

The first report of round goby, *Neogobius melanostomus* (Pisces, Gobiidae) in the waters of Slovakia

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Abstract. After *Neogobius kessleri*, *Neogobius gymnotrachelus*, and *Neogobius fluviatilis*, *Neogobius melanostomus* is the fourth species of Gobiidae to find its way up the River Danube to Slovakia, occurring in our samples near Štúrovo (river km 1720) and in the River Hron (river km 0.82). The fish (male, females, juvenile) were captured along weakly sloped sandy riverbanks with large stones. The mensural and meristic characters of the specimens were similar to those reported elsewhere for the species.

Key words: *Neogobius melanostomus*, Gobiidae, distribution, Slovakia, Danube River, Hron River

Introduction

Since 1996, the presence of species of the genus *Neogobius* in the upper part of Danube is no longer unusual, with reports each year of new species or the upstream expansion of recently-reported species. For example, in the Slovak part of the River Danube, sequential recordings were made of *Neogobius kessleri* (Stránai 1997), *N. gymnotrachelus* (Kautman 2001) and *N. fluviatilis* (Stránai & Andreji 2001, Holčík et al. 2003). In August 2003, we captured four specimens of *N. melanostomus* in the Slovak part of the Danube. This species is known from the Yugoslavia part of the Danube (Simonović et al. 1998) as well as from the Austrian part of the Danube since 2000 (Wiesener et al. 2000, Ahnelt et al. 2001), which mostly lies upstream of the Slovak stretch.

Material and Methods

Specimens of *Neogobius melanostomus* were caught during a fish surveys (21 August 2003) in the littoral part of the River Hron (river km 0.82) and the River Danube (river km 1720) below the city of Štúrovo (Fig. 1). The fish were captured by pulsed D.C. electrofishing along a sandy bank with large stones. The river bank was weakly sloped and water velocity was moderate. The four specimens (one from the River Hron, three from the River Danube) were measured to the nearest 0.1 mm using callipers. Meristic counts and mensural measurements (after Holčík et al. 1986) were made on the left side of each specimen. Fin rays were counted under a binocular microscope. Sex was determined from the shape and length of the urogenital papilla, which is long and narrow in males but short and wide in females (Stránai 1999). The combined data for males, females and juveniles are presented as proportion of standard length (SL) and/or proportion of head length (lc). The specimens

have been deposited in the collection of Department of Poultry Science and Small Animal Husbandry, Slovak Agricultural University in Nitra, Slovak Republic.

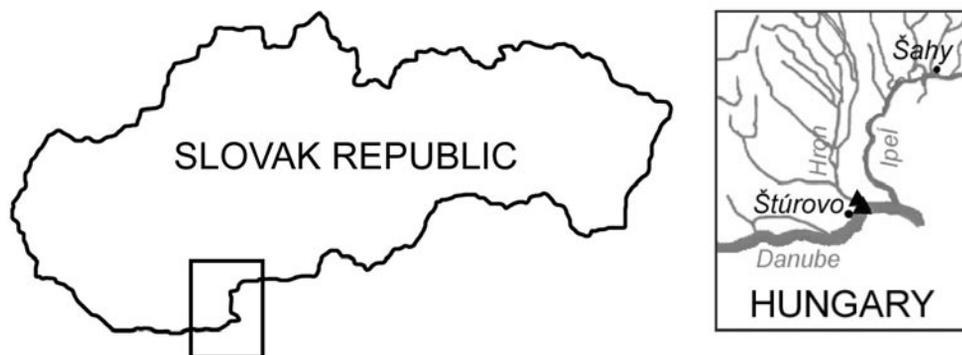


Fig. 1. Locations where round goby *Neogobius melanostomus* were caught in the rivers Danube and Hron.

Symbols used for meristic counts and mensural measurements (after Holčík et al. 1986)

D ₁	first dorsal fin
D ₂	second dorsal fin
A	anal fin
C	caudal fin
P	pectoral fin
V	pelvic fins (disc)
Squ	transverse rows of scales
SL	standard length (from tip of snout to the base of caudal fin rays)
H	maximum body depth
h	minimum body depth (least depth of caudal peduncle)
hpc	maximum depth of caudal peduncle
laco	body width
pD	predorsal distance (distance from snout to origin of first dorsal fin)
pA	preventral distance
P-V	distance between pectoral fin base and ventral fin base
V-A	distance between ventral fin base and anal fin base
lpc	caudal peduncle length (end of A to origin of C)
ID ₁	length of first dorsal fin base
ID ₂	length of second dorsal fin base
hD ₁	depth of first dorsal fin
hD ₂	depth of second dorsal fin
lA	anal fin length
hA	depth of anal fin
lP	pectoral fin length
lV	length of ventral fin (disc)
lC	caudal fin length
lc	head length (snout to midline opposite upper origin of opercle)
hc	head depth (at nape)
lac	head width (between upper origin of opercles)
lmx	upper jaw length
lmd	lower jaw length
Oh	horizontal diameter of eye
poO	postorbital distance
prO	snout length
io	interorbital width
Upl	urogenital papila length (from its base to its tip)

Results and Discussion

Neogobius melanostomus Pallas, 1814 (SL + IC): 1 male 90.0+17.4 mm (21.9 g); 2 females 85.3+16.4, 87.2+16.8 mm (16.1, 19.8 g) and 1 juvenile 54.3+12.5 mm (4.3 g).

