

THE PROTECTION OF AMPHIBIANS AND REPTILES IN THE RUSSIAN FAR EAST

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Data on the distribution of amphibians and reptiles in the Russian Far East in the reserves and national parks of federal importance are presented, as well as the information on the representation of these groups of animals in regional Red Data Books and the Red Data Book of the Russian Federation is provided.

Key words: amphibians, reptiles, Russian Far East, protected areas, Red Data Books.

The Russian Far East is a part of North-East Asia and covers an area between Lake Baikal and the Pacific Ocean, including Wrangel Island, Sakhalin Island, Kurile, Commander and the Shantarsky Islands. Due to its significant meridional extent and the nature of the permafrost occurrence there is a huge variety and patchiness of natural areas which is reflected in the species composition of the amphibian and reptiles living over there.

The north-eastern boundary for reptiles (Eastern Siberian, Dauro-Mongolian and Manchu) (Kurentsov, 1965) passes here; it results in the formation of many different population groups: of the «island» (small isolated) type or the tape distribution type.

Because of the extreme conditions of existence on the boundaries of their ranges, many species in this group of animals are extremely vulnerable to various natural and anthropogenic negative influences.

Protection of amphibians and reptiles is a vast area that includes the research of impact of various forms of pollution on the herpetofauna, massive capture of animals for food, pharmaceutical and cosmetic purposes, etc.

Here we will focus only on two important aspects in this field: the distribution of amphibians and reptiles in the reserves of the Russian Far East and the representation of these groups of animals in the regional and national Red Data Books.

Two works devoted to the protection of herpetofauna of Siberia and the Far East were published near 30–35 years ago (Borkin & Korotkov, 1981; Borkin & Krever, 1987). Nine species of amphibians and 18 species of reptiles, excluding marine species of reptiles swimming into our waters, were recorded in 13 reserves. Unfortunately, reserves of the Trans-Baikalsky Krai¹ and Buryatia were not considered in the survey, but we believe that the herpetological

research is reasonably to conduct in all protected areas located in the basin of the Amur River.

Since that time, the number of Far Eastern Reserves has increased from 13 to 29 (including 4 in Trans-Baikal region), and also 10 National Parks were created (including 2 in Trans-Baikal region). This article contains information about protected areas only of federal importance, as the inventory of the species composition of flora and fauna was not conducted in the vast majority of regional reserves and other smaller forms of protected areas. Reserves «Wrangel Island», Commander, Ust'-Lensky and National Park «Beringia» were excluded from the scope of our research, as they do not have any amphibians and reptiles.

In recent years, an active rearrangement of the federal (and not only) protected areas in the direction of fusion and consolidation is performed. The integrations are at different stages of the legislative process. Areas, considerably distant from each other, often fall under the merger. So, «Zapovednoe Priamurye», created in the autumn of 2014, has included a number of Nature Reserves and National Parks along the lower Amur from Khabarovsk (Bolshekhokhtsirsky Nature Reserve) to the mouth of the Amur River («Shantarsky Islands» National Park). To avoid confusion, we adhere to the former names of protected areas and show the lists of amphibians and reptiles exactly for them.

And like Borkin & Krever (1987), we have not included in the lists the marine reptiles, that occasionally enter the Far Eastern seas, namely, sea turtles – *Dermochelys coriacea* (Vandelli, 1761) and *Caretta caretta* (Linnaeus, 1758), and sea snakes – *Pseudolaticauda semifasciata* (Reinwardt in Schlegel, 1837) and *Pelamis platura* (Linnaeus, 1766). In his work «Biota of Russian waters of the Sea of Japan», Kharin (2008) pointed to the possibility of penetration of another species of sea turtle and seven species of sea snakes into the Peter the Great Bay from the southern part of the Sea of Japan.

¹ «Territory» according to the Constitution of the Russian Federation (<http://www.constitution.ru/en/10003000-01.htm>)

Over the past 30 years, a number of changes in the systematic position of many species of Far Eastern amphibians and reptiles have occurred and their distribution borders have been clarified. New species have been found for region (Adnagulov & Maslova, 2004; Ananjeva et al., 2004; Kuzmin & Maslova, 2005; Tiunov et al., 2009; Kharin, 2011; Dunaev & Orlova, 2012; Poyarkov et al., 2012; Orlov et al., 2014; Stein & Kalinina, 2016).

The names of genera and species are given according to the nomenclature used on the latest published lists in Russia (Ananjeva et al., 2004; Dunaev & Orlova, 2012), as well as to the main herpetological Internet databases (Frost, 2016; Uetz & Hošek, 2016).

Currently, the taxonomic list of the Russian Far East amphibians includes 13 species, 8 genera, 5 families, 2 orders, and that of reptiles includes 24 species, 16 genera, 5 families, 3 orders. Earlier it was believed that there are no endemic amphibians and reptiles in the Far East. Now *Onychodactylus fischeri* (Boulenger, 1886) was proven to be an endemic species for the southern part of the Russian Far East, and is found only on the ridge of the Sikhote-Alin (Poyarkov et al., 2012).

