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Morphological and ecological features of peripherial local populations of *Bufo raddei* Str. within the north - western part of their habitat

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The number of features related to morphology, distribution of habitats, biotopical distribution, and biology of species reproduction (within the territory described) of the Mongolian toad (*Bufo raddei*) which inhabits western shore of Lake Baikal were described. In this paper on the basis of the results of field studies in 1997, 2001, 2005, 2012 the original data on reproduction and chemical composition of the spawning ponds, used by frogs for reproduction, is presented. It was found that reproduction of species occurs in the salty steppe (14-45 g/L) lakes in the west part of the Baikal basin.

Keywords: *Bufo raddei*, distribution, ecology, mineralization of spawning waters, Mongolian toad, morphology, relict population, reproductive biology

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Introduction

Mongolian toad (Bufo raddei, 1876) has an extensive Asian habitat which covers Mongolia, North China, Korea, East Russia and it also includes the territory of the Baikal region and the Far East (Liu and Hu, 1961; Kuzmin *et al*., 1988; Kuzmin, 1999). West coast of the Lake Baikal (Цest Pribaikalje) is a peripheral north-western part of habitat for this species. The distribution of this species here has a relict character (Litvinov and Gavrilova, 1960; Litvinov and Shvetsov, 1967; Litvinov and Shvetsov, 1970; Pleshanov and Pleshanova, 1990; Durnev *et al*., 1996).

Its habitat is confined to the steppe landscapes. Large steppe patches remained at the western part of the Lake Baikal in Priolkhonje (Tazheranskaya steppe) and at the Olkhon Island (Fig. 1). They are relict elements of the Central Asian desert-steppe region (Litvinov and Shvetsov, 1970). The Mongolian toad which was discovered there in 1959 and in 1977 (Litvinov and Gavrilova, 1960; Litvinov and Shvetsov, 1967; Litvinov, 1977) is an outstanding representative of the Central Asian and Daur Mongolian fauna (Litvinov and Shvetsov, 1970).

This species is spread unevenly within West Pribaikalje. There are 2 foci of habitat: the main and bigger one is in Priolkhonje region and a small island focus is located on the largest island of the Lake Baikal-Olkhon. The habitat of the species on the western coast of the Lake Baikal is presented by several isolated populations. Being located at the northern boundary of the area the species is highly vulnerable (Litvinov and Pyzhyanov, 1981; Durnev *et al*., 1996; Litvinov, 2002; Tropina *et al*., 2007; Tropina and Sklyarova, 2012). During the last decade the number of species has been gradually declining (Tropina and Sklyarova, 2012). Being a rare, relict, and endangered species, the Mongolian toad, is listed in the regional Red Data Book (Durnev and Tropina, 2010).

Materials and Methods

Studies were conducted on the territory of West Pibaikalje (in Priolkhonje and on the Olkhon Island) during the period 1996-1998 and 2005-2012) and in East Pibaikalje in the summer season of 1997, downstream of the river Selenga, surrounding area of settlement Kabansk. Data collection took place in daily, seasonal (May-September) and annual dynamics. Zoophenological observations were carried out on temporary and permanent routes and sample sites. The research collected data on the habitat of the Mongolian toad in Pribaikalje region, getting