Fin rays counts: D₁ VI (4), D₂ I 15–16 (15:3, 16:1), A I 12–13 (12:3, 13:1), P 17–18 (17:3, 18:1), V 11–12 (11:1, 12:3), Squ. 54–56 (54:1, 55:2, 56:1).

The mensural and meristic characteristics of *N. melanostomus* captured during our surveys (Table 1) were generally similar to those reported in the literature. The largest specimens can achieve 250 mm SL, but specimens are usually 150–180 mm SL. *N. melanostomus* belongs to the small-mouth-species, such as *N. fluviatilis*, as well as to the group with 6–7 transventral genipores under the eyes (P i n c h u k 1991). The nape, back, pectoral fine bases, neck, belly and quarter of operculum are covered by ctenoid scales, whereas the nape

Table 1. Statistics of measurements of *Neogobius melanostomus* from the rivers Hron and Danube (n = 4) interpreted as proportion of standard length (SL) and/or head length (lc).

Character	Mean	SD	SE	Min-Max
SL (mm)	79.2	16.71	8.36	54.3-90.0
In % of SL				
H	23.7	1.02	0.51	22.8-25.0
h	9.1	1.21	0.61	7.9-10.4
hpc	13.2	0.72	0.36	12.5-14.0
laco	19.8	1.06	0.53	18.4-20.8
pD	34.9	1.09	0.55	34.2-36.5
pV	31.3	1.11	0.55	29.9-32.6
pA	59.0	4.32	2.16	56.4-65.4
P-V	4.8	0.89	0.45	3.7-5.8
V-A	26.5	1.08	0.54	25.0-27.5
lpc	20.2	1.13	0.56	19.0-21.6
ID ₁	18.4	0.50	0.25	17.9-18.9
hD ₁	13.2	0.62	0.31	12.4-13.9
ID ₂	34.0	0.93	0.47	33.1-34.9
hD ₂	14.0	0.87	0.43	13.5-15.3
lA	27.1	1.39	0.70	25.2-28.4
hA	10.4	0.96	0.48	9.5-11.4
lP	24.8	1.68	0.84	23.3-26.3
lV	19.0	1.29	0.65	17.9-20.4
lC	20.2	1.87	0.93	19.2-23.0
lc	28.8	1.05	0.52	27.6-30.0
Upl	2.8	0.60	0.30	2.0-3.4
In % of lc				
hc	77.8	3.25	1.62	74.8-82.2
lac	90.8	4.55	2.28	87.7-97.5
prO	32.7	3.25	1.63	28.0-35.5
lmx	34.0	2.33	1.17	30.7-36.0
lmd	35.4	1.15	0.58	34.4-36.4
Oh	23.6	2.54	1.27	21.2-25.8
poO	49.8	2.95	1.48	45.5-51.9
io	19.5	3.68	1.84	14.7-23.5

and vertex are covered by cycloid scales. The lower jaw is short and not surpassed by the upper jaw. The pelvic disc membrana has slightly developed margins and almost reaches front part of the anus. The sides are pigmented brown-yellow with dark marbling. During spawning males darken to black and their dorsal fins have yellow bands.

Both dorsal fins are high and close together. The height of the second dorsal fin is similar over its entire length. A typical identifying feature of this species is a rich black round spot on the first dorsal fin between rays V–VI on its back side. This spot does not occur in other gobies. In young specimens, this spot has white bands.

Spawning period in the fresh and brackish waters is from March to August (Bă n ă r e s c u 1964). During spawning, males dig under a stone and use adhesive secretions from an accessory gonadal gland to create a nest of sand. A few females lay their eggs in even rows within the nest in batches. After fertilization of the eggs, the male guards the nest until the eggs hatch. During spawning, the males do not feed. In this species, males are generally larger than females. Sexual maturation occurs in the second year, sometimes as small as 60 mm SL (B e r g 1949).

In rivers, *N. melanostomus* occurs mainly along the banks in places with moderate water velocities over sand or sandy-gravelly substratum. The species is now found throughout of the Slovak section of the River Danube, with populations observed in September 2004 in the stretch immediately downstream of the upper dam of the Gabčíkovo hydroscheme (V. K o v á ě & G.H. C o p p, unpublished data). The species feeds on macrozoobenthos, adult specimens taking also molluscs and young-of-the fish.

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