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THE DISTRIBUTION OF THE INVASIVE FISH AMUR SLEEPER, ROTAN *PERCCOTTUS GLENII* DYBOWSKI, 1877 (OSTEICHTHYES, ODONTOBUTIDAE), IN LATVIA

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The registration of distribution of *Perccottus glenii* in Latvia started since 2004 as a part of the research on aquatic ecosystems of the target species *Bombina bombina, Emys orbicularis*. The methods: scoop netting, angling, interviews with fishermen, and analyzes of the data bases and publications. *P. glenii* was found in 55 points in Latvia. Our first finding of *P. glenii* in Latvia took place in 1974. The registered points of finding *P. glenii* are mostly located in the central and south-eastern part of Latvia, the total registered areal of *P. glenii* covers at least the central and eastern part of Latvia. The extreme northern point of finding *P. glenii* in Latvia is located on the border with Estonia; the extreme southern points are located right on the border with Belarus and Lithuania. The extreme eastern point is located at a distance not farther than 17 km from the border with Russia. The species was registered in the water bodies which were inhabited by *Bombina bombina* and *Emys orbicularis* and in Natura 2000 territories. *P. glenii* is distributed by people in Latvia. Fisheries farm trades the subadult and young adult of *P. glenii* with length of 5 – 10 cm in the Internet in Latvia. The typical ecosystems of *P. glenii* are lakes and ponds of a medium and small size, reclamation canals and beaver dams. The conditions of the environment and ecosystems in Latvia allow *P. glenii* to reach its maximal sizes.

Key words: Amur sleeper, Rotan, *Perccottus glenii*, Odontobutidae, Latvia, invasive species, distribution, nature conservation, Natura 2000.

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INTRODUCTION

The negative influences of invasive species along with anthropogenic destruction of ecosystems are among the most pressing threats to the autochthonous species and native ecosystems worldwide (Reshetnikov 2013, Luca & Ghiorghiță 2014). The progressive and expanding invasion of the aquatic allochthonous species is especially dangerous, including in Latvia (Pupins 2007, Pupins et al. 2009, Pupins & Pupina 2011, Pupina & Pupins 2013), because aquatic networks are the natural ways of the effective distribution of hydrobionts (Reshetnikov & Ficetola 2011), but it is more difficult to examine and control aquatic ecosystems when compared to those on the ground.

The natural area of distribution of one of the most invasive freshwater fish species in Europe, Amur sleeper, Rotan *Perccottus glenii* Dybowski 1877 (Osteichthyes, Odontobutidae), is located in the Far East of Russia, north-east China, and northern North Korea (Reshetnikov 2009). At present, *Perccottus glenii* is distributed in many European countries: Belarus, Bulgaria, Estonia, Finland, Germany, Hungary, Italy, Latvia, Lithuania, Moldavia, Poland, Romania, Serbia, Slovakia, Ukraine (Kosco et al. 2003, Nalbant et al. 2004, Reshetnikov 2005, 2009, 2010, Novak et al. 2008, Polakov & Buzmakov 2008; Kosco 2009, Semenchenko et al. 2009, Ureche et al. 2009, Plikss & Aleksejevs 2006, Aleksejevs & Birzaks 2011) (Fig. 1). In Latvia, *Perccottus glenii* was found in the Daugavpils district, it is probably distributed in the Bauska district, Cesis district, Riga district and Valmiera district (Plikss & Aleksejevs 2006).