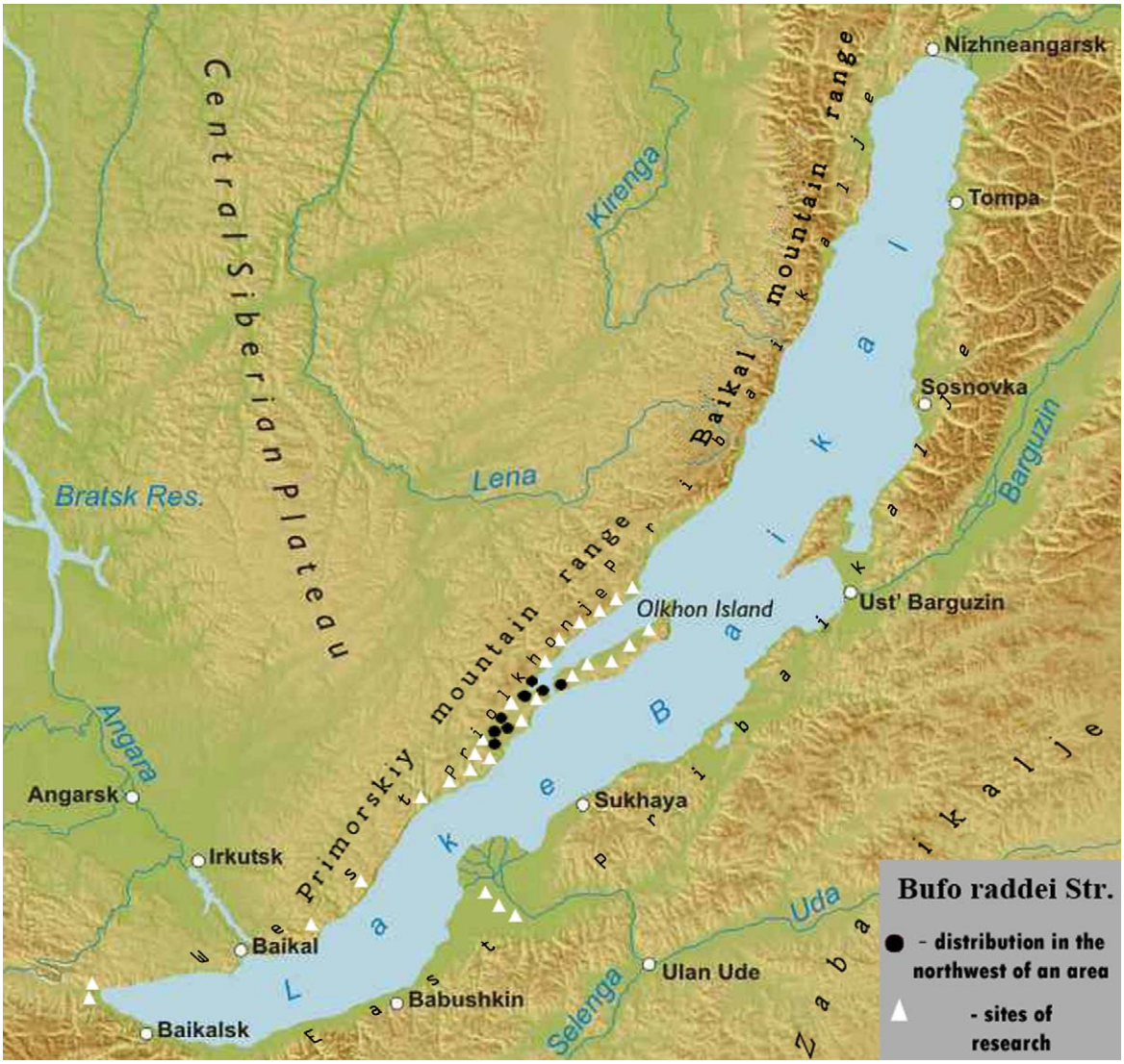

Fig. 1. Sites of registration of Mongolian toad on the border the North-West of the area.

information on the ecology of the species, reproductive biology, population and biotopic distribution.

In 2012, observations covered all water bodies (temporary and permanent) currently existing in the middle part of West Pribaikalje. Some of these reservoirs were used by the Mongolian toad for reproduction. All surveyed ponds and lakes were numbered and mapped.

Standard methods of population-ecological studies of amphibians were applied in this work (Dinesman and Kaletskaya, 1952; Shlyakhtin and Golikova, 1986; Heyer *et al*., 1994; Sherbak, 1999; Lada and Sokolov, 1999; Ravkin *et al*., 1999). Stages of development of the Mongolian toad were determined by the tables of the normal development of tailless amphibians (Dabagyan and Sleptsova, 1975).

Discussion

Distribution and biotops

Priolkhonje - a part of current Baikal rift zone - is the main focus of the Mongolian toad habitat in West Pribaikalje. The species is distributed in patches, in the form of scattered foci in spawning ponds. They are located not only in the central part of it, (within Tazheransk steppe) but also in a small area of the coast within the influence of water masses of the Lake Baikal. The point with coordinates 53° 08′N and 106° 52′E is an extreme northeastern area of this species distribution along western coast of the Lake Baikal, but this species is not registerd farther to the north (Tropina and Sklyarova, 2012).

The Island population of the Mongolian toad is repre-

sented by one focus of habitat which is located south of the Olkhon Island.

