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**Pugheadedness in a Largemouth Bass/  
Florida Largemouth Bass Hybrid from  
Puerto Rico: The Fifth Record in Large-  
mouth Basses**

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Largemouth bass, *Micropterus salmoides* (Lacepede), (Centrarchidae) is the most important sport fish in North America. Only four cases of shortened upper jaws and skulls (pugheadedness) have been described in this species although it is probably one of the best examined of fishes. Bunkley-Williams and Williams (1995) examined large numbers of this fish in Puerto Rico but found no anomalies other than spinal curvature (blamed on mycobacterial infections instead of anomalies). We describe the first case of pugheaded-



FIG. 1. Largemouth bass, *Micropterus salmoides* (Lacepede), collected from Carite Lake in southeastern Puerto Rico. Fish with pugheaded condition above, and normally shaped fish below.

ness in a largemouth bass/Florida largemouth bass hybrid (*M. s. salmoides* × *M. s. floridanus*) and the first report of this condition in the tropics, from a fish captured in a routine reservoir sample and cooperative fish health examination.

During a routine electrofishing survey in Cidra Reservoir (see location map in Bunkley-Williams and Williams, 1995: 174) a pugheaded largemouth bass was noted among fishes examined for diseases. The anomalous fish had a distinctly shortened upper jaw and forehead (Fig. 1) typical of the pugheaded condition. The head and the anterior trunk was preserved in 10% buffered formalin and examined histologically by the Registry of Tumors in Lower Animals, Department of Pathology, George Washington University Medical Center, Washington, District of Columbia (RTLA 6405). This fish also had a gill anomaly on the first arch in the right gill chamber in which six gill filaments were fused along their entire adjacent margins (almost forming a gill plate similar to what is normally found in some sharks).

The histopathological examination was negative. Our necropsy found an infection of bacteria, *Flexibacter columnaris* on the skin, fins and gills; a very heavy infection (100+) copepods, *Ergasilus caeruleus* Wilson, on the gills; and other routine parasites. The high levels of parasites and bacterial infections in this and other fishes in the sample suggested that the health of the fishes in this reservoir was deteriorating. This is not surprising, since the lake has a long history of contamination and fish kills.

In creel censuses, fishing tournament examinations and reservoir sampling, biologists from the Puerto Rico Department of Natural and Environmental Resources have examined many thousands of largemouth bass each year. We interviewed these biologists and none of them had observed pugheadedness in this fish.

Pugheaded largemouth basses have normal length-weight relationships and condition factors. The anomaly does not seem to inhibit feeding or proper nutrition.

Chew (1973) suggested that pugheadedness is a heritable genetic defect, since both the male and female largemouth bass he examined were sexually mature and apparently capable of spawning. We have found, however, that fishes with large, external parasites are unable to defend territories, and pugheadedness may similarly impair reproduction. This condition has been reported so rarely that it does not appear to be readily transmissible. It similarly does not seem to occur often enough to be caused by simple exposure to contaminants.

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