Perccottus glenii is a predator for many hydrobionts, including the protected amphibian species in Latvia and Europe (Reshetnikov 2005; Edgar & Bird 2006, Pupins & Pupina 2012). The maximal published in 2003 weight of *Perccottus glenii* was 250 g (Reshetnikov 2003, cited in: Froese & Pauly 2010). It is also a host and may be a vector of the spread of allochthonous parasites and of the transfer of autochthonous parasites in Latvia (Moravec 2008, Kvach et al. 2013, Kirjušina et al. 2014). For example, 15 taxa of parasites were registered for *Perccottus glenii* in Ukraine; 1 species of Microsporidia, 5 species of ciliates, 2 species of cestodes, 2 species of trematodes, 2 species of nematodes, 1 species of acanthocephalan, 1 species of parasitic crustacean and 1 mollusk (glochidia). *Perccottus glenii* is host of the parasite of rare Latvian reptile species *Emys orbicularis* nematode *Spiroxys contortus,* paratenic hosts are different small-sized fish, insect larvae, tadpoles and adult Anura (Hedrick 1935, Moravec 1994). *Ophiotaenia europaea* is a parasite of the *Natrix* sp. and its larvae are parasites of Anura (Biserkov & Kostadinova 1997).

Due to the above-mentioned things, the measures aimed at examining and managing the population of *Perccottus glenii* in Latvia are strictly recommended in the Plans for the protection of the rare species *Bombina bombina* and *Emys orbicularis* in Latvia (Pupins & Pupina 2006; 2007). It makes the research on the distribution of *Perccottus glenii* in Latvia topical.

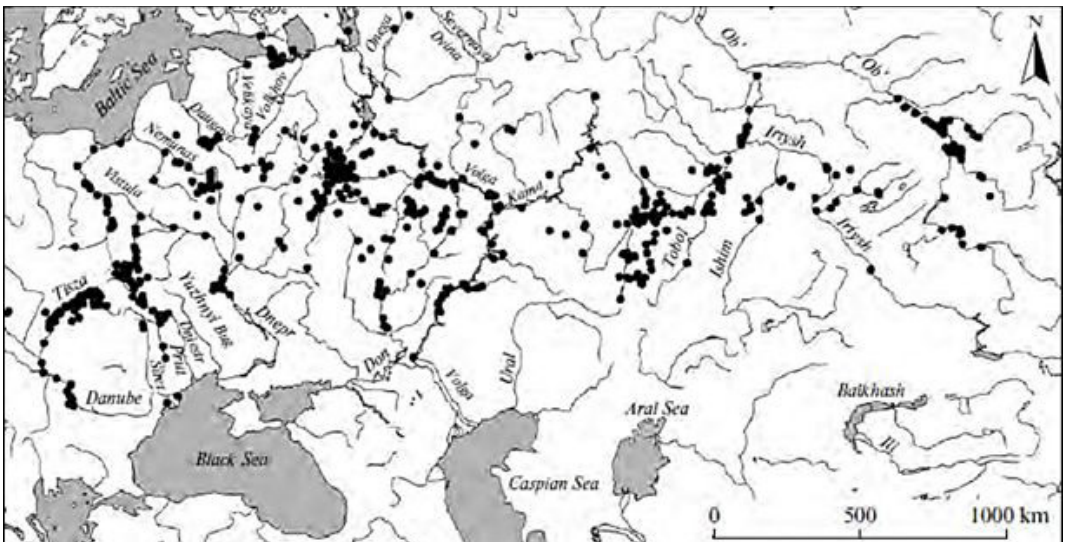

Fig. 1. Non-native range of *Perccottus glenii* (Reshetnikov 2010). Only some finding points are in South-Eastern Latvia.

MATERIAL AND METHODS

We have started the systematic registration of distribution of *Perccottus glenii* in Latvia since 2004 as a part of the research on aquatic ecosystems of the target species *Bombina bombina*, *Emys orbicularis*. The registration was continued by a newly formed group of researchers in 2014 as a study of the potential threat of *Perccottus glenii* as a predator and new vector of the spread of parasites to the fish which are bred in aquaculture and released into nature. The first data we have received is of 1974. Due to the territorial specificity of the target species research, these were south-eastern and central parts of Latvia which had been mostly examined. The research is currently ongoing. The identification of the species *Perccottus glenii* was accomplished according to the key of Kuznecov B.A. (1974). In the research, we used various methods for detecting *Perccottus glenii* in a water body:

1. Fishing with a landing net. The research was carried out during spring and summer seasons during daylight hours. The research was part of examining the ecology of *Bombina bombina*. During the research, we used landing nets 40-60 cm in diameter consisting of a dark coloured net and cells of 2-8 mm. The handle of the landing net was 1-1.5 m in length. While fishing, a researcher standing on shore at one place performed 5-10 figure-eight shaped movements with the help of the landing net in coastal waters 40-70 cm in depth. The fishing operation was held in sites rich in underwater vegetation (Fig. 2). 5-10 sites were examined on each water body. It took on average 1-2 hours to examine one water body.