Priolkhonje and the Olkhon Island compose a small area (about 700 km^2) which can be described as a stone steppe plateau towering over the lake at 100-300 m (Sklyarova *et al*., 2002). The mountains of the Primorsky region where the average precipitation exceeds 700 mm/per year, serve as a natural barrier that contribute to the dry climate of Priolkhonje. The thickness of snow cover on the open steppe areas of Priolkhonje is minimal and often it is absent at all. The average annual air t °C in Priolkhonje ranges from −0.7 to −2.8°C, the frost-free period is approximately 99-124 days, and the autumn frost starts later than in other areas of Pribaikalje - from 10 till 25 September (Berkin *et al*., 1993). The relief is introduced by a close combination of low but extensive "ridges" and narrow valleys which separate them. Priolkhonje is rich in mineral lakes differing in small sizes and depths. They are compactly located on the land and have extremely large variations of the chemical content of the water (Sklyarov *et al*., 2004). The majority of the Mongolian toad population of West Pribaikalje inhabit close to these mineral lakes. And only a small part of the population lives directly on the coast of the Lake Baikal within the influence of the water masses of the lake.

According to our data, the habitat of the Mongolian toad in Priolkhonje is limited by the elevation which ranges from 460 to 670 m above sea level. In other words, in the north-western part of its habitant the species lives at low altitudes. In West Zabaikalje and in the north of Mongolia its habitat is also confined to lowl elevations - to the bottoms of the intermountain basins and the lower part of the mountains, where it rises along the valleys of the rivers at altitudes up to 1000 m (Pleshanov and Popov, 1981). In the south of Mongolia it is found at altitudes up to 1260 m and in north-east of China the toad can penetrate even into the mountain ranges, occurring at altitudes of 3000 m and higher (Bannikov, 1958; Kuzmin *et al*., 1988).

It is noted, that in West Pribaikalje the Mongolian toad is more closely attached to the waters where their reproduction occurs. Animals do not move far away from the spawning pond. The most distant habitat of an adult species t was Tazheransk steppe of Priolkhonje which is located 2 km away from the lake. The highest population density of the toads was registered in a radius of 200-400 meters of the pond, gradually decreasing from the center to the periphery (Tropina and Sklyarova, 2012). As for the more southern territories of the vast area, the Mongolian toad can be found at a more significant distance from the reservoirs. For example, in some parts of Baikal region it can be found not only at a distance of 1.5-2 km from the pond (Gagina *et al*., 1976) but on a larger, up to 5 km, distance from reservoirs (Schepina, 2009).

Morphological features

The extremely low Mongolian toad population which inhabits the western part of the Olkhon Island and shortage of morphometric data do not allow summarizing of available information. Therefore, this article presents data only on Priolkhonje.

We and other authors have previously observed the larger body size of toads living on the west shore of the Lake Baikal (Pleshanov and Popov, 1981; Tropina and Sklyarova, 2012). According to the data of 2005 to 2006 collected in Priolkhonje (West Pribaikalje) the body length of adult species L reached 83 mm (measured on alive specimens), with the predominance of those individuals which had body length of more than 65 mm. Species with

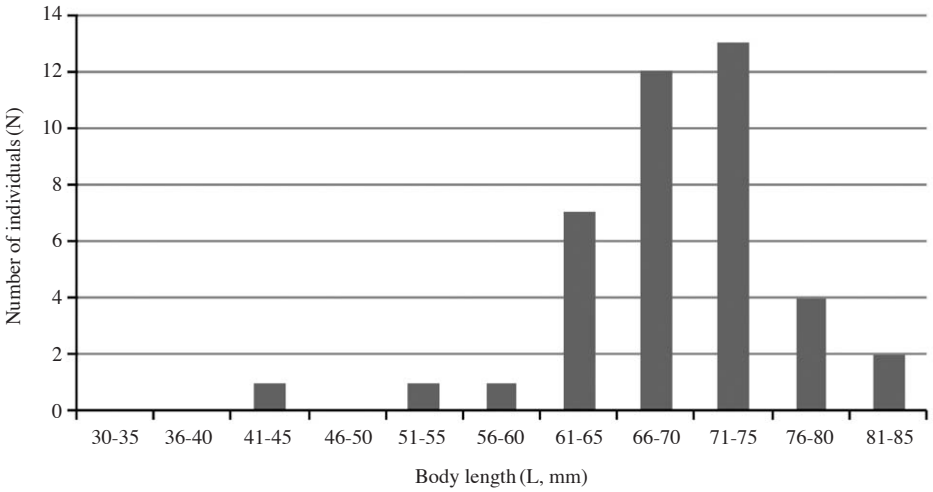

Fig. 2. The age structure of the population of Mongolian toad, N=41 (West Pribaikalje).

