

ABOUT EXTINCTION ALARM SITUATION FOR TWO SPECIES OF LIZARDS IN ARARAT
VALLEY OF ARMENIA

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О КРИТИЧЕСКОЙ СИТУАЦИИ ДЛЯ ДВУХ ВИДОВ ЯЩЕРИЦ В АРАРАТСКОЙ ДОЛИНЕ АРМЕНИИ

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Among outstanding fauna of Armenia two species of lizards (*Phrynocephalus horvathi* (Mehely, 1894) and *Eremias pleskei* Bedriaga, 1907) are considered to be facing an extremely high risk of extinction in the wild and need in immediate conservation activity. Currently both species are deadly threatened on a world-wide scale and listed in IUCN Red List of Threatened Species as Critically Endangered (A2 ver 3.1.). They also included in the Red Book of Armenia.

Ph. horvathi is narrowly distributed in the middle part of Araks river valley (Armenia, Nakhichevan), in E Anatolia and in NW Iran (northward of Lake Urmiah) (Arakelyan et al., 2011; Melnikov et al., 2008). It is small lizard with maximal size of body 52 mm (Darevsky, 1960). Habitats of the lizard are preserved as small sites of semi-desert surrounded by agrarian lands. In the vicinity of Vedi town (Ararat region) the most usual habitat for this species is represented by the few remaining spots of sandy semidesert covered with scattered xerophytes grass and bushes (typically *Calligonum polygonoides* Linnaeus, 1758).

The area of *E. pleskei* is restricted to a small territories of Ararat plain and NW of Iran. The most usual habitat for this species is sandy desert zone covered with rare xerophytes grass and bushes. Rarely this species meets on stony parts of sagebrush semidesert.

There are restricted data on current distribution and status of these species. The last publication was devoted to GIS mapping of known localities for *Ph. horvathi* (Ananjeva et al, 2006). The main aim of our study was to carry out field surveys to fill gaps in knowledge on these topics.

Material and Methods

The field research was carried out for clarification of distribution of endangered species of reptiles (*Ph. horvathi* and *E. pleskei*) focusing first of all on “absent/present” feature. Surveys were made during 2012-2013 in April-July and in September. Also we have gathered the requisite data about human settlements and infrastructure. We transformed coordinates of historical sightings and uploaded them into the personal GPS navigation unit (Garmin, Decota 10) to make easier search in the field. Each site was visited and investigated using visual encounter survey (Crump, Scott, 2004; Tadevosyan, 2006a). Counts were carried out along predefined transects. In place of presence, the lizards were counted on random squares (20x20 m) basis (Tadevosyan, 2006a). The animals were classified by age and sex classes. The field data obtained by direct observations, literature publications from 1938 till now, and old sightings have been generalized in one database. Thus we established a baseline of data through surveys. The data was mapped with GIS system on Arc GIS 10.2. On base of field survey database and maps which include roads, mining, villages’ overgrazing areas, temporary pastures, we have outlined the zone of the most tension in areas of human-wildlife conflict. Finally we have highlighted on maps the zones of the current presence of Critically Endangered species of lizards for future conservation.

Results and Discussion

Our field surveys have shown that currently both endangered species are disappeared in most of localities from where they were recorded in the past, due to habitat loss by cultivation of semi desert habitats and urbanization. Today from 27 localities previously recorded in Ararat valley (Chernov, 1939; Darevsky, 1957; Ananjeva et al, 2006, Tadevosyan, 2006 a, b) the *Ph. horvathi* were found only in 3. The population density of these three isolated populations was extremely low. In Ararat province we found lizards only in one population in the “Goravan Sands” Sanctuary. T. Tadevosyan (2006a) estimated a density of this population as 11 lizards per hectare. Our census made by same method has shown the deep decreasing of density of population where met 4 individuals on area of 2 hectares or 1-2 lizards on hectare. Next two localities were found in Armavir province. One is situated near city Armavir, where A. Aghasyan (1985) was calculated 1.5 ind./hectare. Our census of this population has shown 1 lizard on 4.5 hectares. During spring 2013 we revealed one tiny population of *Ph. horvathi* in Armavir province which was not noted in literature source. Here we met only one female on area of 6.4 hectares. Both populations are surrounded and isolated by agricultural land and, furthermore, was imminently threatened by planned ploughing up.

Our study of distribution of *E. pleskei* has shown that 8 from 9 populations noted in literature (Chernov, 1939; Darevsky, 1957; Tadevosyan, 2006a,b) in Armavir and Ararat provinces completely disappeared. This species we were found in one locality at Ararat Province on the territory of “Goravan Sands” Sanctuary, where they were abundant on very restricted area. According to census of Tadevosyan (2006a) who surveyed 35 random quadrates in March-June, 2005, 50 individuals per hectare were calculated. We revealed higher density of lizards (80 individuals per hectare), but they were concentrated on small area of about 3 hectares.

Urbanization and development of infrastructure are one of the leading causes of species extinction. According to GIS analyses almost all populations with exception of 2 sites are located near human settlements and are under strong anthropogenic press which is the main reason of

disappearing of lizards there. The construction of road in overpopulated area of Ararat plain is the next reason of destruction of habitats of rare reptiles. The dense grid of main and secondary roads is destroyed directly their habitats. Moreover, many reptiles are killed every year on our roads and highways. Currently existing populations are located near the roads. Agriculture is also one of the main threats for the ecosystems here with more than 90% of valley converted and plowed for agricultural use. The land which was at once plowed became not suitable for *Ph. horvathi* and *E. pleskei*. The intensive farming along with the introduction of large companies and land transformation under gardens and vineyards has led to the decline of the lizards' population in their entire distribution area which may fully destroy all living populations. The last populations are also situated very close to agricultural land.

The distribution of these species is highly fragmented and extremely limited in total extent. *Ph. horvathi* inhabit only in three sites, while *E. pleskei* were found only in one site same with *Ph. horvathi* in "Goravan Sands" Sanctuary. Thus, we can assume that situation of surviving of critically endangered species of lizards worse than we expected and current extinction rates are exceedingly high, raising concerns about future surviving of these two species. They need in urgent conservation measures.

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