2. Fishing with a fish rod. The research was carried out during spring and summer seasons during daylight hours. The following fishing tackle was used during the research: a plastic fishing-rod 400-600 cm in length, a fish line 0.15-0.25 mm in diameter, a hook sized 13-10. Either entire earthworms or segmented ones (2-3 cm in length) were used as baits. The bait was placed on the point of a hook for it to be covered. While fishing, a researcher standing on shore at one place casted baited hooks for 20-30 times in coastal waters 50-100 cm in depth at the distance of 2-5 meters from the shore. A baited hook was located at the distance of 10-30 cm from the bottom of a water body. The fishing operation was held in sites rich in underwater vegetation and bordering with it. 5-8 sites were examined on each water body. It took on average 2-3 hours to examine one water body.

Fig. 2. The method of fishing *Perccottus glenii* with the help of a landing net.

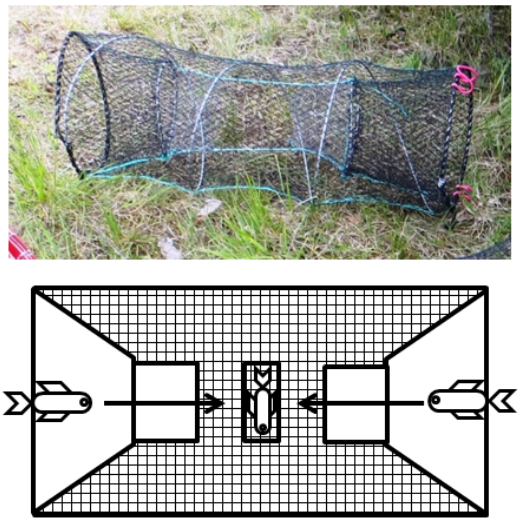

Fig. 3. The appearance and operation scheme of a fish pot.

3. Fishing traps. Dark coloured fish pots (net traps), having two funnel-shaped entrances and shutters not allowing the trapped fish to escape, were used (Fig. 3). The traps were placed in a water body at a depth of 0.5-1 m for 2-3 days. The pieces of unfrozen *Clupea harengus membras* served as the bait which was arranged in a plastic bag with holes in the center of the trap.

4. Face-to-face interviewing of biologists and fishermen. We interviewed respondents during face-to-face meetings in 2012-2015. We preliminary made sure that a respondent was able to distinguish *Perccottus glenii* from other Latvian fish species: a picture of *Perccottus glenii* was shown to the respondent. If an answer to the question "Have you ever encountered *Perccottus glenii* in nature?" was positive, the name and location of a water body, as well as the years of capture of *Perccottus glenii* were being specified. Dubious data were checked in field expeditions with the help of the above-mentioned methods.

5. A survey conducted in social networks of fishermen. For the purpose of this survey, we registered at four target forums of Latvian fishermen and created a new theme there titled "A survey on the invasive species in Latvia". In this theme, after having stressed the importance of the research, we asked whether anyone had ever observed *Perccottus glenii* in Latvia, we asked to specify the location of a water body where it had happened, as well as the year and conditions of fishing. The survey was accompanied by a coloured picture of *Perccottus glenii*. The respondents could leave the reports on the coming across with *Perccottus glenii* both in the form of comments in the theme itself or sending them to our e-mail stated in the theme. Dubious data were checked with the help of the above-mentioned methods of fishing *Perccottus glenii*.

6. The use of electronic databases. For the purpose of the research, we used the electronic database "Latvijas ezeri" ["Latvian lakes"] which is publicly available on the Internet (Ezeri.lv). In this database, we selected the lakes and ponds, inhabited by *Perccottus glenii*, with the help of a search engine.