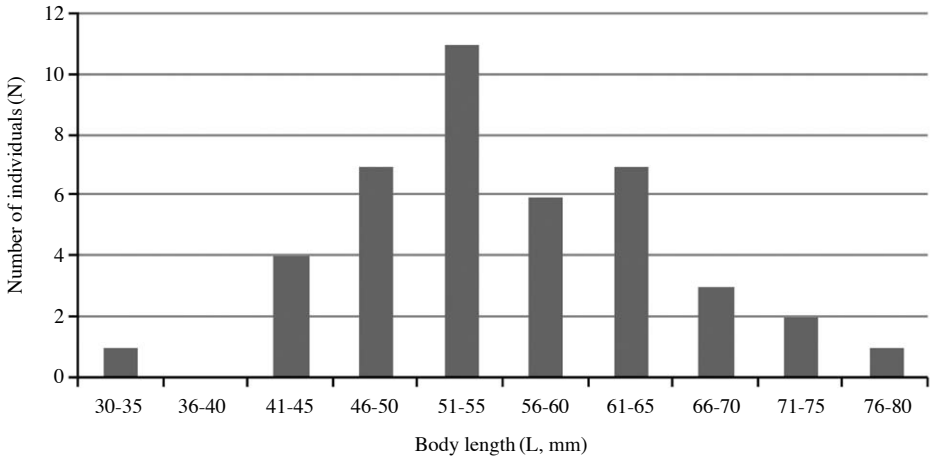

Fig. 3. The age structure of the population of Mongolian toad, N=42 (East Pribaikalje).

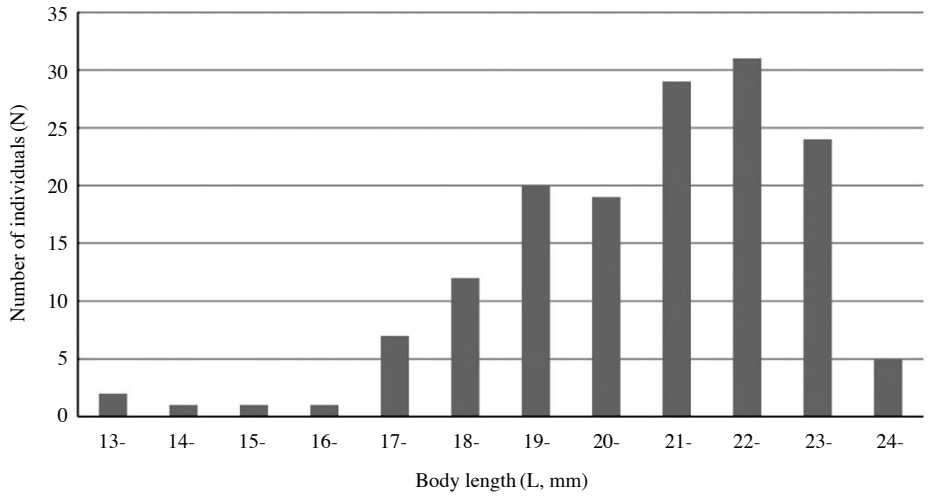

Fig. 4. Dimensions of juveniles after metamorphosis, N=152 (West Pribaikalje).

such characteristics accounted for 75.6%. If to compare (Figs. 2 and 3) with representatives of the toads which were collected slightly to the south - in East Pribaikalje (the lower course of the river Selenga, village Kabansk, 1997) we can see that the percentage of the toads with such body sizes (more than 65 mm) is lower - only 19.6% (Tropina *et al*., 2007). Thus, the Mongolian toad population of West Pribaikalje is characterized by larger body sizes. Their dimensions are significantly larger than average body size among the populations of more southern areas, in East Pribaikalje, Zabaikalje, Mongolia, and among individuals living in the Far East of Russia. So the body length of the Mongolian toad in Mongolia accounts for average 50-65 mm, larger individuals (usually not more than 74 mm) can be found more rarely (Kuzmin *et al*., 1988).

Toads from Zabaikalje and Mongolia have similar sizes of body. In West Zabaikalje, the body length of toads, on the average, is 50-62 mm (Schepina, 2009), which is evident from our data 46-65 mm collected in one of these regions - East Pribaikalje. In the Far East, average body length is even less - 59-64 mm (Lazareva, 2000).

