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# Largemouth bass (*Micropterus salmoides* Lacépède): reproduction management and larval rearing in Italy

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**RIASSUNTO** – Persico trota (*Micropterus salmoides*, Lacépède): gestione della riproduzione e allevamento larvale in Italia. *Il black bass sta assumendo un'importanza crescente nel nostro Paese sia per la pesca sportiva che per l'alimentazione. Nel biennio 2001-'02 prove sulla possibilità di riprodurre e allevare gli stadi giovanili di black bass in Italia sono state intraprese a partire da uno stock selezionato di pesci di taglia adeguata. In aprile, alla deposizione delle uova fecondate dai maschi in stagni precedentemente fertilizzati, ha fatto seguito la cattura delle larve e la fase di allevamento in ambiente controllato. La quantità e la tipologia di alimento naturale ed artificiale nei primi mesi di vita e il ricorso a frequenti calibrature sono alla base del successo di questa tecnica che, nell'arco di circa 70 giorni, ha consentito di ottenere giovanili del peso di 1 g. La successiva fase di allevamento ha avuto luogo in stagno dove, a fine ottobre, si è riscontrata una pezzatura media di 5 g ed una sopravvivenza superiore al 50%.*

**Key words:** black bass, reproduction in ponds, rearing of larvae and juveniles, grading.

**INTRODUCTION** – *Micropterus salmoides* (Lacépède) was originally present into the waters of the eastern United States of America, northern Mexico and southern Canada. This species can be distinguished from the other black basses by the fact that its mouth extends to and beyond the edge of the eye and the first and the second dorsal fins are almost separated by a deep dip and there are no scales on the soft rayed of the second dorsal fin.

Today, this bass can be found in every state of the U.S., Central America and in many countries throughout the world. In Europe, this fish has been mainly introduced into France and Italy where it's sold with the generic name of black bass for recreational fishery. Moreover the Great Distribution Retailers have shown interest for this fish as food.

This work reports the results of preliminary experiences of controlled reproduction and larval and juveniles rearing of largemouth bass carried out during year 2001. The trial was repeated in 2002.

**MATERIALS AND METHODS** – During the first week of April 2001 and 2002, broodstocks of black bass were collected from a wintering ponds using nets. Broodfish were submitted to sexing based on observation of secondary sexual characters: ripe females were selected on the basis of distended and soft abdomen and a red, swollen and protruding urogenital opening; ripe males were fluent when stripped.

For every year, 20 couples were stocked in 1-500 m<sup>2</sup> natural pond, 1 m deep. Before the filling, the earthen basin were fertilized with manure (2 t/ha) and 20 nests were placed at 80 cm depth, 4-6 m spaced. The nests were obtained by splitting in two parts 100 l cylindrical black plastic drums filled with stones.

15 days after having filled the pond (April), broodstocks, weighing 500-800 g, were released and the behaviour was observed in order to verify if eggs had been laid.

18-23 days after hatching, larvae were collected and transferred in 1.5 m<sup>3</sup> black coloured cylindrical fibreglass

indoor tanks at a stocking rate of 30-50 larvae/l. These tanks were provided with aeration and had a 5% dail

water refilling.

Water temperature was maintained at 21°C. The newly hatched Artemia (4 nauplii/ml) were used to feed the

larvae for 15 days. Successively, copepods and cladocerans, collected from a pond used for this purpose, were

administered and an extruded feed was progressively added till the weaning was reached. Feed was supplied

by means of an automatic feeder operating in one 12-hour cycle.

During the larval and juvenile rearing, grading fish was carried out at different times. At the end of this

phase, fingerlings were harvested and mean weight and survival rate were calculated.

At the end of July, fish were transferred in ponds where they stayed until harvesting that occurred at the end

of October.

**RESULTS AND CONCLUSIONS** – In the years 2001-2002, on a total of 20 couples/year, 16 and 15 broodstocks laid eggs respectively, from the half to the end of April at the water temperature of 19±2°C. Fertilized eggs were adhesive and spherical with a 1.5-2.5 mm diameter and a range of 7000-12000 eggs/nest was estimated.

At the age of 18-23 days larvae were harvested and had a mean length of 9±3 mm. During the indoor rearing, to reduce size variability and control cannibalism, it was necessary to submit the fingerlings to frequent grading: the first at 150-200 mg; the second at 300 mg and third at 400 mg mean weight.

As for in other predator fish (*S. vitreum*, *M. saxatilis*, *D. labrax*) (Kerby, 1986; Katavic *et al.*, 1989), a cannibalistic behaviour was observed not only related to the different size but also to prey density and feeding frequency. In this phase, the availability of large quantity of live food reduced this problem and the growth increased.

The weight gain obtained in our trial was higher than that reported by Petit *et al.* (2003) on juveniles at the same age but maintained in aquaria.

Larval and juvenile rearing phase covered 70±10 days to reach 1 g and resulted longer compared with the result of the trial performed in ponds by Kubitzka and Lovshin (1997) that obtained the same weight in 30-45 days. At this weight fingerlings were transferred again in natural ponds until the end of October when a mean weight of 5 g was reached.

The survival rate (50±10%) was lower than that obtained in the U.S. rearing conditions where 65-95% is achieved (Simco *et al.*, 2000).

However, the rearing technique, adopted in this trial, let to reach interesting results because it's necessary to consider that reproduction and the initial rearing until the age of 18-23 days, took place in pond. After this period, the larvae collected from the pond and transferred in cylindrical tanks received *Artemia nauplii* only for 15 days followed by natural zooplankton until the weaning (averagely day 70). The result was a marked reduction of production costs compared with the reproduction and larval rearing totally carried out in hatchery.

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