7. The review of publications. We studied the available publications on the findings and distribution of *Perccottus glenii* in Latvian nature. In case of a match of literature data with the previously independently acquired data by us or in case these data were imprecise but close in terms of territory to the data acquired by us, then the data which we had acquired in field expeditions in practice were favoured.

While processing the acquired data, we determined the coordinates of a water body, where the species had been observed, with the help of the *Magellan GPS* receiver and the *Google Earth* services. The coordinates of the water body were indicated as the coordinates of any point which had been arbitrarily put on the surface of the water body in its central part. When a respondent specified a water body or populated locality, the point of coordinates was assumed to be any point which had been arbitrarily put on the territory of this water body or populated locality. Small adjacent water bodies were considered as a single point. While drawing a map, a circle 10 km in diameter, whose center designates the point of finding the species without taking into consideration the location of water bodies inside the marked area, was drawn for each finding.

RESULTS

Distribution. As a result of the conducted research, *Perccottus glenii* was determined to be present in 55 points in Latvia (Tab. 1). We caught *Perccottus glenii* in 17 of these points, whereas the interviewed fishermen and biologists caught it in other 15 points, while 19 points were stated in the database and 2 more – in publications (Bara 2010, 2013, Kirjušina et al. 2014).

Record of age of the populations. Our first finding of *Perccottus glenii* in Latvia took place in 1974 when co-author M.Pupins was fishing at the pond of the university (Daugavpils) and many times caught numerous *Perccottus glenii*, kept them and bred in an aquarium. The same population keeps successfully existing in this water body at present as well (Fig. 4), despite the reconstruction

Table 1. Findings of *Perccottus glenii* in Latvia

Place or water body	Coordinates N	Coordinates E	Source
1. Pond Ambeļu	56°2’26.31”N	26°50’30.73”E	Authors, pers. record
2. Career Ancupanu	56°32’4.68”N	27°18’56.63”E	Authors, pers. record
3. Pond Apalais	55°41’32.92”N	26°46’14.69”E	Authors, pers. record
4. Pond Balvu	57°8’13.30”N	27°16’29.20”E	Authors, pers. record
5. Pond Galdnieki	55°50’2.87”N	26°28’58.57”E	Authors, pers. record
6. Jersika	56°14’9.20”N	26°11’37.52”E	Authors, pers. record
7. Career Lodes	58° 0’36.63”N	25°23’24.50”E	Authors, pers. record
8. Lake Masanu	56°24’57.30”N	26°11’1.46”E	Authors, pers. record
9. Ozolaine_1	55°44’54.56”N	26°20’5.83”E	Authors, pers. record
10. Ozolaine_2	55°44’55.33”N	26°20’8.84”E	Authors, pers. record
11. Ozolaine_3	55°44’57.08”N	26°19’45.88”E	Authors, pers. record
12. Ozolaine_4	55°44’55.33”N	26°20’8.84”E	Authors, pers. record
13. Ozolaine_5	55°44’54.56”N	26°20’5.83”E	Authors, pers. record
14. Lake Stropins	55°53’22.34”N	26°35’59.54”E	Authors, pers. record
15. Lake Trikartu	55°55’11.51”N	26°28’48.01”E	Authors, pers. record
16. Pond Universitates	55°52’19.16”N	26°30’26.14”E	Authors, pers. record
17. Fish pond Visku	56° 4’54.67”N	26°45’43.99”E	Authors, pers. record
18. Audrini, Rezekne	56°35’46.31”N	27°14’51.47”E	Authors, questioning
19. Pond Cesu	57°17’49.23”N	25°15’54.17”E	Authors, questioning
20. Darzini	56°51’29.45”N	24°16’35.34”E	Authors, questioning
21. Ergli	56°53’26.68”N	25°37’32.74”E	Authors, questioning
22. Ikskile	56°50’44.22”N	24°30’23.13”E	Authors, questioning
23. Lake Kisezers	57° 2’19.96”N	24° 7’3.76”E	Authors, questioning
24. Water reservoir of Ludza	56°32’54.18”N	27°42’52.17”E	Authors, questioning
25. Lake Paberzu	55°46’33.54”N	26°18’40.53”E	Authors, questioning
26. Lake Ploticku	55°54’52.90”N	26°29’54.19”E	Authors, questioning
27. Pond Salaspils	56°51’29.55”N	24°22’38.23”E	Authors, questioning
28. Salaspils	56°51’54.42”N	24°21’24.73”E	Authors, questioning
29. Pond Tukums	56°57’56.46”N	23°11’39.94”E	Authors, questioning
30. Valmiera	57°33’8.02”N	25°24’42.13”E	Authors, questioning
31. Elektroinstruments	55°52’25.21”N	26°35’28.15”E	V.Vahrusevs, pers. comm.
32. Lake Gubisces	55°53’4.30”N	26°33’41.46”E	V.Vahrusevs, pers. comm.
33. Lake Balucku	56°22’59.71”N	27° 7’18.73”E	Ezeri.lv
34. Lake Bizas	56°31’38.39”N	27°29’36.42”E	Ezeri.lv
35. Pond Blontu	56°36’27.42”N	27°45’24.99”E	Ezeri.lv
36. Lake Butisku	55°54’1.43”N	26°45’2.39”E	Ezeri.lv