The larger dimensions in West Pribaikalje (Fig. 4) are typical for the juveniles immediately after metamorphosis (all measurements were carried out on alive specimens). The diagram shows that in West Pribaikalje, the body length of the juveniles on average ranges from 18 to 23 mm, but young individuals with sizes ranging from 21 to 23 mm dominate. They make up 55% of the total mass of the dispersing juveniles. The percent of juveniles with a min body length (13-17 mm) and max (24 mm) is not more than 11%. Moreover, individuals with the minimal body size (13-16 mm) are found extremely rarely and not annually. According to our data in East Pribaikalje (down-

Table 1. Macrocomponent composition 2 salt lakes in Priolkhonje in annual dynamics (approx. TDS - total mineralization).

Test number_month/year	Ph	HCO_3	Cl	SO_4	K	Na	Ca	Mg	TDS
		%	%	%	%	%	%	%	Г/л
226_08/00	8.6	5	21	74	5	56	0	38	45.29
227_08/00	8.8	8	56	36	6	71	1	22	14.53
227_08/01	8.8	9	57	34	6	69	1	24	12.00
227_08/02		8	58	34	7	70	1	22	13.19
227_08/03	9.1	8	55	37	6	72	1	21	14.68
227_08/04	8.9	8	61	31	6	71	1	22	12.45
227_08/06	8.8	8	58	34	7	69	1	23	14.85
227_07/09	9.2	7	66	27	6	72	0	21	13.35
227_05/11	8.5	8	56	33	7	70	3	20	12.60
227_06/11	8.9	7	58	33	6	71	1	22	39.17
227_08/11	9.2	9	59	30	7	71	0	22	47.13

stream of the river Selenga, near the village of Kabansk, 1997) the length of juveniles (N=39) doesn't exceed 21 mm. In Mongolia, the body length of juveniles estimates from 13.9 to 18.8 mm (Kuzmin *et al.*, 1988).

In West Pribaukalje, according to our data, larvae reach 53.1 mm, in Mongolia −51.4 mm (Kuzmin *et al.*, 1988).

Probably, in the natural-climatic conditions (sharp-continental climate) the large size of the adult individuals make them more competitive and juveniles with larger body size when entering the land have some advantages in survival. This opinion was expressed earlier after the study of the destruction of juveniles of some species of amphibians. It is believed that the larger juveniles are more mobile and consume a wider range of feed (Lyapkov, 1990) and are more resistant to starvation (Lyapkov, 1986).

Ecological features of the species

In total, in Pribaikalje for the period of our research from 1997 to 2011 we found 37 spawning water bodies, both in the inner part of Tazheranskaya steppe and near the coast of the Lake Baikal. Some of these reservoirs still exist but some of them disappeared for various reasons (Tropina and Sklyarova, 2012). The reasons are: anthropogenic character and geological specific features of the region. So most of the water bodies which are used by the Mongolian toad in Priolkhonje for reproduction are located in the fracture zone, where shifts of the earth's crust are currently registered. These shifts have an impact on the hydrological regime of the lakes (Sklyarov *et al.*, 2004).

All of spawning water bodies of Priolkhonje which reproduce the Mongolian toad are of three types and are characterized by varying degrees of mineralization. According to our research data, in West Pribaikalje the Mongolian toads lay eggs not only in fresh (0.2 to 1 g/L) and brackish waters (1-7 g/L), but in salt waters with the upper bounds of TDS for this region 14-45 g/L (Tropina and Sklyarov, 2012). According to the herpetological research in Mongolia previously it was marked that the Mongolian toad is resistant to a wide range of salinity and may live in the brackish waters (Obst, 1963; Kuzmin *et al.*, 1988). In studies conducted in China it was found that eggs are laid in water bodies with a pH of not less than 8,4 (Van and Shi, 1958). According to our data, in West Pribaikalje the larvae of the Mongolian toads develop in water with pH 8.5-9, 2 and when upper bounds of TDS are from 12-14 g/L and above. Earlier it was reported that reproduction of the Mongolian toad in this region took place only in brackish water (within 3 g/L) (Litvinov, 2002).

Before 2006 in Priolkhonje there were 3 reservoirs of type III with upper bounds TDS 14-45 g/L. Currently (as of 2013) there are only 2 (one disappeared in consequence of another cycle of desiccation).

