

THREATENED *OMMATOTRITON OPHRYTICUS* BERTHOLD, 1846 IN ARMENIA: STATE OF POPULATIONS, HABITATS CONDITIONS, THREATS AND CONSERVATION ACTIVITIES

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Abstract. *Ommatotriton ophryticus* Berthold, 1846 is listed in the Red Data book of Armenia as CR and in IUCN Red List as NT. In Armenia this species is presented by isolated populations inhabiting in small, degraded habitats, none of which is included in the Protected Areas network. The results of actions, concerning with the measures of conservation of *Ommatotriton ophryticus* in Armenia are represented in the given report.

Keywords: *Ommatotriton ophryticus*, Armenia, conservation measures

Caudate amphibians in Armenia are represented by one species – *Ommatotriton ophryticus* Berthold, 1846 (Gumilevsky, 1939; Eghiasarian, 2008; Arakelyan et al., 2011), estimated as «Critically Endangered» in the Red book of the Republic of Armenia (Aghasyan, Kalashyan, 2010). Despite of presence of numerous publications where this species was mentioned or a manuscript specially dedicated to the newt (Gumilevsky, 1939; Danielyan et al., 1998; Eghiasarian, 2007; Aghasyan et al., 2009; Arakelyan et al., 2011; Stepanyan et al., 2014) many questions of its distribution, peculiarities of biology, environmental conditions remain unsolved. Our data obtained during implementation of the RSG Project N 13769-1 filled some existing gaps (Stepanyan et al., 2014). It was shown that newt is presented by a few populations in Lori province, population number is critically low and habitats are more or less degraded. No conservation measures (both *in-situ* and *ex-situ*) are applied for newt and no habitats are presented in the existing Protected Areas. Taking into account above mentioned, elaboration and implementation of conservation measures of *Ommatotriton ophryticus* is extremely important.

Several results of actions, concerning with elaboration and implementation of the measures of conservation of *Ommatotriton ophryticus* in Armenia during the implementation of second RSG Project N 19622-2 are represented in the given report.

Field surveys were carried out in May-September, 2016 and March-June, 2017. Eight expeditions were carried out in Lori (the vicinities of Alaverdi, Stepanavan, Tashir towns, Dsegh, Shamlugh, Akhtala, Teghut, Mets Ayrum villages) and Tavush (vicinities of Dilijan, Idjevan towns,

Hovk, Aygut, Enokavan, Kayan, Sevkhar, Kirants villages) Provinces of Armenia.

Visual registration of newt individuals during breeding period at day time within the breeding sites was done to survey the area for the newt individuals using transects method (perimeter transects) (Langton et al., 2001; McCune & Grace, 2002; Lewis et al., 2007). For accounting of adult newts at the breeding period the trapping methods (bottle or funnel trapping, netting) were applied. Searching a pond between shortly after dusk and midnight and night period was used for detecting adult newts (Langton et al., 2001). Searching of refuges during the day to detect newts was done. Dip netting of larvae and search for hiding juveniles (Langton et al., 2001), as well as egg searching were done to estimate productivity /fecundity (Langton et al., 2001).

The obtained results are presented below.

Habitats surveys. During period of 2016-2017 22 localities in Tavush and Lori Provinces, revealed in the framework of previous project as well as several newly revealed habitats suitable for newt survival but not yet inhabited were surveyed (Figs. 1, A-B, and Fig. 2). Surveys were carried out in Debed, Tashir, Aghstev, Getik rivers' basins. Among these 4 were inhabited by newt (including those, where conditions were unsuitable), 8 were suitable for newts but not inhabited yet and 10 were both uninhabited and not suitable for further species introduction.

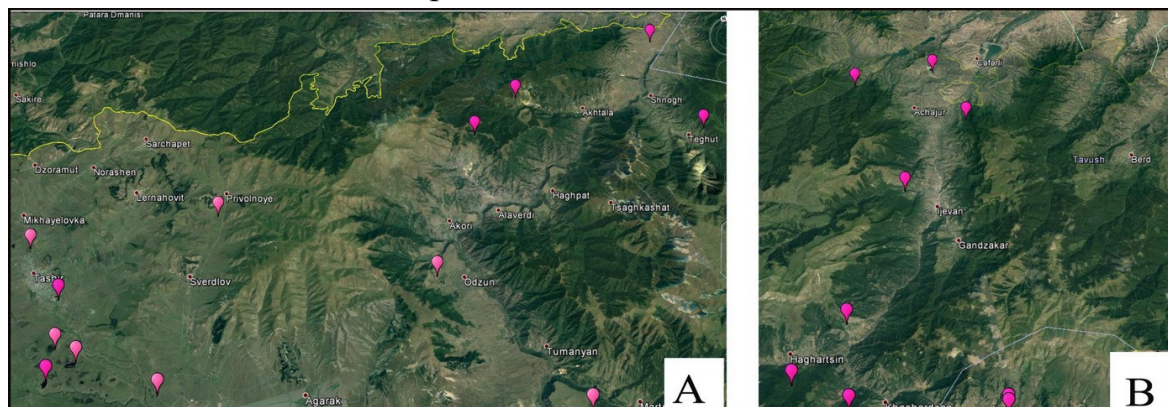


Figure 1. Surveys' localities: **A – Lori Province** (vicinities of Alaverdi, Stepanavan, Tashir towns, Dsegh, Shamlugh, Akhtala, Teghut, Mets Ayrum villages; **B – Tavush Province** (vicinities of Dilijan, Idjevan towns, Hovk, Aygut, Enokavan, Kayan, Sevkhar, Kirants villages)

Abundance of newts detected in 2016 was lower in comparison with data collected in 2013-2014. During the day observation of the newt from 2 (Shamlugh population) to 3 (NE of Tashir) and 4 (NW of Alaverdi population) individuals per day were detected in May 2016. This can be explained by unusual weather conditions during survey period. In spring 2017 abundance was rather high (from 4 (NE of Tashir) to 8 (NW of Alaverdi population) per day in May).

