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A new *Bombina bombina* L. population "Demene" in Latvia, Daugavpils District

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Abstract

Bombina bombina L. is a rare and protected Latvian and European animal. Before 2006, three Latvian *Bombina bombina* populations were known: the "Ilgas" and "Ainavas" populations in the Daugavpils District and the "Bauska" population in the Bauska District. On 21 June, 2006 we found a new *Bombina bombina* population in the vicinities of Demene in the Daugavpils District in the southeast part of Latvia. Eight localities were found with ~70 vocalizing males in total. This population "Demene" in 2006 is the largest population of *Bombina bombina* on the northern border of the distribution range of a species. Thus, the given largest Latvian population of *Bombina bombina* plays very important role in conservation of *Bombina bombina* in the Latvian and the European fauna.

Key words: *Bombina bombina*, new population, Latvia.

Introduction

Bombina bombina L. is a rare and protected Latvian animal. *Bombina bombina* is an amphibian species with the small number of individuals in Latvia. Before 2004 only two stable Latvian populations were known: the "Bauska" population in the Bauska District and the population "Ilgas" from the Daugavpils District (Pupina, Pupins 2005a).

The "Ilgas" population is known since the 1970s (G. Kasparsons, personal communication). This population is stable, regularly observed (Pupins, Skute 1992; Barsevskis 2002; Pupina, Pupins 2005b), but there is a decline in their number and in borrowed habitats due to natural overgrowing and degradations of waterbodies, and due to the predatory introduced Far East invasive fish species *Perccottus glenii* Dyb. (Pupina, Pupins 2005b). The "Atlas of Amphibians and Reptiles in Europe" also gives these two *Bombina bombina* sites in Latvia (Gasc et al. 1997). In 2004 a new site of *Bombina bombina* in Latvia was recorded in the Daugavpils District, Kalkunes pagasts, Ainavas, where one vocalizing male was heard (Pupina, Pupins 2005a).

Thus, before 2006 three Latvian *Bombina bombina* L populations from the southern part of Latvia were known, the "Ilgas" and the "Ainavas" populations in the Daugavpils District and the "Bauska" population in the Bauska District. Due to the rarity and small population size of the given species in Latvia, research of its distribution and search of new populations is important.

Materials and methods

Research on *Bombina bombina* distribution was carried out by the authors over the whole territory of Latvia. More carefully were surveyed the southeast and southern parts of Latvia, due to close distance to already known Latvian *Bombina bombina* populations. The search for new *Bombina bombina* populations in Latvia was carried out in two steps.

First, questioning of inhabitants. In 2002 - 2006 questioning of Latvian inhabitants regarding observation of *Bombina bombina* in nature was carried out. Various methods were used: (i) oral interview of local inhabitants, hunters, people interested in nature, visitors of Zoos, schoolchildren, biology teachers, etc.; (ii) written questioning of inhabitants via publication in newspapers and Internet; (iii) questioning of inhabitants during radio and video broadcasts. The characteristic *Bombina bombina* song was also broadcast.

Second, field studies. After receiving a report on *Bombina bombina* the following search methods were used: (i) audible recognition and count of vocalizing males (Zimmerman 1994), also playback of provoking sound imitation of vocalizing action of *Bombina bombina* males; (ii) visual search by surveying the shore zone of waterbodies, also using binoculars; (iii) catching tadpoles with a scoop-net (Shaffer et al. 1994), and checking them for *Bombina bombina*. Audible and visual checking of potentially possible sites of *Bombina bombina* was carried out repeatedly, at different times of the day, with suitable weather conditions. All reports of *Bombina bombina* were followed by interview of reporters concerning the waterbody, length of time of hearing *Bombina bombina* etc.

Results

In our survey a few thousand Latvian inhabitants were directly and indirectly interrogated: zoo visitors (n = 5682), students, participants of seminars (n = 864). Number contacted by questioning carried out through the newspapers, radio and TV can not be calculated exactly, twelve reports were received from inhabitants of *Bombina bombina* in Latvia.

