The largemouth black bass (*Micropterus salmoides*): first record in the Neretva River delta, Adriatic drainage system of Croatia

by

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**Résumé.** – L’achigan à grande bouche (*Micropterus salmoides*) : premier signalement dans l’estuaire de la rivière Neretva, système de drainage adriatique de Croatie.

Le 10 octobre 2016, un spécimen de *Micropterus salmoides* a été capturé au trémail dans la rivière Neretva (système de drainage adriatique de Croatie). C’est le premier signalement de l’achigan à grande bouche dans cette rivière, et par conséquent dans le système hydrographique drainé vers l’Adriatique.

**Key words.** – Centrarchidae - *Micropterus salmoides* - Adriatic drainage system - Mala Neretva River - First record.

The largemouth black bass *Micropterus salmoides* (Lacepède, 1802) is native to the St. Lawrence-Great Lakes, Hudson Bay (Red River) and Mississippi River basins from southern Quebec to Minnesota and south to Texas, the Gulf Coast and southern Florida, including Atlantic drainages from North Carolina to Florida and Gulf drainages from southern Florida to northern Mexico (Page and Burr, 1991). Due to its appeal as a sport fish and for its tasty flesh, *M. salmoides* has been introduced throughout the United States, southern Canada, and much of the world (large areas of Europe, southern Africa, South America, parts of Asia and many oceanic islands) (Gratwicke and Marshall, 2001). It inhabits warm, quiet and low turbid waters, soft bottoms, and beds of aquatic plants. Typical habitats include farm ponds, swamps, lakes, reservoirs, sloughs, creek pools, and river coves and backwaters. Many of the largest populations are in mesotrophic to eutrophic lakes or reservoirs.

The largemouth bass was introduced along with pumpkinseed (*Lepomis gibbosus*) into Europe at the end of the 19th century. In 1883, it was imported into Germany and, then, into Czechoslovakia, with the first record in the open waters of the Danube dating back to 1957. In the Red Book of Freshwater Fish, a list of 19 alien species that had colonised the mainland waters of Croatia was published and one of them is *M. salmoides*, but only for the Black Sea drainage system (Mrakovčić et al., 2006). The present contribution describes the first record of the largemouth black bass from the Mala Neretva River and consequently for the Adriatic drainage system as a whole.

**MATERIAL AND METHODS**

On 10 October 2016, one immature specimen of largemouth black bass (total length, TL = 22.6 cm; weight, W = 181 g) (Fig. 1) was captured by trammel net (mesh size 20 mm) near the town Opuzen, Croatia (43°00’30.59"N; 17°32’40.19"E) (Fig. 2) at a depth of 1.5 m on a muddy bottom. The salinity at the location of capture was 0.6 ppt, while temperature was 11.7°C. The specimen was deposited (preserved in 95% alcohol) in the ichthyological collection of the Institute of Oceanography and Fisheries in Split, Laboratory of Ichthyology and Coastal Fishery (catalogue number MS-IOR 101016).

**Description of the Mala Neretva specimen**

The identification key of Scott and Crossman (1973) was used. Specimen has: dorsal fin rays X+13; anal fin rays III+11; pectoral fin rays 14; ventral fin rays 14; lateral line scales 57; branchiostegal rays 6; separate gill membranes; standard length 1.2 times into total length; base of anal fin 1.9 times into base of dorsal fin; greatest depth 3.3 times into length from tip of snout to end of scales;

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preorbital length 3.3 times into head length; ocular diameter into head length 4.9 times; upper jaw extending beyond the eyes; connection between dorsal fins lower; shortest posterior spine less than one-half the longest; pelvic fins not joined by a membrane; membrane connecting fins to body obvious.

**DISCUSSION**

No scientific publication has previously reported *M. salmoides* in the Mala Neretva and Neretva River watershed, nor in any other rivers of the Adriatic drainage system of Croatia. Although there are notes suggesting the freshwaters of Bosnia and Herzegovina as a potential distribution area for *M. salmoides*, this data are based only on species lists, which lack detailed species descriptions and localities (Bogut et al., 2006) making the data unreliable. The only possible explanation for such record in the study area is a not sufficiently controlled introduction (in this case of a non-native species).

The largemouth black bass has been probably introduced to the Mala Neretva River and now represents potential threat, especially in case of establishing a population, to the natural equilibrium of their community. In some places where it was introduced, it has already affected populations of small native fish through predation, sometimes resulting in the decline or extinction of such species (Jackson, 2002). Its diet includes fish, crayfish, amphibians and insects. Marković et al. (1996) reported that the largemouth bass as a predatory species can become a food competitor for autochthonous predators like pike (*Esox lucius*). There is also evidence that largemouth black bass consume salmonids, especially when juveniles are migrating (Brown et al., 2009). Alien fish such as largemouth black bass are introduced into water-bodies already altered by human activities; once the introduced fish establish thriving populations, it is difficult for damaged populations of salmon or trout to become re-established (Lackey, 1999). The loss of biodiversity and homogenization of freshwater ecosystems in North America is linked to the introductions of the largemouth black bass (Jackson, 2002).

The artificial flow regulation creates specific conditions and today Mala Neretva River is under a slow flow rate during winter and almost without flow during summer. The temperature range is between 7-8°C in winter and 25-28°C during summer. The salinity is always below 1 psu, despite adjacent marine waters. This creates a suitable habitat for most of the cyprinids, bream and bass species. Largemouth black bass generally inhabit waters that range from fresh to oligohaline, although some individuals have been reported from tidal freshwater and estuaries with salinities up to 24 psu (Peer et al., 2006). It seems that winter temperatures are not adequate for the largemouth black bass since the minimum temperature that permits its growth is 15°C and optimal temperature for spawning and incubation is within range of 13-26°C. Survival of eggs and embryos in unlikely above 30° or below 10°C (Brown et al., 2006). it seems that winter temperatures are not adequate for the growth of the largemouth black bass. Perovich and reality. Renew. Res. J., 17: 6-16.