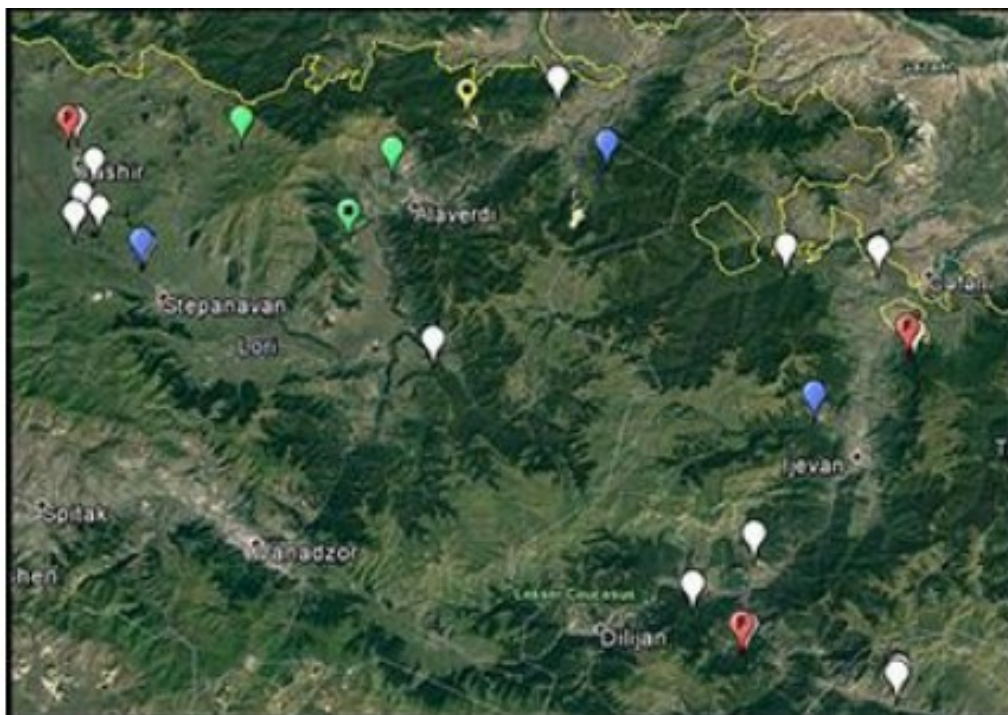


Figure 2. Surveyed habitats of *Ommatotriton ophryticus*. White place mark indicates the absence of a newt in a present locality; green - newt lives there and conditions are less good; yellow - newt lives there but conditions are bad; blue - newt was released by us; red - newt will be released in the future.

Assessment of environmental conditions revealed that none of the localities inhabited by newt could be considered as ideal. Even those which assessed as suitable were threatened. Several factors affected the degradation of the habitats, such as overgrowing and shoaling of ponds, forest cuts in ponds surrounding which can lead to worsening of hydrological conditions as well. High abundance of predators - native *Pelophylax ridibundus*, *Natrix natrix*, *Natrix tessellata*, *Alburnoides eichwaldii*, *Gobio sp.*, somewhere birds (for example, *Alcedo atthis*) is another threatening factor for newts. The coastal part of several water bodies was littered by household garbage, being popular places for picnics of local people. Additionally, newts are object to pet trade.

Breeding activity: 10 adult pairs of *Ommatotriton ophryticus* for formation of laboratory (*ex-situ*) populations were collected at the beginning of summer of 2016 and spring of 2017. Females lay eggs, which are singly attached to aquatic vegetation or on stones in the aqua-terrarium. The eggs were incubated in the lab, larvae were hatched, grown and released into the suitable habitats.

Introduction activity: Over 30 adults, 20 two years old and 10 youngest individuals of newt both from populations living in inauspicious habitats (continuous shoaling of water-bodies, pollution, high density of main juvenile predator – *Pelophylax ridibundus*, etc.) and grown in the laboratory

were re-placed into comfortable habitats newly revealed in Lori (2 localities) and Tavush (1 localities) provinces.

Public awareness rising programs were carried out with following activities: meetings with authorities and the lectures concerning the «Caudate amphibian species in Armenia» and «The monitoring and conservation of newt» themes with preparation of slide-shows and distribution of the informational materials (posters, calendars, flyers). The program was done in Secondary and Higher schools of 8 settlements. The participated students were trained in both field and laboratory methods of Red Data book Armenian amphibians' trapping, housing, breeding, etc. They got experience in presentation of conservation issues in the schools and local communities as well.

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