

# First Record of Brauner's Tadpole-goby *Benthophiloides brauneri* Beling & Iljin, 1927 (Actinopterygii: Gobiidae) in the Bulgarian Stretch of the Danube River

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**Abstract:** One specimen of *Benthophiloides brauneri* has been collected in the Danube River, east of the town of Tutrakan and near the village of Dunavets (422 river km) in October 2011. This is the first record of the species in the Bulgarian stretch of the Danube River and the first locality in the country outside the Black Sea coastal area.

**Key words:** *Benthophiloides brauneri*, Gobiidae, Danube River, rare species.

## Introduction

The Brauner's Tadpole-goby *Benthophiloides brauneri* Beling & Iljin, 1927 is a small benthic Ponto-Caspian fish. It was described from the lower parts of the Dnieper River and Southern Bug (BELING & ILJIN 1927) but later it was also found as upstream the Dnieper River as Kiev (SMIRNOV 1998). Outside this area, it is known from Lake Shabla, NE Bulgaria (GEORGIEFF 1953, GHEORGHIEV 1966). In the Danube River Basin, it was found for the first time in 1959 in Romanian waters of the Danube Delta close to Sulina Harbour (NALBANT 1997). Later, in July 1972, two more specimens (48 and 54 mm SL) were caught in the same area at a depth of 7-9 m. Three juvenile specimens (24-27 mm SL) were caught in the Chilia Arm of the Danube Delta in August 1985 – September 1987 at a depth 7-12 m. The only specimen previously collected in the Lower Danube River was a juvenile fish (25.2 mm SL) caught in August 1984 in the Măcin branch, south of Măcin Town (175 river km) at a depth of 5 m (NALBANT 1997). A dubious record from the Caspian Sea near Baku had been published by BELING & ILJIN (1927) and later accepted by BERG (1949). The species is usually found in fresh to oligohaline waters, mainly with silty sand bottom (PINCHUK & MILLER 2004). It inhabits estuaries, coastal lakes and lower part of rivers at depths up to 15 m (KOTTELAT & FREYHOF 2007).

In Bulgaria, *B. brauneri* was initially reported by GEORGIEFF (1953) from Lake Shabla, a Black Sea coastal lake situated in the north-easternmost corner of the country. The author caught a total of 31 specimens – ten on 20.07.1950 and 20 on 04.08.1950, all of them at a depth 0.5–1.5 m. Another juvenile specimen was caught by Georgieff on 22.11.1950 at a depth of 5.5 m. Later, the same author included *B. brauneri* in the list of fishes of Lake Shabla (MANOLOV-GHEORGHIEV 1967). Although, the species was mentioned in several subsequent publications for the country (STOYANOV et al. 1963, KARAPETKOVA & ŽIVKOV 1995, ŽIVKOV et al. 2005, VASSILEV & PEHLIVANOV 2005, STEFANOV 2007), none of these authors stated additional collection of *B. brauneri*. All these sources cited the information for the presence of this species from the paper by GEORGIEFF (1953). The most detailed recent study on the ichthyofauna of Lake Shabla system was conducted by VASSILEV (1998) in 1992–1994. *Benthophiloides brauneri* was not found during the study and, according to the author, the reason for its extinction was unknown. Therefore, in the new edition of Red Data Book of Bulgaria, this species was included in the category “extinct” (STEFANOV et al. 2012). Recently, more than 50 years after its last record, the species was found again in the same area. A

**Table 1.** Body proportions of the present specimen of *Bentophiloides brauneri* from the Danube compared to those from the Dnieper–Bug Estuary and Lake Shabla. Values are presented as the range followed by the mean in parentheses. Abbreviations: *Tl* – total length, *Sl* – standard length, *lc* – head length, *lac* – head width, *pD<sub>1</sub>* – predorsal distance, *pV* – preventral distance, *pA* – preanal distance, *lpc* – length of caudal peduncle, *ID<sub>1</sub>* – length of first dorsal fin base, *ID<sub>2</sub>* – length of second dorsal fin base, *lA* – length of anal fin base, *IV* – length of pelvic disc, *H* – maximum body depth, *h* – least depth of caudal peduncle, *prO* – preorbital distance, *do* – horizontal diameter of eye, *io* – interorbital distance.

