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THE FIRST RECORD OF *PERCCOTTUS GLENII* DYBOWSKI, 1877 (PISCES: ODONTOBUTIDAE) AND *AMEIURUS MELAS* RAFINESQUE, 1820 (PISCES: ICTALURIDAE) FROM THE ROMANIAN SECTOR OF THE DANUBE

LUIS OVIDIU POPA, OANA PAULA POPA, ELENA IULIA PISICĂ, ALEXANDRU IFTIME, SORINA MATACĂ, FLORINA DIACONU, DUMITRU MURARIU

Abstract. In this paper we report the first occurrence of the rotan *Perccottus glenii* Dybowski, 1877 and the black bullhead *Ameiurus melas* Rafinesque, 1820 in the Romanian sector of the Danube. Given the present distribution range in Europe, it is possible that the reported specimen of rotan (*Perccottus glenii*) belongs to a different population than the previously found specimens in Romania, which could suggest the existence of a second penetration way of the Romanian waters by this species. Based on morphological and meristic features which distinguish our *Ameiurus melas* specimen from previously reported Central European specimens, it is possible to admit the existence of more than one colonization events or founding populations for the European bullhead.

Résumé. On signale pour la première fois la présence des espèces *Perccotus glenii* Dybowski, 1877 et *Ameiurus melas* Rafinesque, 1820 dans les eaux roumaines du Danube. En considérant la distribution présente d'espèce *P. glenii* on peut supposer que l'exemplaire signalé ici proviènne d'une population différente que les exemplaires signalés auparavant en Roumanie. En considérant les caractères morphologiques et méristiques pour l'espèce *A. melas* on peut aussi supposer que l'existence des plusieurs colonisations ou populations fondatrices pour cette espèce.

Key words: invasive species, *Perccottus glenii, Ameiurus melas*, fish, Danube, Romanian fauna.

The study of invasive species has become an important topic of the scientific community in the late years because of the need to conserve biodiversity and sustain human livelihoods by minimizing the spread and impact of these species (see GISP news, 2003). More than 76 alien freshwater fish species belonging to 21 families have been introduced into European freshwaters. The majority of them originate from North America (about 34) and Asia (about 26) (Lehtonen, 2002).

The Odontobutidae family contains species native in freshwater streams of northern Vietnam, China, Korea, Japan, and Russia (Nelson, 1994). The rotan (*Percottus glenii* Dybowski, 1877) was found in Ussuri River and described by B. Dybowski in 1877 (Bogutskaya, 2002). Its natural distribution range is situated between 54°N-34°N and 106°E-141°E, comprising the North-eastern of China, the far East of Russia, the North-eastern of Korea and the basin of the Amur River (Fig. 1 A). The rotan began its spreading in 1916 in the St. Petersburg region when it was released from aquaria into small ponds. Subsequently, the species began its spreading over the drainage area of the Gulf of Finland (Kosco et al., 2003). The second colonization event for the rotan took place in 1948 when members of the Amur expedition brought and released individuals of *P. glenii* in the Moscow region. The species began its spreading in the Moscow hydrological system and the