Water bodies of type I, in which the toad lay eggs, include both poorly flowing and inland water bodies located in the central part of Tazheranskaya steppe and on the coast of the Lake Baikal. They are:

- freshwater lakes of Tazheranskaya steppe;
- fresh shallow water bodies which are formed behind the coastal shaft of the Lake Baikal and separated from it by low sandy, and shingle spits (during tempest on the Lake Baikal these plaits are often blurred). However, it should be noted that temporary water bodies formed behind the surf band of the Lake Baikal where the Mongolian toad could reproduce almost gone. In the last 10-15 years, a number of such reservoirs vanished for various reasons, mostly anthropogenic. Microfoci which existed near the Baikal coast where Mongolian toad lived also disappeared;
- fresh relatively shallow water bodies which are formed in lowered relief by meltwater and maintained by rain waters;
- fresh shallow water bodies (20-30 cm deep), formed by

springs with small production rate;
- poorly flowing lots of springs, mainly in the lowlands of meadow type.

Most famous in Priolkhonje reservoirs of type I (fresh) are used by toads for laying eggs. According to research performed (Sklyarova *et al*., 2002) they all have salinity from 0.25 up to 0.85 g/L. pH of the water in half of these freshwater lakes has neutral reaction of 7.0 to 7.9, the other half of the lakes is characterized by alkaline - from 8.8 to 9.8. Hydrocarbonate ions in freshwater lakes prevail, the total share of Cl^{1-} and SO_4^{2-} does not exceed 5% - equiv. Cation ratio varies widely, corresponding to Ca-Mg, Mg-Ca-Na, Na-Mg compositions. Water temperature in summer reaches 12-25°C.

In addition to the shallow water of freshwater lakes, toads lay eggs in the areas with springs. Depending on the intensity of the current these springs slightly humidify a plot of land or have expressed riverbed, often forming small poorly flowing puddles. The temperature of the water in the springs is a 4-12°C, mineralization is of 0.2 to 0.5 g/L (excluding water bodies within the precincts of the Baikal coastline - 0, 09 g/L), pH is neutral or weakly alkaline - from 7.3 up to 7.9, cationic composition (Ca - Mg) is relatively constant (Sklyarova *et al*., 2002).

Brackish lakes of Tazheranskaya steppe are reservoirs of II type. There 2 subtypes of such lakes. The first one is characterized by low mineralization (0.1-0.18 g/L) and the ratios of the anions and cations similar to those in lakes of I type. But the second subtype is characterized by higher level of mineralization (2-7 g/L). Most of the lakes of Tazheranskaya steppe are of the second subtype and all of them are used by the Mongolian toads for laying eggs. The characteristic feature of the lake waters of the second subtype is high content of chlorine and pH from 8.8 to 9.9. The water has SO_4 - HCO_3, Mg-Na and Na-Mg composition (Sklyarova *et al*., 2002).

Only 2 lakes (previously there were 3) of Tazheranskaya steppe refer to the reservoirs of the type III. Mineralization of the water in these lakes according to the adopted classification is above 14 g/L (Sklyarova *et al*., 2002). Both lakes according to our observations are used by the toads for laying eggs (Tropina and Sklyarova, 2012).

According to Table 1, the first lake is characterized by a high content of SO_4 and the second one is an original epicenter of chlorine concentrations ($>50\%$ -equiv.) (Sklyarova *et al*., 2002). Mineralization of these 2 lakes of type III may differ significantly from year to year depending on many factors, however, even with the lower boundary at the moment of laying eggs by the toads and throughout the larval development TDS is not less than 14 g/L.

Question of reproduction of the Mongolian toad in reservoirs with high TDS requires further comprehensive study. However, registration of eggs and larvae at different stages of their development in these reservoirs indicates their complete development in the water with high salt content. It should also be mentioned that the terms when juveniles having completed the metamorphosis go out of these reservoirs coincided with the terms when the juveniles go out of the nearby lakes related to type II water bodies (weakly mineralized).

Another peculiarity of this regional area population of the Mongolian toad, inhabiting the territory of West Pribaikalje is using of quite small areas of water bodies able to warm up quickly for reproduction. Active males in separate reservoirs waiting for females were registered by us in different years at depths from 5 up to 20-30 cm. However, the pairs in amplexus were met only in the shallows where the depth reaches 12-15 cm, sometimes it is no more 2-7 cm. Laid eggs sometimes were on wet sites with wet bed sediments (due to the irregularities of the bottom of the shallow water) or directly on the fine semi-aquatic vegetation within the shoreline reservoirs. According to our observations in East Pribaikalje spawning occurs in the deeper waters: small ponds and creeks that reach up to 50-60 cm of depth. For East Pribaikalje this fact was noted by other researchers (Shvetsov, 1963). Mongolia toads do not use abundance of small puddles and streams for breeding. They go back to spawn in deeper reservoirs: the funnel-shaped lakes, former river-bed etc. (Bannikov, 1958).

