

A First Record of *Perccottus glenii* (Perciformes: Odontobutidae) in the Danube River in Bulgaria

Pavel Jurajda¹, Milen Vassilev², Matej Poláčik¹, Teodora Trichkova²

Abstract: The first record is reported of *Perccottus glenii* (Perciformes: Odontobutidae) in Bulgaria, a predatory fish species originating from the Far East, and rapidly increasing its range in Europe. Twelve specimens were caught in the main channel of the Danube River between the village of Vrav and the town of Lom (840-744th river km) during a period of elevated water discharge in April 2005.

Key words: exotic species, Amur sleeper, Danube basin

The Amur sleeper, *Perccottus glenii* Dybowski 1877 (Perciformes: Odontobutidae) is a freshwater fish with a stocky body and a large head. It reaches a maximum total length of 250 mm and weight of 250 g, though the majority of specimens are smaller than 120 mm in total length (BERG 1949, RESHETNIKOV 2003). The original areas of distribution of *P. glenii* are the Russian Far East, North-East China, and the northern part of the Korean Peninsula (BERG 1949, NIKOLSKY 1956, BOGUTSKAYA, NASEKA 2002).

In the 20th century there were two recorded introductions of *P. glenii* into the European part of Russia. The first was in St. Petersburg in 1912, from where the species gradually spread throughout the drainage area of the Gulf of Finland (DMITRIEV 1971, PANOV *et al.* 1999). The second introduction took place in Moscow in 1948, from where it spread through from the Moscow River system and into the upper Volga River basin (SPANOVSKAYA *et al.* 1964). A detailed history of the introduction of *P. glenii* to the European part of Russia and its dispersal westwards is described by RESHETNIKOV (2004). *Perccottus glenii* has also spread through the Asian part of Russia, the Baikal area, Kazakhstan, Uzbekistan, Turkmenistan and Eastern Europe (LITVINOV, O'GORMAN 1996, KOŠČO *et al.* 2003, RESHETNIKOV 2004). The expansion in the range of this fish is a result of its popularity as an aquarium fish, used as live bait, and the accidental transfer together with commercial fish for stocking. The species has been recorded in the Baltic Sea drainage (Poland - ANTYCHOWICZ 1994, TERLECKI, PALKA 1999, Latvia - PLIKŠS, ALEKSEJEVS 1998), and also in the White Sea and the Arctic Ocean basins (KOŠČO *et al.* 2003). In the 1990s the species was documented in the Black Sea river basin: in the Don River by KOZLOV (1993), in the Dnieper River by BOGUTSKAYA, NASEKA (2002), and in the Dniester River basin by KORTE *et al.* (1999) and MOSHU, GUZUN (2002).

¹ Institute of Vertebrate Biology, Academy of Sciences of the Czech Republic, Květná 8, 603 65 Brno, Czech Republic; E-mail: jurajda@brno.cas.cz

² Institute of Zoology, Bulgarian Academy of Sciences, 1, Tsar Osvoboditel Blvd., 1000 Sofia, Bulgaria; E-mail: mvassilev@zoology.bas.bg

The first occurrence of *P. glenii* in the Danube River system was in Hungary from the Tisza River basin in 1997 (HARKA 1998); in the Ukraine from the Latorica River drainage (of the Tisza River basin) in 1999 (MOSHU, GUZUN 2002); in Slovakia from the basins of the Latorica River near Bodrog in 1998 (KAUTMAN 1999, KOŠČO *et al.* 1999); in Romania from the Suceava River near Dornesti in 2001 (NALBANT *et al.* 2004); and in Serbia from a fish pond in November 2001 (ŠIPOŠ *et al.* 2004). The first record of *P. glenii* in the main channel of the Danube River in Serbia was in the Vinci Marine (1040th river km) in February 2003 (ŠIPOŠ *et al.* 2004).

From 7 to 13 April 2005, 12 specimens of *P. glenii* were caught in the main channel of the Danube River at five sites between the village of Vrav and the town of Lom (840-744th river km) in North-West Bulgaria (Fig. 1). Sampling was carried out during a period of unusually high river discharge; the water levels reached 864 cm with an average depth of 757 cm over the entire sampling period. Sampling was conducted from flooded banks using a beach seine (7 m length, 4 mm mesh size). Five specimens were fixed in 4% formaldehyde and deposited in the Institute of Zoology of the Bulgarian Academy of Sciences in Sofia. The remaining individuals were kept alive in the aquarium at the same institute. On the basis of scale growth checks, all the preserved specimens were one-year old, with a mean standard length of 44 mm (SD=5.48) and mean weight of 2.26 g (SD=0.64). The live specimens were of a similar size to the preserved. Dissection of preserved specimens revealed one as a male and four as females, the latter with well-developed ovaries.

