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TWO NEW CASES OF PAEDOMORPHOSIS IN THE CAUCASIAN NEWTS: *Ommatotriton ophryticus* (THE FIRST RECORD) AND *Lissotriton vulgaris lantzi*

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A female of the Caucasian banded newt, *Ommatotriton ophryticus ophryticus* (Berthold, 1846) with well-developed external gills was found in Malaya Ritsa Lake, Abkhazia, the western Caucasus. It is the first record of paedomorphosis for the genus. A paedomorphic *Lissotriton vulgaris lantzi* (Wolterstorff, 1914) and an overwintering larva of *Triturus karelinii* (Strauch, 1870) were captured in the settlement Machary, the eastern vicinity of Sukhum Town, Abkhazia. The geographic distribution of paedomorphic newts and overwintering larvae of *Ommatotriton ophryticus ophryticus* and *Lissotriton vulgaris lantzi* are mapped.

Keywords: Amphibia, Salamandridae, paedomorphosis, *Ommatotriton ophryticus*, *Lissotriton vulgaris lantzi*, the Caucasus.

The paedomorphosis (or neoteny according to some authors) as a particular phenomenon of heterochronic development of animals is widely distributed among urodelan amphibians. In the family Salamandridae the paedomorphosis is known for the newt genera *Notophthalmus*, *Pleurodeles*, *Lissotriton*, *Mesotriton*, and *Triturus*. Since the 19th century, the majority of cases (single individuals and populations) were registered in the species of *Mesotriton* and *Lissotriton*, formerly assigned to the genus *Triturus sensu lato* (Litvinchuk et al., 1996; Denoël, 2007). However, no record of paedomorphic newts of the genus *Ommatotriton* was published.

Recently, overwintering larvae of the Caucasian banded newt were observed in Abkhazia, the western Caucasus (Malandziya and Vasilenko, 2002). We recognized two species of the genus *Ommatotriton* Gray, 1850 distributed in Middle Asia and the Caucasus, namely: *O. ophryticus* (Berthold, 1846) and *O. vittatus* (Gray, 1835), each with two subspecies (Litvinchuk and Borkin, 2009). Therefore, the Caucasian populations should be treated as *O. ophryticus ophryticus* (Berthold, 1846).

In spring 2007, a paedomorhic female *O. o. ophryticus* was found by Oleg Novikov in Malaya Ritsa Lake, Ritsa Relic National Park, Abkhazia, among numerous normal adult newts. The animal (total length 103.7 mm, body length 54.8 mm) reached, in fact, the same size as transformed newts (Fig. 1). The female had well-developed external gills, even dorsal fin and a little lighter coloration (Figs. 1 and 2). The newt was taken to the laboratory in Krasnograd Town, Kharkov Province, Ukraine, where it lived about one month. Unfortunately, its death happened in the summer of the same year (2007), without obvious causes. Currently, the specimen is keeping in the collections of the Department of Herpetology, Zoological Institute, Russian Academy of Sciences, St. Petersburg.

As a rule, paedomorphic newts were observed in oligotrophic water bodies with abrupt shores. Such water bodies also provided sufficient amount of food both for adults and larvae, and lacked possible predators. Importantly, a water body must be not frozen down at bottom in winter and to dry up in summer (Litvinchuk et al., 1996; Denoël, 2007). Malaya Ritsa Lake demonstrates all these characters. Indeed, this oligotrophic lake with abrupt shores is situated at the altitude of 1235 m a.s.l. and surrounded by the primary beech forest. The lake length is about 500 m, the maximum width is 275 m, and the maximum depth is 76 m. The water in the lake is quite cold and very transparent because the water level is supported by thawed influx. In addition, Malaya Ritsa Lake contains no fish (Chikovani et al., 1990).

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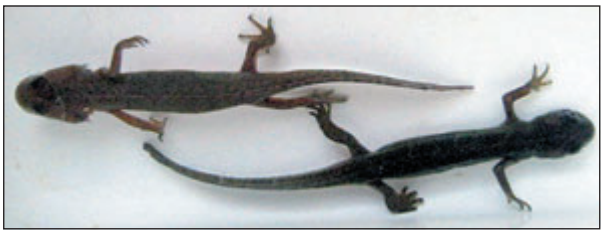

Fig. 1. Paedomorphic (left up) and normal (right down) females of *Ommatotriton ophryticus ophryticus* from the Malaya Ritsa Lake, Abkhazia, the western Caucasus.

