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# Reptiles of the Orenburgsky State Nature Reserve, Russia

A G Bakiev, R A Gorelov and A A Klenina

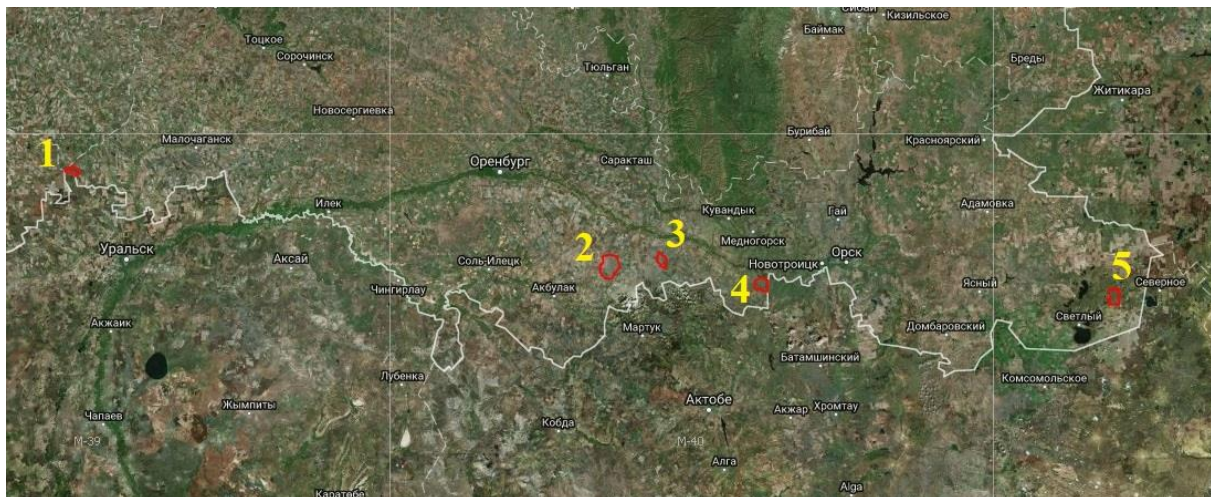
Samara Federal Research Scientific Center RAS, Institute of Ecology of Volga River Basin RAS, Togliatti, Russia

E-mail: herpetology@list.ru

**Abstract.** Nine reptile species inhabited on the five sites in the Orenburgsky State Nature Reserve, these are *Emys orbicularis*, *Eremias arguta*, *Lacerta agilis*, *Zootoca vivipara*, *Natrix natrix*, *N. tessellata*, *Coronella austriaca*, *Elaphe dione*, and *Vipera renardi*. *Lacerta agilis* is the only abundant species. Over the last 20-25 years, the abundance of at least three species (*Emys orbicularis*, *Zootoca vivipara*, *Natrix natrix*) has decreased in some clusters of the reserve.

## 1. Introduction

The Orenburgsky State Nature Reserve was established in 1989. Currently, it includes five cluster areas located in the Orenburg Oblast of Russia, 50°50'-51°50' N, 50°30'-61°20' E (figure 1).



**Figure 1.** The cluster areas of the Orenburgsky State Nature Reserve: 1 – Talovskaya steppe, 2 – Predural'skaya steppe, 3 – Burtinskaya steppe, 4 – Aituarskaya steppe, 5 – Ashchisayskaya steppe.

According to summary data [1-10], nine species of reptiles inhabit the reserve, namely, *Emys orbicularis* (Linnaeus, 1758), *Eremias arguta* (Pallas, 1773), *Lacerta agilis* Linnaeus, 1758, *Zootoca vivipara* (Lichtenstein, 1823), *Natrix natrix* (Linnaeus, 1758), *N. tessellata* (Laurenti, 1768), *Coronella austriaca* Laurenti, 1768, *Elaphe dione* (Pallas, 1773), and *Vipera renardi* (Christoph, 1861). Three species are included into the Red List of the Orenburg Oblast [11]: *E. arguta*, *C. austriaca*, and *E. dione*.