The current distribution of amphibians and reptiles in the Far Eastern reserves and national parks is represented in Table 1 and 2. The presence («+»), the possible presence («?») or absence («-») were given. A number of objective reasons does not allow to provide more reliable detailed data. Among them, a large percentage of protected areas in the Far East is unsurveyed for herpetofauna; very few specialists operate in this field; most of the species of these animals have a hidden way of life. Amphibians and reptiles are highly dependent on temperature and other climatic factors, so the researchers cannot find most of the representatives of the local herpetofauna during the field work for a limited period of time, especially in a bad weather period, and therefore they cannot provide reliable data on the number of individual species.

An inventory of amphibians and reptiles of a protected area is often conducted by researchers, non-herpetologists, and there are examples of inclusion on the lists of species that have never lived in the studied area. They confuse *Bufo gargarizans* Cantor, 1842 and *Strauchbufo raddei* (Strauch, 1876), *Takydromus amurensis* Peters, 1881 and *Takydromus wolteri* Fischer, 1885, *Elaphe dione* (Pallas, 1773) and *Oocatochus rufodorsatus* (Cantor, 1842), etc. Therefore, the data presented, for example, on the site Information-Analytical System «Protected areas of Russia» (Tomilin, 2016) or in the overview of the representativeness of the system Federal protected areas in the relation to amphibians and reptiles (Blagovidov, 2009), have a number of

inaccuracies. There are some species of amphibians and reptiles included in protected areas, where they have never been noted for certain.

Borkin & Krever (1987) wrote: «... In our view, the value of these data is not only that they first summarize all available modern information ... but, most importantly, demonstrate the level of incompleteness and inadequacy of our knowledge ...»). Unfortunately, the quality of the data representation about the Far Eastern herpetofauna is currently still low in most protected areas.

It is noteworthy that almost all types of the Far Eastern amphibians and reptiles are represented in Reserves and National Parks. Only one species of amphibians was not found in the Far Eastern protected areas, namely *Pelophylax ridibundus*, which was introduced in the 1990s in Khalaktyrskoye Lake (near Petropavlovsk-Kamchatsky), heated by wastewaters of a local power plant (Kuzmin & Maslova, 2005).

Nine species (24.3%) are most widely distributed on the territory of the Far East – *Salamandrella keyserlingii*, *Bufo gargarizans*, *Hyla japonica*, *Rana dybowskii*, *R. amurensis*, *Zootoca vivipara*, *Elaphe dione*, *Gloydus intermedius* and *G. ussuriensis*. They were recorded in 42.8% – 68.6% of the Far Eastern protected areas.

Twelve species (32.4%) are reliably recorded only in one or two protected areas: *Onychodactylus fischeri*, *Rana pirica*, *Eremias argus barbo- uri*, *Lacerta agilis exigua*, *Plestiodon finitimus*, *Orientocoluber spinalis*, *Euprepiophis conspicillatus*, *Elaphe quadrivirgata*, *E. climacophora*, *Lycodon rufozonatum*, *Gloydus blomhoffi blomhoffi* and *Natrix natrix sculata*.

Thus, *O. fischeri* is a narrow endemic, found only in the southern part of the Sikhote-Alin mountain system. It is recorded only in the Ussuriisky Reserve and in the Zov Tigra National Park. There are many publications about its presence in the Lazovsky Reserve and Sikhote-Alin Nature Reserve (Borkin & Korotkov, 1981, 1989; Borkin & Krever, 1987; Laptev et al., 1995), but there were not any finds of this species till now (pers. comm. V.Kh. Kryukov, herpetologist of the Lazovsky Nature Reserve; our data). It is noteworthy that *O. fischeri* is observed in the headwaters of many streams in the Przewalski Mountains (Livadia Ridge, Bolshoy Vorobey Ridge, Lozovy Ridge) (Emelyanov, 1947; Kuzmin & Maslova, 2005; our data). On these scenic areas, the active growth of recreational load (ski resorts, tourist camps, etc.) occurs, as well as the massive, often illegal logging is continuing. It is necessary to create a new protected area, possibly of the national park of cluster type, with the organization of the protection of *O. fischeri* habitats.