Fig. 2. A paedomorphic female of *Ommatotriton ophryticus ophryticus* from the Malaya Ritsa Lake, Abkhazia, the western Caucasus.

Apart from the paedomorphic female, other amphibians were also registered in Malaya Ritsa Lake. These were normal adult individuals of *Ommatotriton ophryticus ophryticus*, *Lissotriton vulgaris lantzi* (Wolterstorff, 1914), the lake frog *Rana ridibunda* Pallas, 1771 as well as a tadpole of the Caucasian parsley frog, *Pelodytes caucasicus* Boulenger, 1896. The majority of amphibians including newts inhabited sunny near-shore zone of the lake at the depth down 3 m.

Formerly, a paedomorphic *Lissotriton vulgaris lantzi* has been found in Malaya Ritsa Lake (Tuniyev, 2004). In Abkhazia, numerous paedomorphic individuals of this subspecies (Figs. 2 and 3) were already observed in an artificial pond near the village Ldzaa (= Lidzawa) situated in the vicinity of Pitsunda Peninsula (Rudyk, 1989; Litvinchuk et al., 1996). One more paedomorphic specimen was captured by Dmitry V. Skorinov, May 26, 2006, in the settlement Machara near the eastern vicinity of Sukhum Town, Abkhazia. The paedomorphic female (total length 70.0 mm, body length 33.5 mm) was at about the same length as normal adult individuals ($n = 5$, total length 63.9 – 76.1 mm, body length 32.0 – 37.3 mm). The animal had well developed external gills, larval fin and paler body coloration (Fig. 4). The female inhabited a flooded basement section of undeveloped house. The size of a section was equal to about 3.5 × 3.5 m, with water depth about 0.6 m. The house sections were surrounded by plumb walls having in some places lower section connections. Apart from paedomorphic female *Lissotriton vulgaris lantzi*, an overwintering larva of *Triturus karelinii* (Strauch, 1870), freshly hatching larvae and normal adults of *Lissotriton vulgaris lantzi* and *Triturus karelinii* were found.

Fig. 3. The records of paedomorphic (**1 – 3**) and overwintering larval (**4**, **5**, black) specimens in the western Caucasus: *Ommatotriton ophryticus ophryticus* (blue) and *Lissotriton vulgaris lantzi* (red). **1**, Malaya Ritsa Lake, Abkhazia (Tuniev, 2004; our data); **2**, the village Ldzaa (= Lidzawa), near Pitsunda Town, Abkhazia (Rudyk, 1989); **3**, the village Machary, near Sukhum Town, Abkhazia (our data); **4**, the stanitsa Kholmskaya, backwater of Khabl' River, Krasnodar Kray, Russia (Ostrovskikh et al., 2002); **5**, Karachai-Cherkes Republic (formerly the territory of Stavropol' Kray, Russia) (Gorovaya and Tertyshnikov, 1983).

Fig. 4. A paedomorphic female of *Lissotriton vulgaris lantzi* from the village Machara, Abkhazia, the western Caucasus.

Besides Abkhazia, two cases of overwintering larvae of *Lissotriton vulgaris lantzi* were reported from Stavropol' Kray (Gorovaya and Tertyshnikov, 1983) and the vicinity of the stanitsa Kholmskaya, Krasnodar Kray (Ostrovskikh et al., 2002).

As far as we know, confirmed records of paedomorphic crested newts are scarce (Litvinchuk and Borkin, 2009). Importantly, paedomorphic individuals of large-bodied newts (*Triturus* and *Ommatotriton*) as a rule co-existed with more numerous paedomorphic *Lissotriton vulgaris*. We suggest that such an association would be not occasional. Larger paedomorphic individuals may feed on smaller paedomorphic *L. vulgaris*. Throughout the winter they may attack wintering larvae of both this and own species as well, because other prey subjects of suitable size are rare.

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