

How was a Pirapitinga, *Piaractus brachypomus* (Serrasalminidae) introduced in Croatian freshwaters?

by

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RÉSUMÉ. - Comment le Pirapitinga, *Piaractus brachypomus* (Serrasalminidae), a-t-il été introduit dans les eaux territoriales croates ?

Dans la dernière semaine de juillet 2010, deux adultes de pirapitinga *Piaractus brachypomus* (Cuvier, 1818) ont été capturés dans les eaux croates. Ce sont les premiers enregistrements de cette espèce dans les eaux douces de Croatie, la deuxième fois qu'elle est signalée en Europe centrale. Une des explications envisagées pour expliquer la présence de cette espèce néotropicale dans les eaux croates est le relâcher en rivière par des aquariophiles.

Key words. - Serrasalminidae - *Piaractus brachypomus* - Pirapitinga - Croatia - Records.

The pirapitinga is a tropical fish characteristic of the Amazon and Orinoco basins, where it inhabits large flooded rivers and lakes. It is very valued as an aquaculture species, and is considered to be one of the most significant and prized species in aquarium trade (Saint-Paul, 1992; Jégu, 2003).

Outside of its natural distribution range, the pirapitinga is most common in the open waters of the US, due to aquarium related releases and fish farms escapes (Nico and Fuller, 2010). Incidental finds of individual pirapitinga have also been recorded in Europe, in Spain (Leunda, 2010), Slovakia (Hensel, 2004) and Poland (Nowak *et al.*, 2008). All these individuals are assumed to have been released by aquarists.

The aim of this paper is to present the first records of an ornamental, aquarium species *P. brachypomus* in the open waters of Croatia.

MATERIALS AND METHODS

In the last week of July 2010, sports fishermen captured with hook and line two piranha-like fish at two separate locations. The first individual (Fig. 1: site 1) was caught in the main river channel of the Drava River (45°37'24"N; 18°33'15"E), upstream of the city of Osijek, and the second (Fig. 1: site 2) in the main channel of the Danube River, near the confluence of the Drava and Danube Rivers (45°32'00"N; 18°57'03"E).

Both captured individuals were males and identified as pirapitinga or red-bellied pacu (*Piaractus brachypomus*), according to Machado-Allison (1982), Lovshin (1995) and Ross (2001). Body measures were taken using digital calliper (Mitutoyo) with an accuracy of 0.1 mm. Meristic traits (fin rays, scales in lateral line,

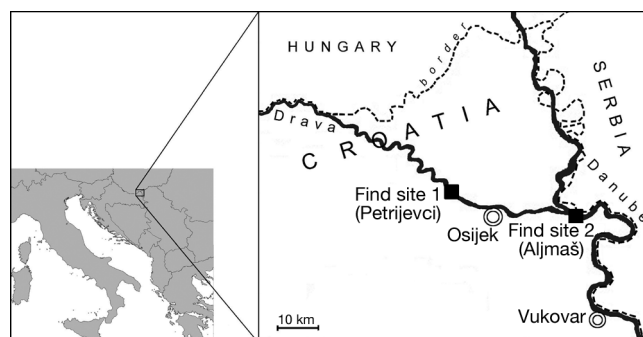


Figure 1. - Map of eastern Croatia and the localities where *Piaractus brachypomus* were captured.



Figure 2. - *Piaractus brachypomus* from the Danube River (Croatia), photographed immediately after capture, total length 232 mm.

ventral scutes and gill rays) were counted under a binocular microscope.

The specimens were deposited in the collection of the Natural History Museum Rijeka (Croatia) under the numbers PMR VP 2551 and PMR VP 2552.

RESULTS AND DISCUSSION

Meristic counts and morphometric measurements of the captured individuals were compared to those reported in Slovakia (Hensel, 2004), US (Ross, 2001) and South America (Machado-

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Allison, 1982), and are presented in tables I and II.

This is the first record of *P. brachypomus* in the open waters of Croatia and the Danube River, and the second such report in central Europe. The pirapitinga is often misidentified and sold as red piranha *Pygocentrus nattereri* Kner, 1858. However, due to the large adult size, many aquarists intentionally release them into non-

native waters when fish outgrow their aquarium.