Further fish sampling was conducted at the same site on two occasions. The first from 25-27th May 2005 at six sites between the villages of Novo Selo and Stanevo (833-724th river km). The water level at all sites was between 652-600 cm. The second occasion was from 6 to 14 July 2005 at five sites between the villages of Vrav and the town of Vidin (840-790th river km), when the water level was between 440-302 cm. On neither occasion were *P. glenii* captured.

Percottus glenii is a typical limnophilic species, inhabiting freshwater canals, oxbow lakes and gravel pits with dense aquatic vegetation and a mud substrate. During spring floods it spreads from these water bodies into rivers (BOGUTSKAYA, NASEKA 2002). KOŠČO *et al.* (2003) assumed that large-scale flooding contributed to the rapid colonization of *P. glenii* of the Tisza River basin. Because this species is not a strong swimmer, it might be expected that its dispersal within a river system would be mainly downstream (KOŠČO *et al.* 2003). In the case of the present study we assumed that the presence of *P. glenii* in our samples was linked to the unusually high water discharge during sampling. The single age class in our first sample and the absence of specimens in the subsequent surveys does not suggest a stable or permanent population in this section of the Danube. The apparent downstream movement of *P. glenii* and its dispersal through the lower Danube matches the observations of KOŠČO *et al.* (2003).

The hydrological conditions in the main channel of the River Danube are probably not suitable for *P. glenii*. Moreover, the pressure of predatory fish species in the Danube such as perch (*Perca fluviatilis* L.), northern pike (*Esox lucius* L.), zander (*Stizostedion lucioperca* L.) and wels catfish (*Silurus glanis* L.), which are reported to control the abundance of *P. glenii* (BOGUTSKAYA, NASEKA 2002), might curb its establishment. Therefore, though there are several studies documenting the negative impact of *P. glenii* on native fish and amphibian populations (KAUTMAN 1999, 2000, RESHETNIKOV 2003, KOŠČO *et al.* 2003) in the Danube, its impacts may be restricted by the local fish assemblage and the hydrological conditions. However, if *P. glenni* is able to form

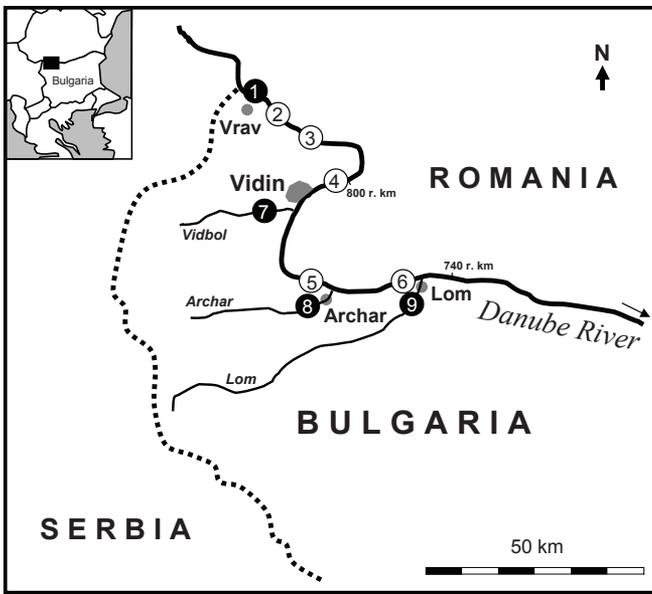


Fig. 1. Map of the upper stretch of the Danube River in Bulgaria sampled in April 2005, with study sites indicated (white rings indicate presence of *P. glenii*). 1. Vrav Village (840 r. km), 2. Novo Selo Village (833 r. km), 3. Gomotartsi Village (817 r. km), 4. Koshava Village (811 r. km), 5. Archar Village upstream (772 r. km), 6. Lom Town (744 r. km), 7. Vidpol River - Dunavci Village, 8. Archar River - upstream of Archar Village, 9. Lom River - Lom Town.

stable populations in off-channel water bodies associated with the main river channel, it could present a threat as an invasive trophic competitor and predator.

Acknowledgements: This study was possible thanks to the financial support of the Project Centre of Excellence, Ministry of Education, Youth and Sports No. LC522. We would like to thank the National Agency of Fisheries and Aquaculture at the Bulgarian Ministry of Agriculture and Forestry that permitted the field research and to the Chief of its Department in Vidin, Milen Metodiev, for the co-operation and support. We would like to thank our colleagues Markéta Ondračková, Radim Blažek, Kateřina Francová and Zdenka Valová for their field assistance.