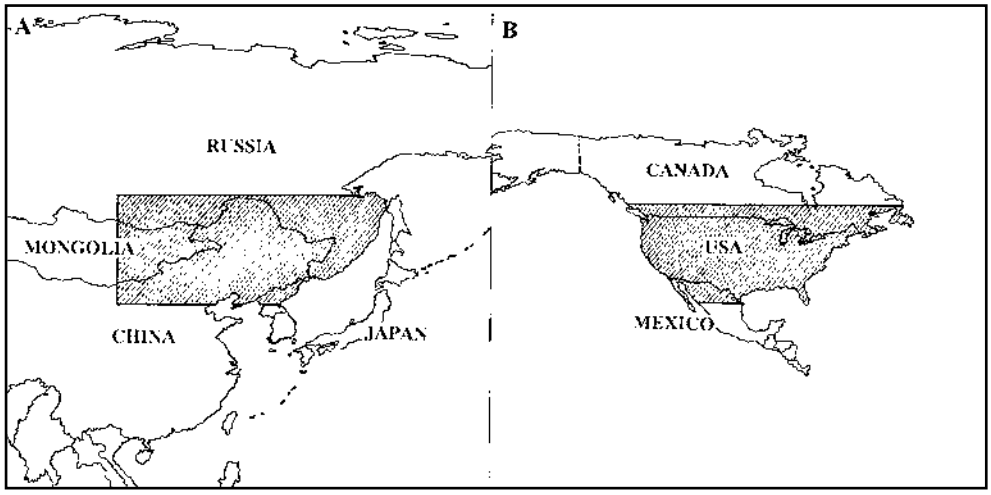

Fig. 1 – The native range (shaded area) of *Percottus glenii* Dybovski, 1877 (A) and *Ameiurus melas* Rafinesque, 1820 (B).

upper Volga basin and since then the rotan continuously spread westward (Bogutskaya & Naseka, 2002). The non-native areas the rotan is found today include: the Russian Federation, Kazakhstan, Uzbekistan, Belarus, the Baltic Sea basin (Reshetnikov, 2003), Poland (Antichowicz, 1994), Hungary (Harka, 1998), Slovakia (Kautman, 1999), Serbia, Ukraine (Moshu & Guzun, 2002), Romania (Nalbant et al., 2004), Italy (Edgar & Bird, 2005). In the Danube River the rotan was found in 2004 (Šipoš, 2004) in Vojvodina, Serbia.

The black bullhead (*Ameiurus melas* Rafinesque, 1820) is a member of the family Ictaluridae which contains species native in America, from Southern Canada to Guatemala. The native range of *A. melas* is situated between 52°N – 26°N, from the Great Lakes in the Southern Canada to Northern Mexico (Fig. 1 B). In Europe, the species was brought for the first time in France in 1861, then in Germany in 1880 and 1885. The present European range comprises Albania, Belgium, France, Germany, Hungary, Italy, Ireland, Holland, Poland, Romania, Russia, Spain, Switzerland, Great Britain and former Yugoslavia (Benigno, 2001).

The present specimen of *Percottus glenii* (Fig. 2) as well as the specimen of *Ameiurus melas* (Fig. 3) were caught in 2005 by a fisherman using a fishing-net in the Danube River at Km. 929 (44°37'13.68"N, 22°40'49.40"E). The fish specimens were kept for several months in an aquarium at the Iron Gates Region Museum in Drobeta Turnu Severin. The specimens were identified, measured, photographed with a digital camera, preserved in 70% ethanol and catalogued in the Iron Gates Region Museum collection (*P. glenii*) and in the "Grigore Antipa" National Museum of Natural History (Bucharest) fish collection (*A. melas*). The main morphometric parameters and the respective body proportion of the specimens are summarized in table 1 (*P. glenii*) and in table 2 (*A. melas*). The meristic features for *P. glenii* are: D: VI/10; A: III/10; P: 14; V: 5; scales in lateral line: 33; the meristic features for *A. melas* are: D: 7; A: 18; P: I/8; V: 7.

Perccottus glenii is considered to be a dangerous invader affecting the native amphibian populations and fishes. The species tolerates significant variations in

Fig. 2 – The rotan *(Perccottus glenii* Dybowski, 1877) specimen photographed by the authors.

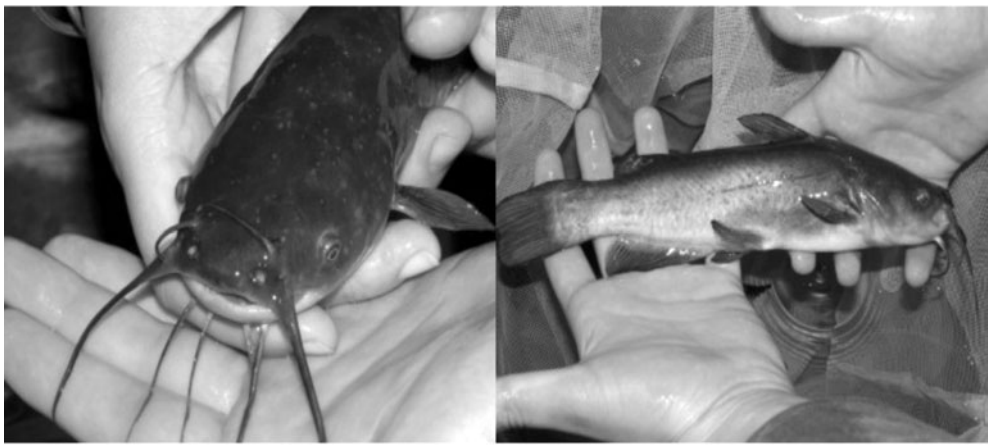

Fig. 3 – The black bullhead (*Ameiurus melas* Rafinesque, 1820) specimen photographed by the authors.