Table 1. Amphibians of the Russian Far Eastern protected areas

The name of federal protected areas (in brackets the sources of information)	Z – Nature Reserve N – National Park	Territorial location	Species													Total
			<i>Salamandrella keyserlingii</i> Dybowski, 1870	<i>Salamandrella tridactyla</i> (Nikolsky, 1905)	<i>Onychodactylus fischeri</i> (Boulenger, 1886) *	<i>Bufo gargarizans</i> Cantor, 1842	<i>Strauchbufo raddei</i> (Strauch, 1876)	<i>Hyla japonica</i> Guenther, 1859	<i>Bombina orientalis</i> (Boulenger, 1890)	<i>Rana dybowskii</i> Guenther, 1876	<i>Rana amurensis</i> Boulenger, 1886	<i>Pelophylax nigromaculatus</i> (Hallowell, 1861)	<i>Pelophylax vittibundus</i> (Pallas, 1771)	<i>Rana pirica</i> Matsui, 1991	<i>Rana arvalis</i> Nissson, 1842	
Alkhanay (37)	N	Zab	–	–	–	–	+	–	–	–	+	–	–	–	–	2
Anyuisky (1, 4, 23, 24, 40, 44)	N	Khab	+	+	–	+	?	+	+	+	+	?	–	–	–	7
Bastak (13, 19)	Z	Jew	+	–	–	+	+	+	–	+	+	+	–	–	–	7
Baikalsky (7, 37)	Z	Bur	+	–	–	–	–	+	–	–	–	–	–	–	+	3
Barguzin (7, 37, 38)	Z	Bur	+	–	–	–	–	+	–	–	+	–	–	–	+	4
Bikin (29, 46)	N	Prim		+	–	+	–	+	+	+	+	+	–	–	–	7
Bolonsky (19, 40, 41, 42)	Z	Khab	+		–	+	?	+	–	?	+	+	–	–	–	5
Bolshekhekhtsirsky (2, 7, 8, 9, 19, 33, 40, 47)	Z	Khab		+	–	+	?	+	–	+	+	+	–	–	–	6
Botchinsky (3, 19, 42, 47)	Z	Khab	+	–	–	+	–		–	+	?	–	–	–	–	3
Bureinsky (1, 17, 19, 42)	Z	Khab	+	–	–	+	–	+	–	+	+	–	–	–	–	5
Chikoi (19, 37)	N	Zab	?	–	–	–	?	?	–	–	?	–	–	–	–	?
Far Eastern Marine (15)	Z	Prim	–	+	–	+	?	+	+	+	+	+	–	–	–	7
Daursky (19, 35, 37, 38)	Z	Zab	–	–	–	–	+	–	–	–	+	–	–	–	–	2
Dzhurdzhursky (1, 19)	Z	Khab	+	–	–	–	–	–	–	+	–	–	–	–	–	2
Khankaisky (27)	Z	Prim	–	+	–	+	+	+	–	–	+	+	–	–	–	6
Khingansky (7, 9, 32, 47)	Z	Am	+	–	–	+	+	+	–	+	+	–	–	–	–	6
Kedrovaya Pad (26)	Z	Prim	–	+	–	+	–	+	+	+	+	+	–	–	–	7
Komsomolsky (1, 9, 19, 22, 40, 41, 45, 47)	Z	Khab	+	–	–	+	+	+	–	+	+	+	–	–	–	7
Koryaksky (19, 20)	Z	Kam	+	–	–	–	–	–	–	–	–	–	–	–	–	1
Kronotsky (7, 19, 20)	Z	Kam	+	–	–	–	–	–	–	–	–	–	–	–	–	1
Kurilsky (19)	Z	Sakh	+	–	–	–	–	+	–	–	–	–	–	+	–	3
Lazovsky (19, 21, 47)	Z	Prim	–	+	?	+	?	+	+	+	–	+	–	–	–	6
Land of the Leopard (26, 46)	N	Prim	–	+	–	+	–	+	+	+	+	+	–	–	–	7
Magadanskiy (9, 19)	Z	Mag	+	–	–	–	–	–	–	–	+	–	–	–	–	2
Norsky (16, 19, 32, 47)	Z	Am	+	–	–	+	–	+	–	+	+	–	–	–	–	5
Olekminsky (6, 19, 20, 36, 39)	Z	Yak	+	–	–		–	–	–	+	+	–	–	–	+	4
Poronaisky (5, 19, 20)	Z	Sakh	+	–	–	+	–	–	–	–	+	–	–	+	–	4
Shantar Islands (11, 12, 20)	N	Khab	+	–	–	–	–	–	–	+	–	–	–	?	–	2
Sikhote-Alin (10, 46)	Z	Prim	–	+	–	+	–	+	+	+	–	–	–	–	–	5
Sokhondinsky (7, 19, 35, 37, 38)	Z	Zab	+	–	–	–	+	+	–		+	–	–	–	–	4

The end of the Table 1

Udegeyskaya Legenda (19, 43)	N	Prim	–	?	–	?	–	+	+	+	–	–	–	–	–	3
Ussuriisky (8, 25)	Z	Prim	–	+	+	+	–	+	+	+	–	–	–	–	–	6
Zabaikalsky (37, 36)	N	Bur	+	–	–	–	–	+	–	–	+	–	–	–	+	4
Zeisky (7, 9, 15, 19, 47)	Z	Am	+	–	–	–	–	+	–	+	+	–	–	–	–	4
Zov Tigra (18)	N	Prim	–	+	+	+	–	+	+	+	?	–	–	–	–	6
Total:			21	11	2	19	7	24	10	21	22	10	0	2	4	

«*» – species is included in the Red Data Book of the Russian Federation (2001)