Place or water body	Coordinates N	Coordinates E	Source
37. Dolgoje	55°52’19.00”N	27°11’22.37”E	Ezeri.lv
38. Lake Franopoles	56°33’41.17”N	27°46’52.72”E	Ezeri.lv
39. Lake Gailezers	56°58’14.33”N	24°14’18.89”E	Ezeri.lv
40. Water reservoir of Krace	56°15’49.17”N	27° 4’17.63”E	Ezeri.lv
41. Lake Lielais Kangaru	56°55’14.56”N	24°43’30.02”E	Ezeri.lv
42. Lake Losu	56°26’4.98”N	27° 9’56.33”E	Ezeri.lv
43. Lake Lubastes	55°57’0.06”N	26°27’0.04”E	Ezeri.lv
44. Lake Maltas	56°21’7.33”N	27° 9’9.89”E	Ezeri.lv
45. Lake Percina	55°53’55.70”N	27°10’48.65”E	Ezeri.lv
46. Lake Rezeknes	56°29’51.36”N	27°19’10.09”E	Ezeri.lv
47. Lake Sķerzlateņa	56°18’45.39”N	27°13’41.19”E	Ezeri.lv
48. Lake Speļu	56°19’51.01”N	27°13’44.28”E	Ezeri.lv
49. Lake Tarakanovas	56°26’29.37”N	27° 8’5.39”E	Ezeri.lv
50. Vecdaugava	57°3’51.40”N	24° 5’25.73”E	Ezeri.lv
51. Lake Veziņs	56°21’24.93”N	27°11’5.34”E	Ezeri.lv
52. Birkineļi	55°47’16.2’’N	26°25’52.6’’E	Kirjušina et al. 2014
53. Liksna	55°59’14.6’’N	26°23’54.7’’E	Kirjušina et al. 2014
54. Rudna	55°52’24.91”N	26°56’22.02”E	Bara 2010
55. River Daugava: section Plavinas – Kegums	56°37’18.88”N	25° 5’33.81”E	Bara 2013

of the pond during the construction of the first new building of the university which is located nearby. Having the minimum age of 41 in 2015, it is possible one of the first populations of *Perccottus glenii* in Latvia.

Another finding of *Perccottus glenii* was made in Pond Galdnieki by co-author Ag.Pupina and E.Pupina in 1999. This population with age of 16 also keeps existing at present despite the small size of the water body and fishing therein.

Areal in Latvia. The registered points of finding *Perccottus glenii* are mostly located in the central and south-eastern part of Latvia, at the same time the total registered areal of *Perccottus glenii* covers at least the central and eastern part of Latvia. *Perccottus glenii* is found in the five catchment basins of these rivers in Latvia: Daugava; Gauja; Salaca; Veļkaja; Baltic Sea small rivers’ basin (near to Tukums) (Fig. 5).