Locality Source	Danube River Present study	Lake Shabla GEORGIEFF (1953)	Dnieper–Bug Estuary BELING & ILJIN (1927)
n	1 ad.	30 ad.	20 juv. and 2 ad.
<i>Tl</i> [mm]	69.1	31 – 72 (44.81)	juv. 17.5 – 30.5; ad. 54.64
<i>Sl</i> [mm]	57.3	24.8 – 55 (34.84)	
% of <i>Sl</i>			
<i>lc</i>	30.54	31.09 – 34.61 (32.88)	31 – 34
<i>lac</i>	27.22		27
<i>pD<sub>1</sub></i>	36.48		35 – 41.9
<i>pV</i>	32.64		28.3 – 35 (30.4)
<i>pA</i>	60.73	58.97 – 61.54 (60.15)	
<i>lpc</i>	18.85	13.72 – 18.52 (16.65)	8.3 – 10
<i>ID<sub>1</sub></i>	15.01		13.6 – 16 (14.2)
<i>ID<sub>2</sub></i>	32.81		28.4 – 32.4 (30.8)
<i>lA</i>	22.86		23.7
<i>IV</i>	18.50		23 – 29
<i>H</i>	20.77	19.19 – 23.07 (20.96)	19.2 – 24
<i>h</i>	9.77	10 – 11.53 (10.79)	10.1 – 12.5
% of <i>lc</i>			
<i>prO</i>	26.86		
<i>do</i>	17.71	20 – 24.19 (22.04)	22.7 – 27.3 (25.1)
<i>lac</i>	89.14	75.47 – 91.42 (83.39)	
<i>io</i>	22.86	16.36 – 20.96 (18.45)	

single specimen was caught in Lake Ezerets, which is part of the Lake Shabla system and connected to the main lake via an artificial channel (VASSILEV et al. 2012). In Bulgaria, the species is not known outside the Lake Shabla system.

In this article, we report the first record of this species in the Bulgarian stretch of the Danube River.

## Materials and Methods

On 12 October 2011, one specimens of *Bentophiloides brauneri* was caught in the Bulgarian stretch of the Danube River at 422 river km, East of the town of Tutrakan, near the Dunavets Village (N44°04'15.23"; E26°44'49.20"; Fig. 1). It was found alive in a temporary pool on the river bank after major decreasing of the water level. The habitat did not correspond well with the typical environmental requirements of the species: the bottom substrate was not made by fine sandy bottom but mainly by small stones and gravel. The specimen was stored in 70% ethanol immediately after it was collected and later deposited in the Ichthyological Collection of the National Museum of Natural History, Sofia.

## Results

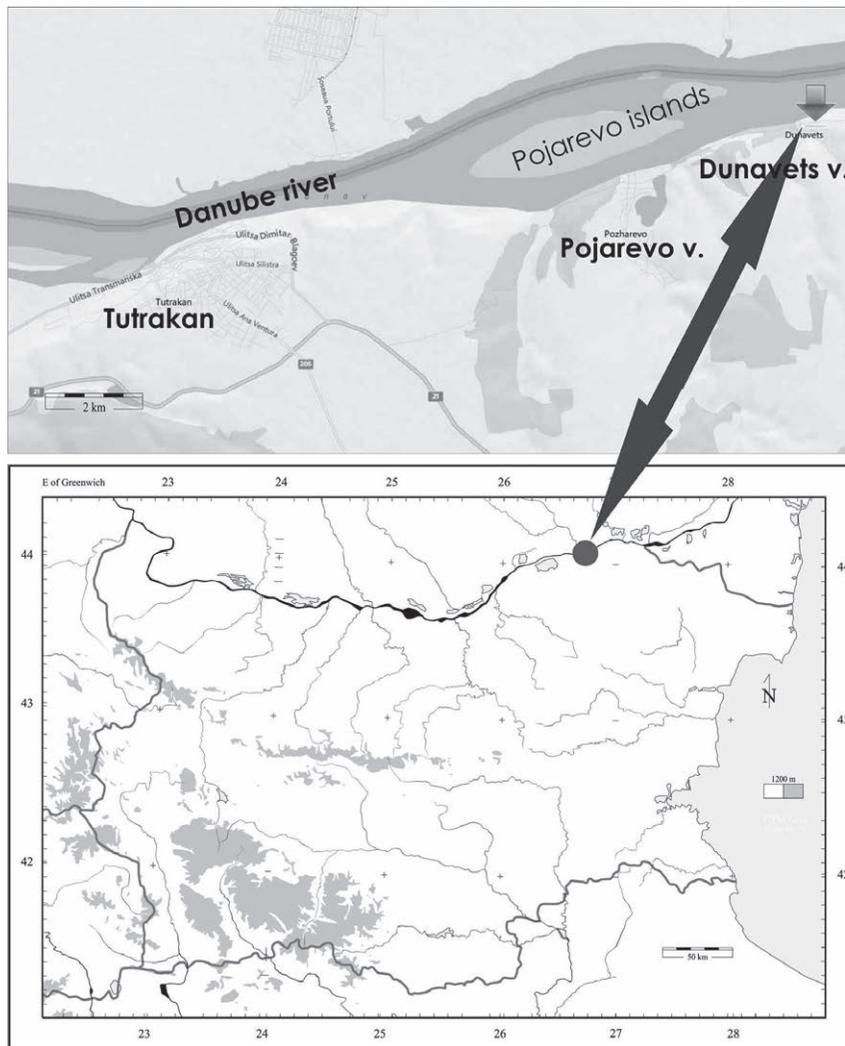
The collected adult specimens of *Bentophiloides brauneri* (69.1 mm *Tl*) was very well preserved but the coloration of the body was quite blurred and whit-