«Bur» – Republic of Buryatia; «Zab» – Trans-Baikalsky Krai; «Yak» – Republic of Sakha (Yakutia); «Kam» – Kamchatsky Krai (including the Commander Islands); «Mag» Magadan Region; «Am» – Amur Region; «Jew» – Jewish Autonomous Region; «Khab» – Khabarovsk Krai (including Shantarsky Islands); «Prim» – Primorsky Krai, «Sakh» – Sakhalin Region (Sakhalin and the Kurile Islands)

The sources of the information: 1. Adnagulov, 1996; 2. Adnagulov et al., 2000; 3. Adnagulov & Oleinikov, 2011; 4. Antonov et al., 1996; 5. Basarukin, 1983; 6. Borkin et al., 1981, 1984; 7. Borkin & Korotkov, 1981; 8. Borkin & Korotkov, 1989; 9. Borkin & Krever, 1987; 10. Chernichenko & Maslova, 2006; 11. Dunaev & Orlova, 2014; 12. Emelianov, 1932; 13. Averin et al., 2012; 14. Kharin, 2011; 15. Kolobaev, 1990; 16. Kolobaev, 2003; 17. Kolobaev & Trilikauskas, 2003; 18. Kryukov, 2014; 19. Kuzmin & Maslova, 2005; 20. Kuzmin, 2012; 21. Laptev et al., 1995; 22. Lazareva, 1996; 23. Malyarchuk et al., 2009; 24. Malyarchuk et al., 2010; 25. Maslova, 2003; 26. Maslova 2006a; 27. Maslova, 2006c; 28. Maslova, 2008; 29. Maslova, 2015; 30. Maslov & Kotlobay, 1998; 31. Orlov et al., 2014; 32. Red Data Book of the Amur Region, 2009; 33. Red Data Book of the Khabarovsk Krai, 2008; 34. Red Data Book of the Sakhalin Region, 2016; 35. Red Data Book of Trans-Baikalsky Krai, 2012; 36. List of objects of the fauna listed in the Red Data Book of the Republic of Sakha (Yakutia), 2009; 37. Popov, 2006; 38. Schepina, 2007, 2009; 39. Sedalishchev, 2006; 40. Tagirova, 2009; 41. Tagirova, 2016; 42. personal communication E.V. Adnagulov; 43. personal communication L.A. Sibirina, G.A. Gladkova, G.N. Butovetz, N.D. Kronikovskaya, A. B. Murygin, O. M. Sokolova; 44. personal communication V.T. Tagirova; 45. personal communication V.V. Bobrovsky; 46. Our own data; 47. Tomilin, 2016

L. a. exigua and *N. n. sculata* are commonly found in other parts of Russia, but in the Trans-Baikal region they are on the eastern border of their distribution, and live in small isolated populations (Popov, 2006; Red Data Book of Republic of Buryatia, 2013; Shkatulova et al, 1980; Shchepina, 2009). Other species (*E. a. barbouri*, *O. spinalis*, *L. rufozonatum*, *P. finitimus*, *E. conspicillatus*, *E. quadrivirgata*, *E. climacophora* and *G. b. blomhoffii*) have a significant common area, but live within Russia on the area border. *E. a. barbouri* was observed only in the southern Buryatia and in the utmost south-west of the Trans-Baikalsky Krai in the Daursky Reserve (Popov, 2006; Dunayev & Orlova, 2012). *O. spinalis* and *L. rufozonatum* are reliably observed only in two local areas in the utmost south of Primorsky Krai. The first species was found in the Far Eastern Marine Reserve, the second one – in the Land of the Leopard National Park. It is assumed that their habitats in Primorsky Krai can be broader, and a large-scale field studies should be conducted (Maslov & Kotlobay, 1998; Red Data Book of the Primorsky Krai, 2005; Kharin, 2011; Maslova et al., 2016). The last five of the above mentioned species were found only in the Kuril Reserve on Kunashir Island (Orlov et al, 2014; Red Data Book of Sakhalin Region, 2016).

The information about the spreading of *R. pirica* is very scanty. There are suggestions that this

species, but not *R. dybowskii*, inhabits Shantar Islands National Park (Kuzmin, 2012).

Eight species (21.6%) of the Far Eastern herpetofauna are intended to be included in the new edition of the Red Data Book of the Russian Federation, namely one species of amphibians – *O. fischeri* and seven species of reptiles – *P. maackii*, *E. a. barbouri*, *P. finitimus*, *T. wolteri*, *O. spinalis*, *E. conspicillatus* and *L. rufozonatum*. From the previous edition of the Red Data Book, two species are excluded: the Taiwan Beauty Snake – *Orthriophis taeniurus* (Cope, 1861) and the Oriental Odd-tooth Snake – *Lycodon orientalis* (Hildendorf, 1880), – because the occurrence of these species on the territory of Russia could not be confirmed.