The most western point is located in Tukums city (56°57’56.46”N, 23°11’39.94”E). According the interviews with local fishermen, *Perccottus glenii* never was caught in Dobele and Apgulde and to the west of the cities. The extreme northern point of finding *Perccottus glenii* in Latvia is located on the border with Estonia; the extreme southern points are located right on the border with Belarus and Lithuania. The extreme eastern point is located at a distance not farther than 17 km from the border with Russia.

Ecosystems. In this research, the typical ecosystems of *Perccottus glenii* are lakes and ponds of a medium and small size, reclamation canals and beaver dams filled with water (Fig. 6), linked with permanent or temporary aquatic connections in a single aquatic network.

Distribution by people. As part of the research, we received the reports from local people on the

releasing of *Perccottus glenii* by them into water bodies, including the illegal export of the species from Latvia into neighbouring Belarus for the purpose of its further illegal releasing in water bodies; on fishermen using it as the bait when fishing for pike and perch.

Trading for releasing in water bodies. We found Fisheries farm in Riga district, Babites parish, which trades the subadult and young adult of *Perccottus glenii* with length of 5 – 10 cm in the Internet (The cost is 0.07 EURO per one fish). The fishes distribution offered in Jurmala city,

Fig. 4. *Perccottus glenii* adult individual from the population in Pond Universitates with the minimum age of 41. 55°52'19.16"N; 26°30'26.14"E. Daugavpils, Latvia, 2015.

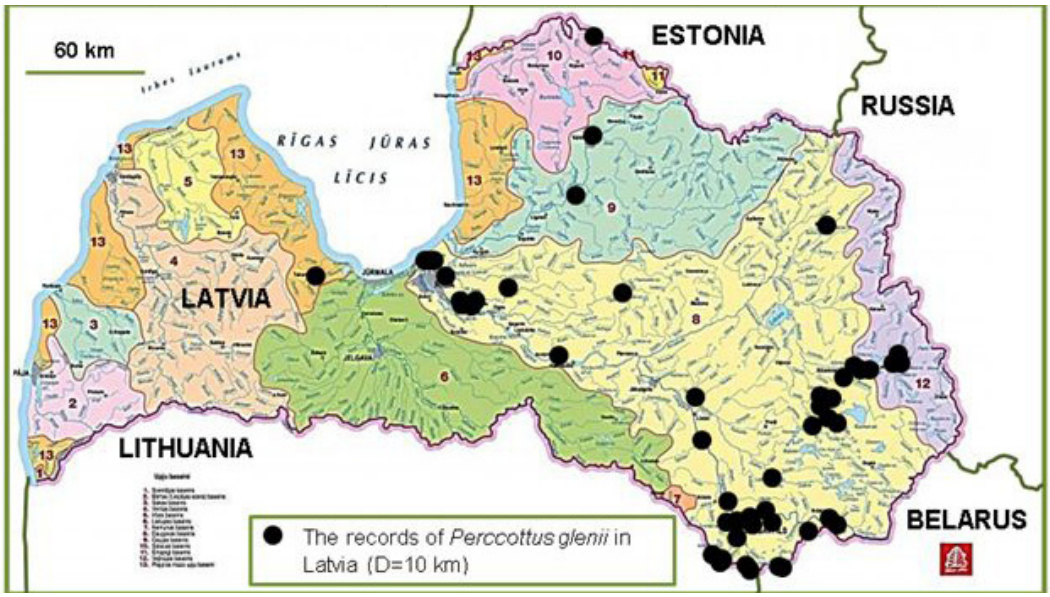

Fig. 5**.** The location of records of *Perccottus glenii* in Latvia and catchments basins: 1. Sventaja river basin; 2. Bartas-Liepajas lake basin; 3. Saka river basin; 4. Venta river basin; 5. Irve river basin; 6. Lielupe river basin; 7. Nemunas river basin; 8. Daugava river basin; 9. Gauja river basin; 10. Salaca river basin; 11. Emajegi river basin; 12. Veļkaja river basin baseins; 13. Baltic Sea small rivers' basins (the basic map of catchments basins from http://www.upes.lv/k-a-r-t-e/, open access).