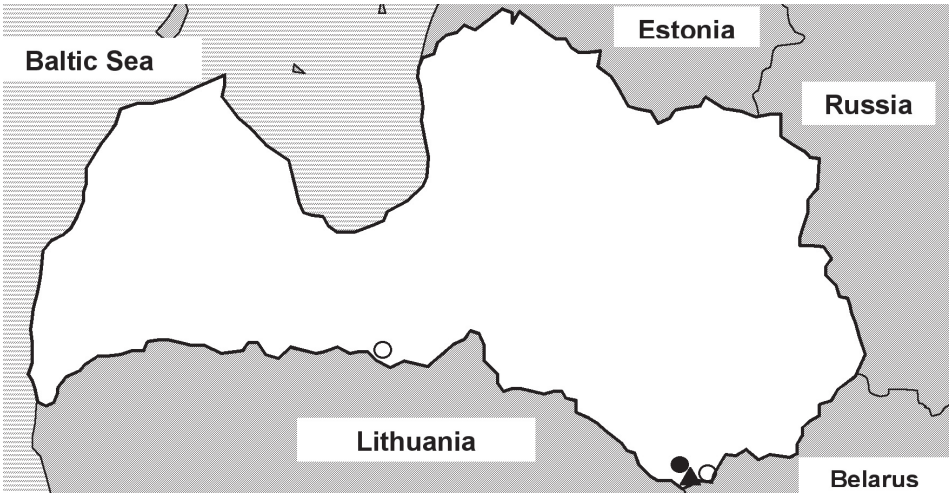

Fig. 1. Known populations of *Bombina bombina* in Latvia in 2006. (❍) "Bauska" and "Ilgas" known before 2004. (●) "Ainavas" found in 2004. (▲) "Demene" found in 2006.

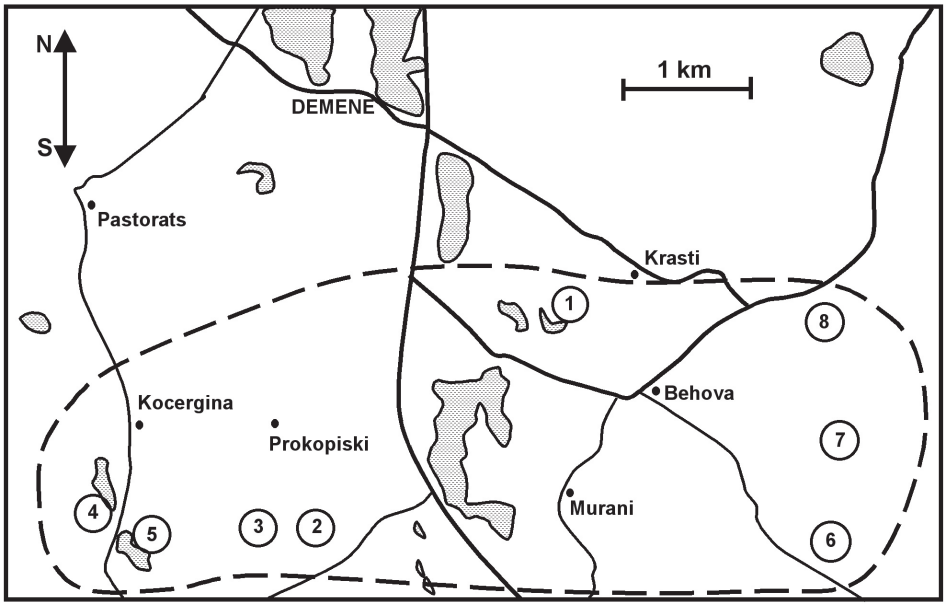

Fig. 2. Map of locations of the "Demene" *Bombina bombina* population in 2006. (–––) supposed border of the population.

The reports had different reliability and were checked by the authors. In most cases, the inhabitants were mistaken, considering other species of amphibians and even insects for *Bombina bombina*.

One report of *Bombina bombina* was confirmed. On 21 June, 2006 a *Bombina bombina* population was found in the vicinity of village Demene, Daugavpils area, southeast part of Latvia (Fig. 1). The distance to the "Ilgas" population is 14 km along a straight line through the large lake Ricu (along the coast of lake – 15.31 km), distance to the population "Ainavas" is 16 km, and to the "Bauska" population 165 km. There are rivers, lakes, roads, woods, and settlements between populations.