A new species, *T. wolteri*, inhabiting the southern and south-western districts of the Primorsky Krai, has been introduced. Its main anthropogenic threats are numerous spring and autumn grassland fires, typical for the region (Maslova, 2006c; Maslova, 2008; Semenishcheva & Maslova, 2010). Currently, this lizard is protected in the Khankaisky and the Far Eastern Marine Reserves and in the Land of the Leopard National Park (Maslova, 2006c; Kharin, 2011; our data).

Perhaps after further investigation, the only population in our country of *G. b. blomhoffii* on Kunashir Island (Orlov et al., 2014) will be also included in the regional (Sakhalin Region) and the Federal Red Data Book.

Table 2. Reptiles of the Russian Far Eastern protected areas

The name of federal protected areas (in brackets the sources of information)	Z – Nature Reserve, N – National Park	Territorial location	Species																			Total						
			<i>Pelodiscus maackii</i> (Brandt, 1857)*	<i>Eremias argus barboursi</i> Schmidt, 1925*	<i>Zootoca vivipara</i> Jacquin, 1787	<i>Lacerta agilis evigua</i> Eichwald, 1831	<i>Takydromus amurensis</i> Peters, 1881	<i>Takydromus wolteri</i> Fischer, 1885	<i>Plestiodon finitimus</i> Okamoto et Hikida, 2012*	<i>Orientalocoluber spinalis</i> (Peters, 1866)*	<i>Elaphe dione</i> (Pallas, 1773)	<i>Elaphe schrenckii</i> (Strauch, 1873)	<i>Oocatochus rufodorsatus</i> (Cantor, 1842)	<i>Euprepiophis conspicillatus</i> (Boie, 1826)*	<i>Elaphe quadrivirgata</i> (Boie, 1826)	<i>Elaphe climacophora</i> (Boie, 1826)	<i>Lycodon rufozonatum</i> Cantor, 1842*	<i>Rhabdophis tigrinus</i> (Berthold, 1859)	<i>Hebius vibakari ruthveni</i> (Van Denburgh, 1923)	<i>Natrix natrix sculata</i> (Pallas, 1814)	<i>Gloydus halys</i> (Pallas, 1776)		<i>Gloydus intermedius</i> (Strauch, 1868)	<i>Gloydus ussuriensis</i> (Emelianov, 1929)	<i>Gloydus blomhoffii</i> (Boie, 1826)	<i>Vipera (Pelias) sachalinensis</i> (Tzarewsky, 1917)	<i>Vipera berus</i> (Linnaeus, 1758)	
Alkhanay (37)	N	Zab	-	-	+	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	+	-	-	-	+	4	
Anyuisky (1, 4, 40, 44, 45)	N	Khab	+	-	+	-	-	-	-	-	+	+	+	-	-	-	-	-	-	-	-	-	+	+	-	+	-	8
Bastak (13)	Z	Jew	+	-	+	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	4	
Baikalsky (7, 37)	Z	Bur	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	3	
Barguzin (7, 37, 38)	Z	Bur	-	-	+	+	-	-	-	-	+	-	-	-	-	-	-	-	-	-	+	+	-	-	-	+	6	
Bikin (29, 46)	N	Prim	+	-	+	-	+	-	-	-	+	+	+	-	-	-	-	-	-	-	+	-	+	+	-	+		
Bolonskiy (40, 41, 42)	Z	Khab	-	-	+	-	-	-	-	-	-	?	-	-	-	-	-	-	-	-	-	-	-	-	?	-	1	
Bolshekhkhtsirsky (2, 7, 8, 9, 33, 40, 47)	Z	Khab	+	-	+	-	-	-	-	-	+	+	+	-	-	-	-	-	-	-	+	-	+	+	-	-	8	
Botchinsky (3, 42, 47)	Z	Khab	-	-	+	-	-	-	-	-	+	+	-	-	-	-	-	-	-	-	-	+	?	-	+	-	5	
Bureinsky (1, 17, 42)	Z	Khab	-	-	+	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	+	-	-	+	-	4	
Chikoi (37)	N	Zab	-	-	?	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	?	-	-	-	-	?	
Far Eastern Marine (8, 15)	Z	Prim	-	-	-	-	?	+	-	+	+	+	+	-	-	-	-	-	-	-	+	+	+	-	-	-	9	
Daursky (19, 35, 37, 38)	Z	Zab	-	+	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	3	
Dzhurdzhursky (1)	Z	Khab	-	-	?	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	?	-	,	
Khankaisky (27, 28)	Z	Prim	+	-	-	-	-	+	-	-	+	+	?	-	-	-	-	-	-	-	+	?	-	-	+	-	6	
Khingansky (7, 9, 32, 47)	Z	Am	+	-	+	-	-	-	-	-	+	+	-	-	-	-	-	-	-	-	+	-	-	+	+	-	8	
Kedrovaya Pad (26)	Z	Prim	-	-	-	-	+	-	-	-	+	+	-	-	-	-	-	-	-	-	+	+	-	+	-	-	7	
Komsomolsky (1, 9, 22, 40, 45, 47)	Z	Khab	+	-	+	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	?	-	+	+	-	6	
Koryaksky	Z	Kam	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	
Kronotsky (7)	Z	Kam	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	
Kurilskiy (11, 31, 34)	Z	Sakh	-	-	-	-	-	-	+	-	-	-	-	+	+	-	-	-	-	-	-	-	-	+	-	-	5	
Lazovsky (21, 47)	Z	Prim	-	-	-	-	+	?	-	-	+	+	-	-	-	-	-	-	-	-	+	+	-	+	-	-	7	
Land of the Leopard (30, 46)	N	Prim	-	-	-	-	+	+	-	-	+	+	+	-	-	-	-	-	-	-	+	+	+	+	-	-	10	
Magadansky (9)	Z	Mag	-	-	?	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	?		
Norsky (16, 32, 47)	Z	Am	-	-	+	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	+	-	+	-	+	5	
Olekminskiy (6, 36, 39)	Z	Yak	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	2	
Poronaisky (5, 19)	Z	Sakh	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	