It is not possible, at the present, to determine how these pirapitinga specimens reached open waters and their actual abundance. The individuals were caught in two different rivers and the distance between the find sites was 35 km. Therefore, there are likely a larger number of individuals in the river in order for two to be captured at two distant localities. This was also confirmed by both sport fishermen, who claim that it was an entire school of fish. Further confirmation is given by two other catches of piranha-like fish in the same month, both in the Drava River. One, near Valpovo, 18 km upstream of the first find site (sports fisherman did not save the fish), and second, in the Drava River near Klagenfurt (Austria). All the above indicate the possibility of the presence of a larger number of specimens of pirapitinga in the Drava River, thus raising questions about the theory of the release of a few individuals from a private aquarium. Unofficial information indicates that the high water levels of the Drava River and its tributaries in spring 2010 lead to a flooding of fish-ponds (in Hungary) where pirapitinga were kept, thus sweeping them into the river course.

Regardless of the fact that this is a harmless species of "piranha", the appearance of these ornamental species in Croatia could have a negative impact on the ecosystem and native fish fauna. However, the pirapitinga is a tropical species and is not considered risky in temperate climates. The minimum water temperatures of the Drava (nearby Osijek) or Danube (nearby Dalj) Rivers are below 10°C from November through March. Pirapitinga stops feeding between 16 and 18°C, with death ensuing at 11-13°C (Lovshin, 1995; Logan *et al.* 1996). The only areas where the pirapitinga could survive locally and maintain a population would be in naturally warm springs or power plant effluent channels.

As already stated by Lovshin (1995) about pirapitinga temperature needs, it is unlikely that this species can establish a permanent population in Croatian waters. After these specimens were caught there were no data showing the continued existence of pirapitinga in the Croatia. However, due to the potential threats it should be monitored on the continuous basis.

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Table I. - Comparison of the meristic counts of two pirapitingas (*Piaractus brachypomus*) from the Drava and Danube Rivers in Croatia, with the literary data.

	Present study		Hensel, 2004	Ross, 2001	Machado-Allison, 1982
	spec. I	spec. II			
D rays	III+ 14	(III+14) 17	III + 14	15-17	II-III + 13-15
A rays	III+24	(III+22) 25	III + 22	23-26	III - IV 21-24
V rays	I+7	I+7	I + 7	8	I + 7
P rays	I+16	I+14	I + 14	15-16	I + 15-18
Gill rays	34	33	36	/	33-39
Ventral scutes	57	61	29 + 24	58-62	46-63
Lateral line scales	96	99	104	97-102	70-89

Table II. - Comparison of the morphometric measurements (in mm) of two pirapitingas (*Piaractus brachypomus*) from the Drava and Danube Rivers in Croatia, with the literature data. *: POP, preopercular.

Measurements	Present study		Hensel, 2004	Machado-Allison, 1982
	spec. 1	spec. 2		
TL	232	241.5	/	/
SL	179.8	203.6	222	
Weight (g)	255.3	293.5	540	
Head length	52.3	60.3	64.4	
<i>In % of head length</i>				
Preorbital distance	28.5	28.0	31.6	30.2 (18.0-38.6)
Eye diameter (horizontal)	23.9	23.5	20.8	23.7 (16.3-29.8)
Postorbital distance	53.7	53.4	53.8	52.1 (47.9-57.5)
Interorbital width	46.3	47.1	52.7	47.2 (34.2-53.5)
Suborbital depth	15.5	15.4	16.2	14.0 (5.71-25.1)
Distance between eye and POP*	25.2	24.5	21.3	24.9 (18.5-30.0)
Head depth (eye level)	84.5	84.2	89.5	78.3 (63.1-89.8)
Maxilla length	21.4	22.7	22.9	21.5 (18.1-26.3)
<i>In % of standard length</i>				
Head length	29.1	29.6	29	36.2 (26.9-45.0)
Predorsal distance	59.1	58.5	56.3	59.5 (55.2-65.7)
Preventral distance	53.7	53.4	51.1	56.4 (47.0-61.3)
Preanal distance	75.4	77.1	76.1	77.0 (69.8-81.3)
Distance D-adipose fin	16.1	16.7	15.6	14.4 (8.6-26.9)
Caudal peduncle length	10.8	11.7	10	10.4 (8.7-12.8)
Body depth (max)	55.6	53.3	50.9	57.4 (47.5-67.4)
Caudal peduncle depth	11.3	11.7	12	11.4 (9.7-12.9)
D length	22.2	21.7	20.9	22.0 (18.9-24.9)
A length	27.8	26.0	24.3	27.6 (22.8-31.0)
P length	21.9	22.2	21.5	22.4 (17.2-26.4)
V length	20.1	18.4	18.7	19.7 (15.9-23.5)
Adipose fin base length	3.1	2.8	3	3.3 (2.0-5.5)
D depth (1 st ray)	25.7	26.1	22.5	25.7 (18.6-30.9)
A depth (2 nd ray)	23.3	21.0	16.5	23.1 (13.7-29.3)

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