abiotic factors (water level, temperature) and can tolerate poorly oxygenated waters, which represent the favorable breeding sites of native amphibians. There are several studies documenting the adverse impact of the rotan upon the native amphibians populations, both urodelles (*Triturus cristatus* and *T. vulgaris*) and anures (*Rana arvalis*, *R. lessonae*, *R. temporaria*) (Reshetnikov, op. cit.), *R. latastei* (Edgar & Bird, op. cit).

This is the first record of the rotan in the Romanian sector of the Danube River and the second record in the Danube River. In the same time, it is the second

Table 1

The main morphometric parameters and the body proportions of *P. glenii.*

Morphometric characteristics	Size (mm)	Body proportions
Total length (LT)	165	
Standard length (LS)	141.3	85.6%LT
Head length (LH)	51.5	36.4%LS
Caudal peduncle length (CPL)	38.2	27.0%LS
Pre-orbital length (r)	13.9	9.8%LS, 27%LH
Orbital diameter (o)	9.5	6.7%LS, 18.4%LH
Post-orbital length (op)	32.9	23.3%LS, 63.9%LH
Pre-dorsal length (X)	68	48.1%LS
Pre-anal length (Y)	93.0	65.8%LS
Pre-ventral length (Z)	55.0	38.9%LS
Pectoral fin length (P)	26.8	18.9%LS
Ventral fin length (V)	11.5	8.2%LS
Dorsal fin base (DFB)	44	31.1%LS
Dorsal fin length (DH)	21.1	14.9%LS, 47.9%DFB
Body maximum depth (BMD)	37.4	26.5%LS
Body maximum width	32.0	22.6%LS, 85.6%BMD
Anal fin base (AFB)	18.6	13.2%LS
Anal fin length (AH)	15.7	11.1%LS, 84.4%AFB

Table 2

The main morphometric parameters and the body proportions of *A. melas.*

Morphometric characteristics	Size (mm)	Body proportions
Morphometric characteristics	Size (mm)	Body proportions
Total length (LT)	229.5	
Standard length (LS)	194.5	84.7%LT
Head length (LH)	52.9	27.2%LS
Caudal peduncle length (CPL)	35.5	18.3%LS
Caudal peduncle depth	21.1	10.8%LS, 59.4%CPL
Pre-orbital length (r)	16.3	8.4%LS, 30.8%LH
Orbital diameter (o)	7.4	3.8%LS, 14%LH
Post-orbital length (op)	30.2	15.5%LS, 57.1%LH
Pre-dorsal length (X)	72.6	37.3%LS
Pre-anal length (Y)	115.2	59.2%LS
Pre-ventral length (Z)	94.5	40.6%LS
Pectoral fin length (P)	31.4	16.1%LS
Ventral fin length (V)	30.2	15.5%LS
Dorsal fin base (DFB)	16.5	8.5%LS
Dorsal fin length (DH)	28.0	14.4%LS, 169.7%DFB
Body maximum depth (BMD)	42.2	21.7%LS
Body maximum width	43.5	22.4%LS, 103.1%BMD
Anal fin base (AFB)	44.7	23.0%LS
Anal fin length (AH)	21.9	11.3%LS, 49.0%AFB

finding of the species in Romania. The first five specimens of rotan were collected by electrofishing in the river Suceava (Nalbant et al., 2004). We think that these specimens originated from Ukrainean populations, while the new finding reported here could originate from the upper Danube. Given the size of these first found specimens, it is possible that they were juveniles, while this new individual was a fully mature fish. It is to be noted that once the species reached the Danube River, the Rhine-Main-Danube Canal offers no physical barrier to the spreading of this invasive species to Western Europe (Müller et al., 2002).

