The unique animal population of the caves, many of these species are regional endemics. Beetles Duvalius miroshnikovi, Cimmerites kryzhanovskii, Caucasorites kovali - rare species

from the caves of the surroundings of the Stavropol Territory. About 300 species of endemic live on the territory of Stavropol; about 97% of them are invertebrate animals (for example, Caucasian ground beetle, bear lady, Russian lady, etc.). Among the weevils, the endemic of the Caucasus is Brachycerus sinuatus. From ground beetles endemic to the Pontic steppes - Cymindis medvedevi, C. znojkoi. Of the capuchins, the endemic of the Ciscaucasia is Saprinus lutshniki, of the darkling beetles Asida lutosa, Pimelia subglobosa, of the secretive species Cryptophagus spadiceus, C. caucasicus, C. schaitan. Earwigs Forficula kaznakovi and Anechura euxina are mountain endemic species, distributed mainly in the Western Caucasus and have local populations on the territory of the Stavropol Upland [20].

In the Central Ciscaucasia, some representatives of the subtropical fauna live: sultanka, pheasant, pelicans, preserved here since the Ciscaucasia entered the zone of subtropics. Of the relicts of the fauna of the Black Sea steppes, one can note a tolstun of a multi-hummock steppe and a steppe stand. The relic of the European steppe weevils is the Stephanocleonus tetragrammus. Relics of the tropical fauna are Hymenoptera: bee carpentry, spotted copulata, coleoptera - parinda caspian (Parandra caspia). The relic of the Pontic steppes is made of ground beetles: (Cymindis medvedevi, C. znojkoi). Ponto-Caspian relics are from beetles: Pterostichus lyroderus, Scicindela nordmani, Carabus faldermanni, from darkling beetles: Pimelia subglobosa, Asida lutosa, Probaticus subrugosus, from beetles: Dorcadion caucasicus, D. carinatum, from leaf beetles: genus Pallasiola, of weevils: the genus Eusomatus.

There are relic species, for example, Artemia salina is a relic of the Neogene fauna. Neogene relics from beetles: Macrotoma scutelaris. Neogene relicts: the Caucasus is Acalles and Plinthus from the weevil family (Curculionidae). The Caucasian relic of beetles-beetles is a Rhaesus serricollis. Earwig - Forficula kaznakovi – a relic of the Caucasus, is distributed mainly in the Western Caucasus and has local populations on the territory of the Stavropol Upland. Of the octopus relics of the Caucasus, the Oedipoda meridionalis, the entire genus Pecilimon, Chrysochraon dispar, and the cockroach Ectobias vittiventris. Of the class of bone fish: sterlet, Azov puzank - Ponto-Caspian relics, from the birds of the order of the Anseriformes - the duck is a relic of the Black Sea steppes.

Phylogenetic relics of insects are Diptera: Aximuids and Pahineurids inhabit the Central Ciscaucasia. Paleontological relics - representatives of the dragonfly order (Odonata) - relict of the tropical fauna and Orthoptera (Orthoptera) of the almost extinct family of Haglidae, rich in species in the Mesozoic. The relic of the Mesozoic is the raphidiopter (Rhaphidioptera).

The total number of invasive animal species of the Central Ciscaucasia, according to preliminary data, reaches 57 (Table 2).

Table 2. The role of invasive species in the biodiversity of Central Ciscaucasia

Type	Class	Number of species	
		aboriginal	annexationist
Arthropods	Crustaceans	120	7
	Insecta	35000	16
Shellfish	Bivalvia	10	2
	Gastropoda	90	1
Chirdata	Bone fishes	80	31
	Birds	322	2
	Mammals	86	3
Total		35300	57

The proportion of invasive species from the total number of known to date was 0.12%. In the structure of invasive species, the leading place is occupied by fish (54%) and insects (28%), mainly due to the irrigation and cropping activities of humans. In a number of invasive species, some can be identified, leading to significant economic damage, for example, the mollusk Dreissena polymorph [5,20], the Leptinotarsa decemlineata [3], the Hyphantria cunea [16]. Serious threats to local structures of general biodiversity are created by such species of fish as the channeled catfish and the goby-sandpiper.

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Authors contribution:

The paper was carried out by the author on the basis of data collected during the identification of animals. Contributed to the theoretical substantiation of faunistic research. The work was carried out at the expense of Pushkin, Ilyukh.

Conflict of interest:

In the article, there is no information capable of provoking conflicts of interest, with the exception of information contained in previously published articles by the Pushkin S.V., Ilyukh M.P.

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