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## 2. Materials and Methods

Count of reptiles was carried out in 2015–2020. The reptile abundance in the cluster areas was assessed according to the standard point scale [12] with original modifications:

- 0 points – the species is not registered (no findings);
- 1 point – the species is rare (single specimens are found from time to time, or there are regular findings of single specimens along the same route);
- 2 points – the species has low abundance (regular findings of single specimens on particular routes or many specimens along one route);
- 3 points – the species is common (few specimens are found on many routes);
- 4 points – the species is numerous (large number of specimens are found on many routes).

## 3. Results and Discussion

In 2015-2020, grass/water snakes of the genus *Natrix* and the smooth snake *Coronella austriaca* were most rare of the nine reptile species registered in the reserve (table).

A single specimen of the grass snake *N. natrix* was found in the cluster "Burtinskaya steppe" in 2020. One specimen of the diced snake *N. tessellata* and one specimen of the smooth snake *C. austriaca* were found in cluster "Aituarskaya steppe" in 2017. According to the published data [2], the grass snake was already a rare species in 1990s in the clusters "Talovskaya steppe" and "Burtinskaya steppe" and a common species in the cluster "Aituarskaya steppe"; the diced snake was already a rare species in the cluster "Aituarskaya steppe".

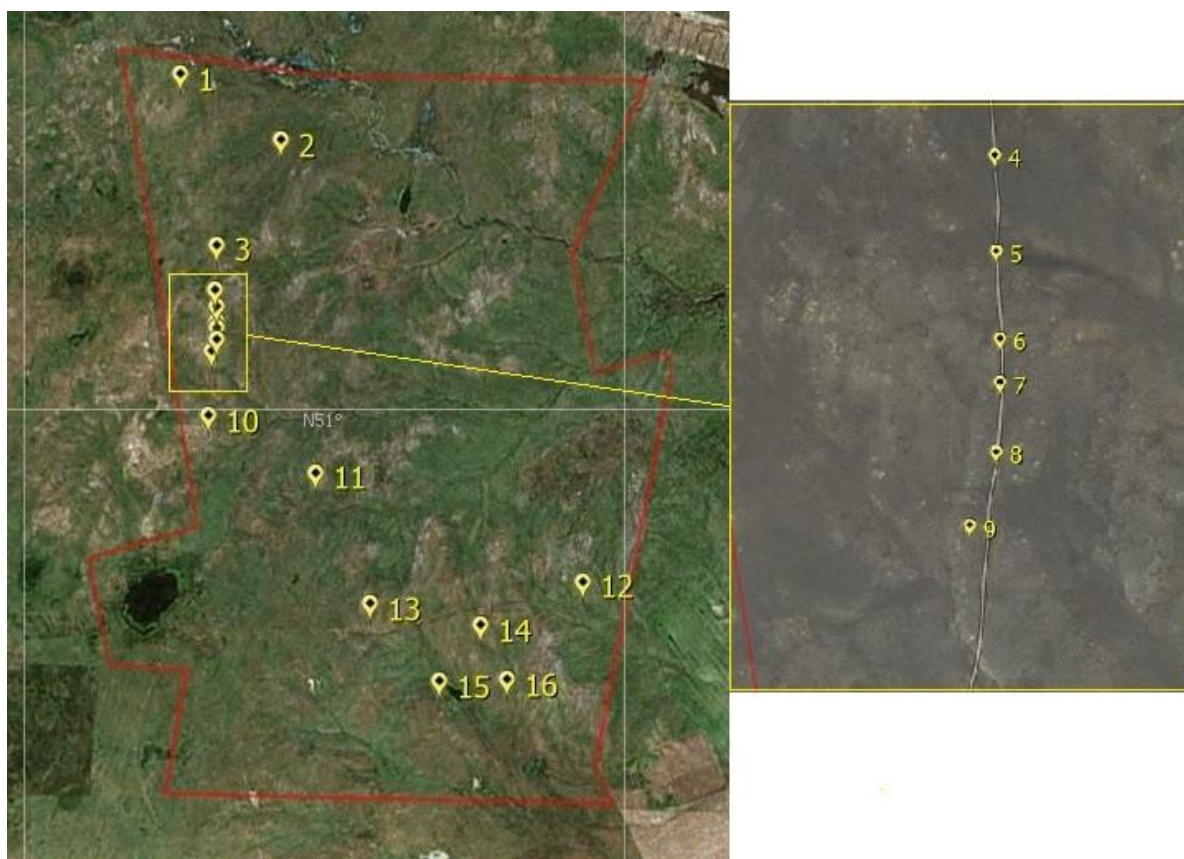
We did not find a viviparous lizard *Zootoca vivipara* in the "Aituarskaya steppe" cluster, although this species was reported as common in this area at the end of the XX century [2]. In the "Talovskaya steppe" cluster, we did not find the smooth snake *Coronella austriaca*, known here as a single finding in 1997 [4]. The Dione's ratsnake *Elaphe dione*, previously noted here as a rare species, disappeared from the "Burtinskaya steppe" cluster [2].

