ABSTRACTS

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The integrated database of geographical distribution of Darevskia rock lizard species in the Caucasus and Asia Minor

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Интегрированная база данных географического распределения видов скальных ящериц рода Darevskia Кавказа и Малой Азии

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Knowledge of the geographical distribution of parthenogenetic (D.dahli, D.rostombekowi, D.armeniaca, D.unisexualis) and their parental bisexual (D.valentini, D.portschinskii, D.raddei (D.nairensis), D. Mixta) species is important for understanding their biology, for modeling ecological niches and identifying potential range due to accelerating anthropogenic warming and global climate change. Thermoregulation of ectothermic lizards is mainly realized due to the heat received from various thermal factors of the environment. This feature makes them more sensitive to climate change. The new data obtained will allow the broadening of scientific notion of the ecology and speciation of Darevskia lizards, and will also help to model possible ways of adaptation of organisms to extreme environmental conditions. The common descriptions of the habitats of Darevskia rock lizards are often moved from one publication to another without verification. The purpose of our work is: 1) to create a valid database by developing and carrying out computational experiments with geographic information models by the example of bisexual and parthenogentic species; 2) to gain new knowledge about the ways and mechanisms of the emergence of hybridization centers for parthenogenetic species and the role of biotic

and abiotic factors in the processes of reticular evolution of vertebrates. The main objectives of the study include the creation of geoinformation models represented by the electronic library of vector maps based on the distribution data of parthenogenetic and their parental species and their contact zones:

1. The model of distribution of 4 parthenogenetic and 4 parental species of rock lizards and the location of possible contact areas in the past, present and in the future;

2. Models of fundamental ecological niches of each species and identification of the main factors influencing the distribution of each species;

3. The model of the evolution of contact zones of parental species and the territory of possible emergence of new forms of rock lizards;

4. The model for predicting changes in the ranges of lizards and their contact areas in the future;

5. The model of the definition of modern zones of possible formation of a new species as a result of stepwise hybridization. The results obtained will allow a correct interpretation of the data of molecular genetics and cytogenetics, and are of essential value for understanding the mechanisms of reticular evolution.

An example of the data analysis for rock lizards of the genus Darevskia species shows that standard descriptions of the range of species can include false or ambiguous data. Creating a database of the species presence and documenting the locations is the only way to obtain reliable information on the range of species to understand the mechanisms of the reticular evolution in past, present and future. This study was supported by the RFBR № 18-34-00361, № 17-00-00427.

The use of matematical methods in analysis of antibioticresistans of microorganisms of lake Baikal

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