The end of the Table 2

Shantar Islands (11, 12)	N	Khab	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	2	
Sikhote-Alin (10, 46)	Z	Prim	-	-	+	-	+	-	-	-	+	+	-	-	-	-	-	?	+	-	-	+	+	-	+	-	8
Sokhondinsky (7, 35, 37, 38)	Z	Zab	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	+	-	3
Udegeyskaya Legenda (43)	N	Prim	-	-	?	-	+	-	-	-	+	+	-	-	-	-	-	?	-	-	+	?	-	?	-	4	
Ussuriisky (8, 25)	Z	Prim	-	-	-	-	+	-	-	-	+	+	-	-	-	-	-	+	+	-	-	+	+	-	-	7	
Zabaikalsky (37, 36)	N	Bur	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	-	-	-	-	-	3	
Zeisky (7, 9, 15, 47)	Z	Am	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	+	-	-	-	3	
Zov Tigra (18)	N	Prim	-	-	-	-	+	-	-	-	+	+	-	-	-	-	-	+	+	-	-	+	+	-	-	7	
Total			7	1	20	1	8	3	1	1	21	14	5	1	1	1	1	8	9	2	7	16	16	1	9	5	

«*» – species is included in the Red Data Book of the Russian Federation (2001)

«Bur» – Republic of Buryatia; «Zab» – Trans-Baikalsky Krai; «Yak» – Republic of Sakha (Yakutia); «Kam» – Kamchatsky Krai (including the Commander Islands); «Mag» Magadan Region; «Am» – Amur Region; «Jew» – Jewish Autonomous Region; «Khab» – Khabarovsk Krai (including Shantarsky Islands); «Prim» – Primorsky Krai, «Sakh» – Sakhalin Region (Sakhalin and the Kurile Islands).

The sources of the information: 1. Adnagulov, 1996; 2. Adnagulov et al., 2000; 3. Adnagulov & Oleinikov, 2011; 4. Antonov et al., 1996; 5. Basarukin, 1983; 6. Borkin et al., 1981, 1984; 7. Borkin & Korotkov, 1981; 8. Borkin & Korotkov, 1989; 9. Borkin & Krever, 1987; 10. Chernichenko & Maslova, 2006; 11. Dunaev & Orlova, 2014; 12. Emelianov, 1932; 13. Averin & Krykov, 2012; 14. Kharin, 2011; 15. Kolobaev, 1990; 16. Kolobaev, 2003; 17. Kolobaev & Trilikauskas, 2003; 18. Kryukov, 2014; 19. Kuzmin & Maslova, 2005; 20. Kuzmin, 2012; 21. Laptev et al., 1995; 22. Lazareva, 1996, 2009; 23. Malyarchuk et al., 2009; 24. Malyarchuk et al., 2010; 25. Maslova, 2003; 26. Maslova 2006a; 27. Maslova, 2006c; 28. Maslova, 2008; 29. Maslova, 2015; 30. Maslov & Kotlobay, 1998; 31. Orlov et al., 2014; 32. Red Data Book of the Amur Region, 2009; 33. Red Data Book of the Khabarovsk Krai, 2008; 34. Red Data Book of the Sakhalin Region, 2016; 35. Red Data Book of Trans-Baikalsky Krai, 2012; 36. List of objects of the fauna listed in the Red Data Book of the Republic of Sakha (Yakutia), 2009; 37. Popov, 2006; 38. Schepina, 2007, 2009; 39. Sedalishchev, 2006; 40. Tagirova, 2009; 41. Tagirova, 2016; 42. Personal communication E.V. Adnagulov; 43. Personal communication L.A. Sibirina, G.A. Gladkova, G.N. Butovetz, N.D. Kronikovskaya, A. B. Murygin, O. M. Sokolova; 44. Personal communication V.T. Tagirova; 45. Personal communication V.V. Bobrovsky; 46. Our own data; 47. Tomilin, 2016.