The black bullhead *Ameiurus melas* is one of the four species of the *Ictaluridae* family imported into Europe. The other three species are *A. nebulosus* (brown bullhead), *A. natalis* (yellow bullhead) and *Ictalurus punctatus.* Confusion over the taxonomic status of this species together with *Ameiurus nebulosus* resulted in more doubts as to which of the two is present in some countries. In Europe, it forms dense stunted populations which make it unpopular. Several countries report adverse ecological impact after introduction (Billard, 1997).

The identification of the present specimen of black bullhead was accomplished according to Scott and Crossman, 1973.

The present report of the species represents the first finding of the black bullhead in the Romanian sector of the Danube River. The species was imported into some Hungarian fisheries from Italy, and it is presumed that subsequently escaped and reached the Criș basin, then naturally spreading the Romanian waters (Wilhelm, 1998). In a 2002 report, the black bullhead is known to inhabit the Hungarian Danube, but not the Austrian, nor the Romanian Danube (Schiemer et al., 2004).

It is interesting to note that the features used to distinguish the two species (the posterior edge of the pectoral spine not serrated in *A. melas* vs. strongly serrated pectoral spine in *A. nebulosus* and 17-21 anal rays in *A. melas* vs. 22-23 in *A. nebulosus*) are considered by some authors not to be as different in the two species in European populations (Harka & Pinter, 1990). The main features used to identify our specimen of *A. melas* were the not serrated posterior edge of the pectoral spine and the number of anal rays (18 in our specimen) and this could suggest the existence of more than one colonization events or founding populations for the European bullhead.

In conclusion, the specimens reported here (*Perccottus glenii* and *Ameiurus melas*) represent the first record of the species in the Romanian sector of the Danube River. Given the present distribution range in Europe, it is possible that the present specimen of rotan (*Perccottus glenii*) belongs to a different population than the previously found specimens in Romania, which could suggest the existence of a second penetration way of the Romanian waters by this species. Based on morphological features which distinguish our *Ameiurus melas* specimen from previously reported Central European specimens, it is possible to admit the existence of more than one colonization events or founding populations for the European bullhead.

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PRIMA SEMNALARE A SPECIILOR *PERCCOTTUS GLENII* DYBOWSKI, 1877 (PISCES: ODONTOBUTIDAE) ŞI *AMEIURUS MELAS* RAFINESQUE, 1820 (PISCES: ICTALURIDAE) ÎN SECTORUL ROMÂNESC AL DUNĂRII

REZUMAT

În anul 2005 au fost pescuite în Dunăre la km. 929 câte un exemplar de *Ameiurus melas* Rafinesque, 1820 şi *Perccottus glenii* Dybowski, 1877. Exemplarele au fost păstrate timp de câteva luni în acvariile din cadrul expoziţiei Muzeului Regiunii Porţile de Fier din Drobeta Turnu Severin. Aceasta reprezintă prima semnalare a celor două specii în sectorul românesc al Dunării. Luând în considerare răspândirea actuală a speciei *P. glenii* putem presupune că exemplarul semnalat aici face parte dintr-o altă populaţie decât cele raportate anterior in România, ceea ce sugerează existenţa unei noi căi de penetrare a teritoriului României de către această specie. De asemenea, ţinând cont de caracterele morfologice şi meristice ale exemplarului de *A. melas* semnalat aici, putem bănui existenţa mai multor fenomene colonizatoare sau populaţii fondatoare pentru această specie în Europa.

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Luis Ovidiu Popa, Oana Paula Popa, Elena Iulia Pisică,
Alexandru Iftime, Dumitru Murariu
Muzeul Național de Istorie Naturală „Grigore Antipa"
Șos. Kiseleff nr. 1, 011341 București 2, România
e-mail: popaluis@idilis.ro
oppopa@antipa.ro
elenap@antipa.ro
aiftime@antipa.ro
dmurariu@antipa.ro

Sorina Matacă, Florina Diaconu
Muzeul Regiunii Porțile de Fier
Str. Independenței nr. 2, Drobeta Turnu-Severin,
RO-220171, România
e-mail: s_mataca@yahoo.com
florinadiaconu@yahoo.com