**Table.** Abundance of reptiles (point scale) in the clusters of the Orenburgsky State Nature Reserve.

Species	Cluster areas and study period				
	Talovskaya steppe (2018)	Predural'skaya steppe (2019)	Burtinskaya steppe (2015-2020)	Aituarskaya steppe (2017)	Ashisayskaya steppe (2020)
<i>Emys orbicularis</i>	0	0	1	2	0
<i>Eremias arguta</i>	0	0	0	0	3
<i>Lacerta agilis</i>	4	4	4	4	4
<i>Zootoca vivipara</i>	0	0	2	0	0
<i>Natrix natrix</i>	0	0	1	0	0
<i>N. tessellata</i>	0	0	0	1	0
<i>Coronella austriaca</i>	0	0	0	1	0
<i>Elaphe dione</i>	0	0	0	3	0
<i>Vipera renardi</i>	1	2	2	2	2

The population of the European pond turtle *Emys orbicularis* in the cluster area "Burtinskaya steppe" has sharply decreased. In the late 1980s, up to 18 adults and more than 40 juveniles were registered in the swamp "Cherepash'ye" (150 m<sup>2</sup>) [1]. During our research, we did not find any turtles in this shallow swamp. In total, there were from two (2018) to seven (2020) turtles in the cluster "Burtinskaya steppe".

Until recently, there were no reliable data on the presence of the steppe-runner *Eremias arguta* [2] in the reserve, which is a species included in the Red List of the Orenburg Oblast [11]. In 2020, we have met this species on several routes in the cluster "Ashisayskaya steppe" (figure 2).



**Figure 2.** Sites of meeting of *Eremias arguta* in the cluster "Ashisayskaya steppe": 1 – N 51.040834°, E 61.157671°; 2 – N 51.032116°, E 61.178516°; 3 – N 51.018452°, E 61.165249°; 4 – N 51.012501°, E 61.164967°; 5 – N 51.010433°, E 61.16505°; 6 – N 51.008533°, E 61.165165°; 7 – N 51.007599°, E 61.165150°; 8 – N 51.006084°, E 61.165016°; 9 – N 51.004467, E 61.164135°; 10 – N 50.996067°, E 61.163517°; 11 – N 50.988682°, E 61.185665°; 12 – N 50.974365°, E 61.241367°; 13 – N 50.971483°, E 61.197017°; 14 – N 50.968632°, E 61.219967°; 15 – N 50.961315°, E 61.211498°; 16 – N 50.961507°, E 61.225511°.

Two other species of reptiles, also included into the Red List of the Orenburg Oblast, were met in the reserve only in the cluster "Aituarskaya steppe". One specimen of the smooth snake *Coronella austriaca* was found in 2017. This is the first record of the species in this cluster area [8]. The Dione's ratsnake *Elaphe dione* is a common species in the "Aituarskaya steppe", when up to 24 specimens were met on the routes during the same day.

#### 4. Conclusion

All three species of reptiles included into the Red List of the Orenburg Oblast – *Eremias arguta*, *Coronella austriaca*, and *Elaphe dione* – inhabits the Orenburgsky State Nature Reserve and are protected here. Over the last 20-25 years, the abundance of at least three species (*Emys orbicularis*, *Zootoca vivipara*, and *Natrix natrix*) has decreased in some clusters of the reserve.

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