ASSESSMENT OF THE IMPACT OF CLIMATE CHANGE ON THE ECOLOGY OF THE COMMON VOLE IN ARMENIA

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Introduction: According to the latest forecast, by 2030 the temperature in the territory of Armenia is predicted to rise by 1^{o}C. According to the latest data, this increase has already taken place. According to the «Third National Communication on Climate Change», by 2100, climate changes are expected to cause the average annual temperature to increase to 10.2°C in Armenia. This exceeds the baseline by 4.7°C and precipitation is expected to decrease by 23%. Our study aimed to use climate forecasts made by the Intergovernmental Panel on Climate Change under the A2A scenario for 2050 for the country of Armenia to assess how these changes will affect the habitat and populations of the common vole as the main carrier of especially dangerous infections, and hence the epizootic potential these territories.

Materials and Methods: The *WorldClim* temperature and precipitation database was used, which is a set of global climate layers with a spatial resolution of about 1 square kilometer. This data was used for mapping and spatial modeling in geographic information systems. For spatial analysis, the database on the location of the common vole population in Armenia from 1981 to 2021 was also used. Separate layers were created from these sources and habitat areas with extreme and favorable habitat conditions for the common vole under climate change were differentiated.

Results: It is predicted that climate change will lead to the expansion of regions that are classified as desert, semi-desert, arid, and sparsely forested, which will lead to the movement of desert ecosystems up the mountain slopes by 250-400 m. In the area of dry mountain zones and areas bordering the mountain steppe zone, populations will either have to adapt or migrate to cooler and wetter habitats, for example, with access to the northern slopes. Areas of the meadow-steppe and lower subalpine belt, most densely populated by voles, are currently found at an altitude of about 2500 m. It is possible that some isolated populations will survive in lower areas, but probably only along the banks of large rivers, where vegetation will remain in sufficient quantities to feed them. Based on the overall reduction in size and isolation of many populations of common voles, we can assume a decrease in the number of epizootics in those places where they were previously recorded, and vice versa, an increase in the number of epizootics of especially dangerous infections in those places where the areas of the main carrier will remain.

Conclusions: Based on this study, the authors tried to predict whether climate change will affect common vole ranges and the occurrence of epizootics. The number and distribution of the main reservoir of plague, tularemia, and other especially dangerous infections are predicted to be significantly reduced. The range of the remaining vole population will decrease and will be limited mainly to high mountain zones, above 2400-2800 meters above sea level. The current mountain-steppe and meadow-steppe ecosystems will be shifted to areas that are currently subalpine and alpine. According to the authors, additional surveillance and research are needed to document changes in the ecology of zoonotic diseases, as well as closer collaboration between human and animal health authorities for risk assessment.