ish; the two typical for the species broad dark bars around the body were not distinct (Fig. 2). It had small differences in some body proportions as compared to those of conspecific individuals from the Dnieper–Bug Estuary and Lake Shabla (Table 1). It had slightly smaller head – *lc* in % of *Sl* was 30.54 versus 31–34.61 (summarised range for the other two localities). Caudal peduncle was more elongated (*lpc* in % of *Sl* was 18.85 versus 8.3–18.52) and somehow stumpy (*h* in % of *Sl* was 9.77 versus 10–12.5). Eyes were smaller (*do* in % of *lc* was 17.71 versus 20–27.3) and interorbital distance bigger (*io* in % of *lc* was 22.86 versus 16.36–20.96 in specimens from Lake Shabla). Pelvic disc also was much smaller – *IV* in % of *Sl* was 18.5 versus 23–29 in specimens from the Dnieper–Bug Estuary. Morphological data of only one specimen were clearly not enough to make any taxonomic conclusion about its status.

## Discussion

Although the ichthyofauna of the Bulgarian stretch of the Danube River is comparatively well studied (MARINOV 1978, VASSILEV 1994, POLAČIK et al. 2008), there are no data about the presence of *B. brauneri* in it. This is the first record of the species in this part of the Danube River and the first record from Bulgaria outside the Lake Shabla system.

Invasive biology is well known among most of the Ponto-Caspian species of gobies, especially



**Fig. 1.** Map of the locality, where *B. brauneri* was found in the Bulgarian stretch of the Danube River.

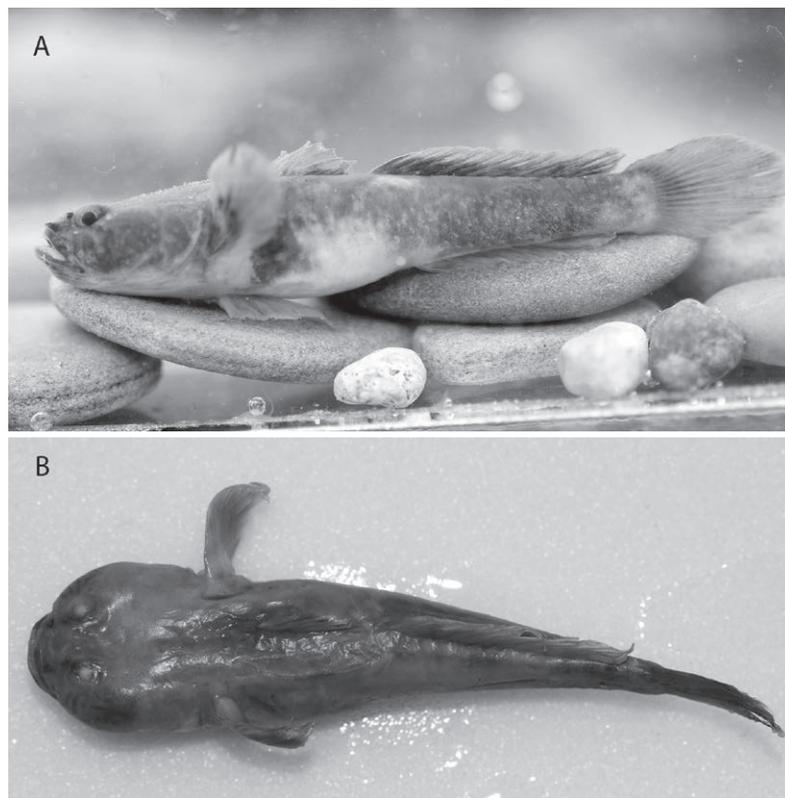
in the direction East-to-West, but such expansion is still not described for *B. brauneri*. Nevertheless, recently it has been detected to spread upstream the Dnieper as far as Kiev (SMIRNOV 1998). It would be interesting to follow whether the species will expand its range in the Danube River or not. In our opinion, the Lower Danube in Bulgaria is part of the original (native) range of this species, forming the westernmost part of its distribution, where it is very rare and has remained unknown for a long period of time.

According to BELING & ILJIN (1927), the lifespan of *B. brauneri* is very short and lasting about one year. It is known that males mature at 54-60 mm total length, and females at about 30 mm at the age of one year (BELING & ILJIN 1927, GHEORGHIEV 1966). This means that the adults die soon after the spawning. The breeding season of the species in Lake Shabla is July–August (GHEORGHIEV 1966), which seems also probable for the rest of the geographical range of the species. Thus, the specimen found by us in October

2011 was most probably at the end of its lifespan and it was washed near the bank of the river.

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**Fig. 2.** A: *Benthophiloides braueri* (69.1 mm TL) caught in the Danube River near the town of Tutrakan: lateral view of the body, live specimen. B: Same fish, fixed in ethanol: dorsal view of the body.

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