Riga city, Pinoks town and Babite town (Fig. 7) (www.ss.lv). We found also the trades on an individual basis.

The maximal size. The largest *Perccottus glenii* of those we had caught was 250 mm in length from the end of the caudal fin to the tip of the snout, it weighed 266 g and was caught in Lake Trikartu, Daugavpils, south-eastern Latvia in 2014 (Fig. 8).

Nature conservation and *Perccottus glenii* threat. The species was registered by us in the water bodies which were inhabited by the protected species of herpetofauna: *Bombina bombina*, *Triturus cristatus*, *Pelobates fuscus*, and *Emys orbicularis*. *Perccottus glenii* was registered in a large number and various water bodies of the conservation areas of Natura 2000, for example, in "Augsdaugava" and the nature park "Daugavas loki" (Daugavpils novada dome 2010), "Augszeme", Silene Nature Park and micro-reserve "Ilgas", as well as at a distance of 3 km from the border of the Razna National Park.

DISCUSSION

The distribution of the points of finding *Perccottus glenii* in Latvia, registered during the research, proved a previously unverified assumption by M.Plikss and E.Aleksejevs (Plikss & Aleksejevs 2006) that the species may be distributed not only in the Daugavpils region, but also in the Cesis, Riga, Valmiera regions. In this research, no information was received confirming the assumptions by the mentioned authors regarding the distribution of *Perccottus glenii* in the Bauskas district.

It is seen based on the location of the points of finding *Perccottus glenii*, registered during this research in the territory of Latvia, that most of these points are concentrated around major cities: Riga, Daugavpils, Kraslava, Cesis etc. This may be due to the fact that the population of Latvia contributes to the introduction of *Perccottus glenii* into new water bodies by releasing them both on purpose (www.ss.lv) and by accident together with other fish species when stocking with fish (crucian carp, tench etc.).

In particular, during the present research, we received reports from land owners on their purposeful releasing of *Perccottus glenii* into water bodies for the purpose of fishing. On a regular basis, *Perccottus glenii* may be also introduced into water bodies, especially into large lakes, rivers and their catchment basins as the bait used while fishing for larger predators: pike, perch etc.

The concentration of the marked points of registration of *Perccottus glenii* around the cities may be also associated with the fact that there

Fig. 6. A pond overgrown with dense vegetation – a typical small pond biotope of *Perccottus glenii*. Pond Galdnieki, Kalkunes parish, Daugavpils district. 55°50'2.87"N; 26°28'58.57"E.

Fig. 7. The photo from the popular Latvian trade web-site with subadult and young adult of *Perccottus glenii* for sale with length of 5 – 10 cm. 30 *Perccottus glenii* ready for selling are seen on the photo (www.ss.lv).

is a higher concentration of fishermen, thus the probability of receiving a report on catching *Perccottus glenii* during fishing was greater.

Of course, the methods of registration of *Perccottus glenii* used in the present research are not capable of giving an answer to the question whether there is no the species in a water body, but they may only state its presence. Therefore, if *Perccottus glenii* was not encountered with the help of the methods used in the research, it does not mean that the species does not inhabit a particular water body and respectively this territory.

The effectiveness of the used field methods can depend on various factors: the weather conditions, time of the year, the population concentration of *Perccottus glenii*, the amount of feed in a water body, the chosen location for fishing, the qualification of a researcher etc. In this regard, it cannot be said that *Perccottus glenii* did not occupy those Latvian territories wherein it had not been encountered.

Nevertheless, we did not use probably more effective methods (electrofishing, fishing nets etc.) for the purpose of minimizing the impact of the research on the local ecosystems of water bodies many of which are inhabited by the rare target and other species of herpetofauna of Latvia (*Bombina bombina*, *Triturus cristatus*, *Pelobates fuscus*, *Emys orbicularis* etc.) (Ministru kabinets. 2000; Pupina & Pupins 2007, 2008, 2013).