Received: 13.03.2006

Accepted: 10.04.2006

References

- ANTYCHOWICZ J. 1994. *Percottus glenii* w naszym wodach. - *Komunikaty Rybackie*, **2**: 21-22.
- BERG L. S. 1949. Ryby presnyh vod SSSR I sopredelnyh stran. Moskva - Leningrad, Akad. Nauk. SSSR, III, 929-1382. (In Russian).
- BOGUTSKAYA N. G., A. M. NASEKA 2002. *Percottus glenii* Dybowski, 1877. Freshwater Fishes of Russia. Zoological Institute RAS. - In the INTERNET: http://www.zin.ru/Animalia/Pisces/eng/taxbase_e/species_e/percottuss_el.htm
- DMITRIEV M. A. 1971. Look out, Rotan. - *Rybovodstvo i Rybolovstvo*, **1**: 26-27. (In Russian).
- HARKA Á. 1998. New fish species in the fauna of Hungary. *Percottus glenii* Dybowski, 1877. - *Halászat*, **91**: 32-33.
- KAUTMAN J. 1999. *Percottus glenii* Dybowski, 1877 vo vodách východného Slovenska. - *Chránené územia Slovenska, SAŽP Banská Bystrica*, **40**: 20-22.

- KAUTMAN J. 2000. Three new fish species of Slovakia. - *Biodiverzita Ichtyofauny ČR (III)*, Brno, 29-36.
- KORTE E., V. LESNIK, A. LELEK and W. SONDERMANN 1999. Impact of overexploitation on fish community structure in upper River Dniester (Ukraine). - *Folia Zoologica*, **48**: 137-142.
- KOŠČO J., P. KOŠUTH and E. HRTAN 1999. Further new fish element of fishes in Slovakia: Amur sleeper. - *Polovníctvo a Rybárstvo*, **51 (6)**: 33.
- KOŠČO J., S. LUSK, K. HALAČKA and V. LUSKOVÁ 2003. The expansion and occurrence of the Amur sleeper (*Percottus glenii*) in Eastern Slovakia. - *Folia Zoologica*, **52**: 329-336.
- KOZLOV V.I. 1993. Ecological prediction of ichthyofauna of fresh waters (by the example of Ponto-Caspian Region). Moskva, VNIRO, 252 p. (In Russian).
- LITVINOV A.G., R. O'GORMAN 1996. Biology of Amur sleeper (*Percottus glehni*) in the delta of the Selenga River, Buryatia, Russia. - *Journal of Great Lakes Research*, **22**: 370-378.
- MOSHU A.Y.A., A.A. GUZUM 2002. The first discovery of rotan *Percottus glenii* (Perciformes, Odontobutidae) in Dniester River. - *Vestnik Zoologii*, **36**: 98. (In Russian, English summary).
- NALBANT, T., K. BATTES, F. PRICOPE and D. URECHE 2004. First record of the Amur sleeper *Percottus glenii* (Pisces: Perciformes: Odontobutidae) in Romania. - *Travaux du Museum National d'Histoire Naturelle "Grigore Antipa"*, **47**: 279-284.
- NIKOLSKY G.V. 1956. Fishes of Amur River basin. Results of Amur ichthyological expedition of 1944-1949. Moskva, 551 p. (In Russian).
- PANOV V., E. LEPPAKOSKI and H. OJAVEER 1999. Introduction of alien species into the Gulf of Finland – an increasing environmental problem. - In: PANOV V., M. DIANOV and A. LOBANOV (eds.): Regional Biological Invasions Center.
- PLIKŠS M., E. ALEKSEJEVS 1998. Latvian daba. Zivis. Riga, Gandrs, 304 p.
- RESHETNIKOV A.N. 2003. The introduced fish, rotan (*Percottus glenii*), depresses populations of aquatic animals (macroinvertebrates, amphibians, and a fish). - *Hydrobiologia*, **510**: 83-90.
- RESHETNIKOV A.N. 2004. The fish *Percottus glenii*: history of introduction to western regions of Eurasia. - *Hydrobiologia*, **522**: 349-350.
- SPANOVSKAYA V. D., K. A. SAVVAITOVA and T. L. POTAPOVA 1964. Ob izmenchivosti rotana (*Percottus glehni* Dyb. fam. Eleotridae) pri akklimatizatsii. - *Voprosy Ikhtiologii*, **4**: 632-643. (In Russian).
- ŠIPOŠ Š., B. MILJANOVIĆ and L.J. PELČIĆ 2004. The first record of Amur sleeper (*Percottus glenii* Dybowski, 1877, fam. Odontobutidae) in Danube River. - *International Association for Danube Research*, **35**: 509-510.
- TERLECKI J., R. PALKA 1999. Occurrence of *Percottus glenii* Dybowski 1877 (Perciformes, Odontobutidae) in the middle stretch of the Vistula River, Poland. - *Archives of Polish Fisheries*, **7**: 141-150.

Първо намиране на *Percottus glenii* (Perciformes: Odontobutidae) в българския участък на р. Дунав

П. Юрайга, М. Василев, М. Полачик, Т. Трнчкова

(Резюме)

За първи път в българския участък на р. Дунав е установен видът *Percottus glenii* (Perciformes: Odontobutidae). Това е хищен вид риба с произход от Далечния Изток, който поради високата си инвазивност бързо разширява своя ареал в Европа през последните години. През април 2005 г. при изключително високо водно ниво на реката в участъка между с. Връв и гр. Лом (реч. км 840-744) бяха намерени 12 екземпляра от този вид.