According to our data wintering of the toads on the territory of West Pribaikalje on the average lasts for 240-245 days, in some years, with warm spring shrinking-up to 230 days increasing in the years with late and cold spring up to 250-255 days. The active period of toads, on average, is about 120-125 days, in some years with early warm spring it lasts for 130-135 days or decreases up to 110-115 days. In general, the terms of the active period of the year are determined by the original of physical-geographical conditions of the west coast of the Lake Baikal, thermal influence of the water masses of the lake, and also by different weather conditions over the years. In average, on the west coast of the Lake Baikal wintering ends in mid of May and starts - in the middle of September. In Mongolia wintering also takes about 230 days. The first individuals appear in the first week of May and go for wintering in the middle of September (Bannikov, 1958) except in areas with thermal springs, where the Mongolian toads were registered on the surface up to the third week of November (Kuzmin *et al*., 1988). In Zabaikalje toads migrate for wintering at the end of September - beginning of October, (Shvetsov, 1963). The same terms are marked in the Far East (Khabarovsk territory) (Tagirova, 1984).

Coming out from wintering and appearance of toads on the surface in West Pribaikalje is mainly determined by the character of spring that particular year. It may start

from early May to early June. Only occasionally, in some years appearance of the first individuals on some sites of Priolkhonje is possible in the end of the third week of April. But this situation is not typical for West Pribaikalje. In Mongolia (Bannikov, 1958; Kuzmin *et al*., 1988) and in East Pribaikalje (Shvetsov, 1963) the appearance of toads on the surface is marked in the first week of May. In the central part of Zabaikalje - in the end of April or May (Shkatulova *et al*., 1980) and in the Far East (Primorskiy territory) - in the first week of May (Tagirova and Veseneva, 1979).

Terms of reproduction of toads in West Pribaikalje prolonged for more than one month, as well as on the most of its vast area. However, it should be noted that if in the southern part of the area toads can begin reproduction not only in May (the central part of China (Schmidt, 1927; Pope, 1931) but also in April (China, surroundings of Beijing) (Liu, 1950) then according to our data, in the north-western part of the area, laying of eggs occurs only in the middle of May. There is one more characteristic fact: the revival of toads in West Pribaikalje and the beginning of the reproductive season are not connected directly with the opening of spawning water bodies of ice. Despite early awakening toads in some years egg-laying begins not earlier than the second week of May. In Mongolia, reproduction begins 2-3 days after toads come out of the wintering (Bannikov, 1958). In the Far East (Khabarovsk territory) - in May (Kuzmin *et al*., 1988; Lazareva, 2000).

Reproduction season in West Pribaikalje often ends in the second, sometimes in the third week of June. For the period 2005-2012 only once there was marked a very late egg-laying by the Mongolian toad in one of the ponds in Priolkhonje. It happened in very late terms-in the first half of July 2012. Larvae of 2 clutches (laid with interval in 10-12 days) were discovered on July 27 at the same time when juveniles from before laid clutches (end of May - beginning of June) had already finished their metamorphosis and were going out from the reservoir. This situation when the toad larvae of various ages were present in the pond was observed by us in East Pribaikalje (the lower course of the river Selenga). For West Pribaikalje very late (July) egg-laying is not typical and occurs very seldom. In general, in different areas of Zabaikalje such situation was noted by other authors (Gagina *et al*., 1976; Shchepina, 2009).

Often in Priolkhonje call activity of males is fixed from the second week of May (in some years from the first week of May) to the second to third week of June. Character of call activity of males depends on their total number in the spawning pond. The fewer males are present in the pond, the more carefully they behave. Marriage vocalization in the same water body may differ significantly in annual dynamics, manifesting either sluggish or quite intensively. As a rule, by the end of the reproductive season males become more cautious and their call activity is declining. It was noted that the first and the most active males may express their first call activity being in places of wintering shelters which is outside the areas of spawning water bodies or their coastal areas. There was registered their call activity at low water t °C in the pond: +5 and +5.5°C in the morning after the night frosts when on the surface of a pond there was a thin film of ice (May, 2006).