We gathered the information about the whole territory of Latvia; however, its central and south-eastern parts were examined more fully wherein field studies were carried out. This is due to both the regular examination of water bodies of the target species (*Bombina bombina*, *Triturus cristatus*, *Pelobates fuscus*, *Emys orbicularis* etc.), distributed in these regions (Gasc et al. 1997, Kuzmin et al. 2008, Pupins & Pupina 2007, Pupina & Pupins 2008), carried out by co-authors and territorial proximity of these regions to the authors' central institution, namely, Daugavpils University, and, respectively, more frequent examinations, as well as more effective contacts with local fishermen and biologists while conducting interviews.

Luca M. and Ghiorghița G. concluded that, the resistance to extreme environmental conditions

Fig. 8. *Perccottus glenii*, caught in the biotope of *Emys orbicularis*. Lake Trikartu, Daugavpils.

gives the Amur sleeper the capacity to exploit different ecological niches and thus to adapt more easily to a different trophic spectrum (Luca & Ghiorghița 2014). Probably, most of the territory in Europe is climatically suitable for the species (Reshetnikov 2013). Therefore we suppose there are no significant limiting factors (climatic, hydrochemical, zoological etc.) preventing very ecologically plastic *Perccottus glenii* from occupying the whole territory of Latvia. Thus, despite the absence of the registered findings of *Perccottus glenii* in the central and western part of Latvia, we assume that the whole territory of the country potentially can be occupied to a greater or lesser extent by this species at present.

CONCLUSIONS

Perccottus glenii is widely distributed in Latvia; the registered findings of this species include the whole territory of Latvia except for its western part. It is probable that *Perccottus glenii* has already been distributed or will be distributed in the whole territory of Latvia and will inhabit all the water bodies available to it and corresponding to its ecological needs. The populations of *Perccottus glenii* in Latvia have been registered up to the borders with other countries, that is why they might have genetic contacts with the populations in the neighbouring countries: Lithuania, Belarus, Estonia, and Russia, and be transboundary. Thus, the populations of Latvia and neighbouring countries may become a source of distribution of *Perccottus glenii* for each other and mutual replenishment of its populations. In this respect, it is advisable to carry out the researches on the distribution of, monitoring and the management campaigns for *Perccottus glenii* in the bordering regions of Latvia.

In Latvia, the populations of *Perccottus glenii* can be very stable, long-lived (at least 41 years) and resistant to negative factors (fishing, reconstruction of water body). The conditions of the environment and ecosystems in Latvia allow *Perccottus glenii* to reach its maximal sizes.

Perccottus glenii is a dangerous predator and food competitor (Edgar & Bird 2006) for the rare species of Latvian hydrobionts (*Bombina bombina*, *Triturus cristatus*, *Pelobates fuscus*, *Emys orbicularis* etc.), in whose water bodies it was registered, because of its wide distribution in Latvia, plasticity in the selection of ecosystems, and predation. It may also be a predator, food competitor, and new vector of the spread of parasites for fish (Moravec 2008; Kvach et al. 2013), including the valuable ones, which makes it necessary to research, monitor and manage its population in Latvia.

While carrying out researches and elaborating the nature conservation plans of protected territories (Edgar & Bird 2006, Bara 2010, 2013, Pupina & Pupins 2014), it is necessary to examine and monitor the distribution of *Perccottus glenii* therein and plan the measures aimed at managing its population.

The measures aimed at managing the population of *Perccottus glenii*, preventing further distribution of *Perccottus glenii* and its introduction into new water bodies in Latvia should include the construction of barriers impassable for the above-mentioned species on waterways connecting water bodies; creation of new water bodies not connected with other water bodies; strengthening the legal responsibility for releasing *Perccottus glenii*; prohibition of using *Perccottus glenii* as the bait for fishing; education of the public, especially fishermen and land owners.

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