Among the species listed in the Red Data Book of the Russian Federation, only *P. maackii* is observed in 7 protected areas, which looks the most optimistic for the protection of this reptile (Adnagulov & Maslova, 2005; Red Data Book of Primorsky Krai, 2005; Maslova, 2006c; Red Data Book of the Khabarovsk Krai, 2008; Averin & Krykov, 2012; Maslova & Seryodkin, 2016 (in press)). But, in fact, the vulnerability of the species on the territory of Russia retained an extremely high level. The occurrence of the species in Khingansky and Komsomolsky Reserves and in the Bikin National Park (Table 2) is indicated on the basis of individual meetings, so they cannot serve as reserve sites of the turtle because of its low abundance in these areas. In the spring and autumn seasons in 2016, places of breeding of the Chinese soft-shell turtle (spits for egg-laying) were simultaneously flooded in three main populations: on Khanka Lake in Khankaisky Reserve (Primorsky Krai, our data), on Gassi Lake in the Anyuisky National Park (Khabarovsk, private message of Tagirova) and in the Bijan river (Jewish Autonomous Region, pers. comm. Adnagulov).

It should be noted that there are two sites in the Primorsky Krai, which are important for the conservation of rare species of herpetofauna, and where *P. maackii*, *T. wolteri* and *O. rufodorsatus* inhabit. The last mentioned species is listed in three regional Red Data Books (Table 3), and its recent find in the Amur region suggests the entry of *O. rufodorsatus* in the Red Data Book of the region (Stein & Kalinina, 2016).

The first site is located on the north-west coast of Khanka Lake and, unfortunately, does not fall within the borders of the Khankaisky Reserve and its buffer zones. The second site is located in the middle reaches of the Arsen'evka river. Both sites have many convenient places for breeding of *P. maackii*, as well as vast areas of woodlands and open spaces with a variety of different types of reservoirs, suitable for habitation of *T. wolteri* and *O. rufodorsatus* (Adnagulov & Oleinikov, 2006; Semenishcheva & Maslova, 2010; our data). It is necessary to create protected areas in these mentioned locations.

It is interesting to find out how the Far Eastern amphibians and reptiles are represented in the regional Red Data Books. The findings are shown in Table 3.

Table 3. The species of amphibians and reptiles, listed in the regional Red Data Books of the Russian Far East

№	Administrative Unit	Bur	Zab	Yak	Mag	Am	Jew	Khab	Prim	Sakh	Total
	The year of the issue of the Red Data Book	2013	2012	2009	2008	2009	2014	2008	2005	2016	
	Name of the species										
1	<i>Salamandrella keyserlingii</i>	–	–	+	–	–	–	–	–	–	1
2	<i>Salamandrella tridactyla</i>	–	–	–	–	–	–	–	–	–	0
3	<i>Onychodactylus fischeri</i> *	–	–	–	–	–	–	–	+	–	1
4	<i>Bufo gargarizans</i>	–	–	–	–	–	–	–	–	–	0
5	<i>Strauchbufo raddei</i>	–	–	–	–	–	–	+	–	–	1
6	<i>Hyla japonica</i>	+	+	–	–	–	–	–	–	–	2
7	<i>Bombina orientalis</i>	–	–	–	–	–	–	+	–	–	1
8	<i>Rana dybowskii</i>	–	–	+	–	–	–	–	–	–	1
9	<i>Rana amurensis</i>	–	–	–	+	–	–	–	–	–	2
10	<i>Rana pirica</i>	–	–	–	–	–	–	–	–	–	0
11	<i>Rana arvalis</i>	+	–	+	–	–	–	–	–	–	2
12	<i>Pelophylax nigromaculatus</i>	–	–	–	–	–	–	–	–	–	0
13	<i>Pelophylax ridibundus</i>	–	–	–	–	–	–	–	–	–	0
14	<i>Pelodiscus maackii</i> *	–	–	–	–	+	+	+	+	–	4
15	<i>Eremias argus barbouri</i> *	+	+	–	–	–	–	–	–	–	2
16	<i>Zootoca vivipara</i>	–	–	+	+	–	–	–	–	–	2
17	<i>Lacerta agilis exigua</i>	+	–	–	–	–	–	–	–	–	1
18	<i>Takydromus amurensis</i>	–	–	–	–	–	–	+	–	–	1
19	<i>Takydromus wolteri</i>	–	–	–	–	–	–	–	–	–	0
20	<i>Plestiodon finitimus</i> *	–	–	–	–	–	–	–	–	+	1
21	<i>Orientocoluber spinalis</i> *	–	–	–	–	–	–	–	+	–	1
22	<i>Elaphe dione</i>	+	+	–	–	–	–	–	–	–	2
23	<i>Elaphe schrenckii</i>	–	–	–	–	+	+	+	–	–	3
24	<i>Oocatochus rufodorsatus</i>	–	–	–	–	–	+	+	+	–	3
25	<i>Euprepiophis conspicillatus</i> *	–	–	–	–	–	–	–	–	+	1
26	<i>Elaphe quadrivirgata</i>	–	–	–	–	–	–	–	–	+	1
27	<i>Elaphe climacophora</i>	–	–	–	–	–	–	–	–	+	1
28	<i>Lycodon rufozonatum</i> *	–	–	–	–	–	–	–	+	–	1
29	<i>Rhabdophis tigrinus lateralis</i>	–	–	–	–	–	–	+	–	–	1
30	<i>Hebius vibakari ruthveni</i>	–	–	–	–	+	+	+	–	–	3
31	<i>Natrix natrix sculata</i>	+	+	–	–	–	–	–	–	–	2
32	<i>Gloydus halys</i>	–	–	–	–	–	–	–	–	–	0
33	<i>Gloydus intermedius</i>	–	–	–	–	–	–	–	–	–	0
34	<i>Gloydus ussuriensis</i>	–	+	–	–	–	–	–	–	–	1
35	<i>Gloydus blomhoffii blomhoffii</i>	–	–	–	–	–	–	–	–	–	0
36	<i>Vipera (Pelias) sachalinensis</i>	–	–	–	–	+	+	–	–	–	2
37	<i>Vipera (Pelias) berus</i>	+	–	+	–	–	–	–	–	–	2
Total		7	5	5	2	4	5	8	5	4	