According to our data in Priolkhonje in 2007-2011 total duration of embryonic and post-embryonic development of individuals (before juveniles move into the land) last on average 55-57 days. Full development of early clutches (laid in mid of May) mainly lasts for up to 65 days, and for the late clutches it may decrease in some years up to 49-51 days (Tropina and Sklyarova, 2012). In Zabaikalje - 40-50 days (Shchepina, 2009).

The weather conditions of Pribaikalje have a direct impact on the reproductive period and development of eggs. In May and even in June frequent sharp cooling and even snowfall cause the death of earlier laid clutches. There are cases of mass drying of eggs due to the sharp reduction of the area of shallow water. Drying up small puddles separate over the time from the main reservoir are destroying and a significant part of the larvae die. The most part of tadpoles fall into such trap due to the irregularities of the bottom of a shallow, especially on the sites of the lake shoreline where there are many abattoir hummocks.

Population density of tadpoles varies significantly over the years and between reservoirs. The local population density of larvae on the first stages of their development in reservoirs of Priolkhonje in annual dynamics is 4-13 per 1 M^2 of the surface of a pond. However, there are such years when the density of tadpoles varies from 0.1 to 0.3 larvae/1 M^2. Only twice in the last 7 years we registered a high local population density of larvae up to 170 and 944/1 M^2 in different pond. But even with the initially high population density of larvae percentage of surviving to the age of juveniles in Priolkhonje is very low and in different years it is from 0.16% to 0.35%. It says not only about low pre-metamorphosis larval survivability but, in general, about low efficiency of reproduction of this species within the northern border of the area (Tropina and Sklyarova, 2012). There are many reasons for such low larval survival. There are natural abiotic environmental factors as well as biotic and partly anthropogenic factors which take place near water bodies located close to the settlements along the coastline.

Major abiotic environmental factors negatively affecting the survival of larvae of the Mongolian toad in West Pribaikalje are reduction of the area of shallow-water that causes drying up of delayed eggs and death of the tadpoles after they get into the traps due to the irregularities

of the bottom of the shallow water (because of the presence of a large number of abattoir hummocks at the shoreline of ponds) and sudden cooling including precipitation in the form of snow during the period of egg-laying. Other authors also consider that a negative role among the biotic factors should be given to the press by predators (Kephart and Arnold, 1982). For larvae of the Mongolian toads it is first of all aquatic larvae of predatory insects. For larvae of Mongolian toad it is first of all water larvae predatory insects, including family Dytiscidae. Facts of attack of toad tadpoles by their larvae were observed not once in shallow water of the reservoirs located on the border of the Lake Baikal (Tropina and Sklyrova, 2012).

We also recorded cases of attacks on juveniles during the first days of their life on land - *Corvus corone*. Birds attracted by temporary accumulation of juveniles in small flocks of 3-4 individuals fly to getting hillock meadow areas near water bodies and grab young individuals moving within meadows. But it happens only in the peripheral areas of the ponds which are located near the settlements existing within Priolkhonje. According to some authors density of the larvae population in a pond may also affect the survival of amphibians larvae (Lyapkov, 1995), and as a result, competition for food resources.

According to our observations the first appearance of the juveniles in West Pribaikalje is marked not earlier than the second week of July. In large quantities juveniles on the final stages of their development are registered in Priolkhonje during the third decade of July. In large quantities juveniles on the final stages of their development are registered in Priolkhonje in the III week of July. Only in some years at late reproduction in some reservoirs juveniles go out on land in second-third week of August. In East Pribaikalje (mouth and lower part of the Selenga river) the exit of juveniles on land in general coincides in terms (2nd week of July 1st week of August) (Shvetsov, 1963; Tropina *et al*., 2007). In Mongolia, moving of juveniles to land stretched from July to August (Kuzmin *et al*., 1988). But in more southern areas of Zabaikalje mass exit of juveniles on land is observed not only in the beginning to mid of July (Shchepina, 2009) but in the end of June as well (Pleshanov and Popov, 1981).

Being situated within the north-western border of its area, the existence of this species occurs in the conditions of pessimal set of abiotic environmental factors (including the conditions of negative amount of the annual temperatures) and isolation of the individual micro-populations. All this, as well as the presence of the island genetically isolated populations determines the validity of West Pribaikalje territory of the Mongolian toad habitat for studying the adaptive capacity of the species within the limits of the northern borders of the area. The population of this species on the west coast of the Lake Baikal -needs conservation in order to maintain the biological diversity on the west coast of the Lake Baikal.

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