We observed eight locations of the "Demene" *Bombina bombina* population during 2006: (1) Bebru gravis, (2) Izcirtuma pelke, (3) Mezu dikis, (4) Lauru dikis, (5) Gravu dikis, (6) Cizovkas dikis, (7) Orhideju purvs, (8) Tumsais karjers (Fig. 2). A characteristic *Bombina bombina* habitat at the location "Bebru gravis" is shown in Fig. 3.

We recorded ~70 vocalizing males in the eight locations of the population during June - August 2006 (Table 1). In most cases, the number of males was counted using the audible method, precisely to one individual, but also visually. An exception was made in estimation of male number in the location "Lauru dikis", consisting of two large ponds, and "Mezu dikis". Due to many simultaneously vocalizing males, their number was approximate (±2 animals).

Local residents living in a house 30 m from the location "Mezu dikis" reported that the sounds made by *Bombina bombina* have been heard for more than 30 years. Thus, this Latvian population of *Bombina bombina* has survived not less than 30 years.

The whole "Demene" population is located on unprotected territory, but establishment of a protected area is in process.

Table 1. Found locations and size of the *Bombina bombina* population "Demene" in 2006

Location Nr.	Name of location	Coordinates	Height above sea level (m)	Number of vocalizing males
1	Bebru gravis	N 55°42'70" E 26°34'22"	149	16
2	Izcirtuma pelke	N 55°42'18" E 26°31'51"	141	1
3	Mezu dikis	N 55°42'03" E 26°31'24"	134	~15
4	Lauru dikis	N 55°41'89" E 26°30'47"	132	~25 (~15+~10)
5	Gravu dikis	N 55°41'92" E 26°30'47"	132	5
6	Cizovkas dikis	N 55°41'69" E 26°35'85"	162	3
7	Orhideju purvs	N 55°41'85" E 26°36'54"	169	4
8	Tumsais karjers	N 55°42'46" E 26°36'11"	152	1
Total				**~70**

Fig. 3. One of characteristic habitats "Bebru gravis" of the *Bombina bombina* population "Demene".

Discussion

Number of vocalizing males in known populations of *Bombina bombina* in Latvia in 2006 were: in the population "Ilgas" - 9, in the population "Bauska" - 7, there are no males in 2006 in the population "Ainavas" (the only male was observed in 2004). Thus, the population of *Bombina bombina* in "Demene" with ~70 vocalizing males in 2006 is the biggest population of *Bombina bombina* on the northern border of the distribution range of a species in

Latvia. Thus, this population probably plays an important role in conservation of *Bombina bombina* in Latvia and Europe.

The distance from known locations of the *Bombina bombina* "Demene" population to populations "Ilgas" and "Ainavas" is about 15 - 16 km. There are urbanized habitats that hinder migrations of animals between these populations: roads, settlements. However, due to the hilly and cut up relief of this part of Latvia, there are plenty of thicksets, lowlands, suitable waterbodies, drainage channels, ponds and tempory pools. These habitats could be used by *Bombina bombina* in migration or territories for forming a metapopulation. Thus, contacts between the Daugavpils area *Bombina bombina* populations are likely possible or might have been possible in the past. Search for intermediate locations of Bombina bombina and genetic research is needed. The same concerns also the possible contacts to Lithuanian and Belarus populations. Also, further research of the given population is necessary to determine its sizes, new locations, habitat conditions, population genotype, possible contacts to other populations, population dynamics etc.

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Jauna *Bombina bombina* populācija "Demene" Daugavpils rajonā, Latvijā

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Kopsavilkums

Sarkanvēdera ugunskrupis *Bombina bombina* L. ir rets un aizsargājams dzīvnieks Latvijā un Eiropā. Līdz 2006. gadam bija zināmas trīs šīs sugas populācijas, divas no kurām – „Ilgas" un „Ainavas" atrodas Daugavpils rajonā, bet populācija „Bauska" – Bauskas rajonā. Jaunu *Bombina bombina* populāciju mēs atradām Demenes apkārtnē, Daugavpils rajonā, Latvijas dienvidaustrumu daļā. Konstatētas astoņas lokalizācijas ar pavisam aptuveni 70 vokalizējošiem tēviņiem. Jaunatrastā „Demene" *Bombina bombina* populācija, 2006.gadā bija vislielākā areāla ziemeļu robežās Latvijas teritorijā. Tādēļ šai populācijai ir būtiska nozīme sugas saglabāšanā Latvijā un Eiropā.