«*» – species is included in the Red Data Book of the Russian Federation (2001)

«Bur» – Republic of Buryatia; «Zab» – Trans-Baikalsky Krai; «Yak» – Republic of Sakha (Yakutia); «Kam» – Kamchatsky Krai (including the Commander Islands); «Mag» Magadan Region; «Am» – Amur Region; «Jew» – Jewish Autonomous Region; «Khab» – Khabarovsk Krai (including Shantarsky Islands); «Prim» – Primorsky Krai, «Sakh» – Sakhalin Region (Sakhalin and the Kurile Islands).

Only 9 (24.3%) out of 37 species of the Far Eastern herpetofauna are not represented in any of the regional Red Data Books. And three of them are prime candidates for inclusion: *S. raddei* and *G. b. blomhoffii* – in the Red Data Book of Sakhalin Re-

gion (Tiunov et al., 2009; Orlov et al., 2014), and *O. rufodorsatus* in the Red Data Book of Amur Region (Stein & Kalinina, 2016).

Of the other 28 species (75.7%) only *P. maackii* was included in four out of ten regional Red Data

Books. Fifteen species of amphibians and reptiles (53.6% of the total in the regional Red Data Books) were included only in one out of ten Red Data Books, which shows the great diversity of the distribution and of the volume of distribution for the Far Eastern herpetofauna. Thus, *G. ussuriensis*, common and numerous for the major part of the Russian Far East, is included in the Red Data Book of the Trans-Baikalsky Krai, where its western border of the distribution extends (Danube & Orlova, 2012; Red Data Book of the Trans-Baikalsky Krai, 2012).

Conclusions

Of the 37 species of Far Eastern amphibians and reptiles, except for the adventitious species *P. ridibundus*, 36 are represented in 35 Reserves and National Parks of the federal level.

Of the seven species listed in the Red Data Book of the Russian Federation, one species – *P. maackii* – is represented in the major number of Reserves and National Parks – (7 protected areas). *O. fischeri* is reliably protected in two protected areas. Each of the five remaining species (*E. a. barbouri*, *P. finitimus*, *O. spinalis*, *E. conspicillatus* and *L. rufozonatum*) is observed only in one of the protected areas.

Planned for inclusion in the new Red Data Book of the Russian Federation, the lizard species *T. wolteri* inhabits three protected areas (Far East Marine Reserve, Land of the Leopard National Park and Khankaisky Reserve).

Three new protected areas are necessary to organize in the south of the Russian Far East: in the Przewalski Mountains – to save the narrow endemic *O. fischeri*; in the north-west coast of the Khanka Lake and in lowland areas of the middle reaches of the Arsen'evka river – to save *P. maackii*, *T. wolteri* and *O. rufodorsatus*.

There are 28 (75.7%) out of the 37 species of the Far Eastern herpetofauna included in the regional Red Data Books. Of these, 15 species (53.6% of the total in the regional Red Data Books) are included only in one out of ten Red Data Books, which shows the great diversity of the distribution and of the volume of distribution for the Far Eastern herpetofauna.

It is necessary to consider the inclusion of the Sakhalin population of *S. raddei* and Kunashir population of *G. b. blomhoffii* in the Red Data Book of Sakhalin Region and of *O. rufodorsatus* in the Red Data Book of the Amur Region.

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ОХРАНА АМФИБИЙ И РЕПТИЛИЙ ДАЛЬНЕГО ВОСТОКА РОССИИ

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Приведены сведения о распределении амфибий и рептилий на Дальнем Востоке России в заповедниках и национальных парках федерального значения, а также указана информация о представленности этих групп животных в региональных Красных книгах и Красной книге Российской Федерации.

Ключевые слова: амфибии, Дальний Восток, Красные книги, особо охраняемые природные территории, рептилии.