

Swimming Performance of Juvenile Bighead Carp
(*Hypophthalmichthys nobilis*)

By

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INTRODUCTION

Bighead carp (Hypophthalmichthys nobilis) are native to China (Jennings 1988).

Spawning occurs in channels of large rivers where velocities exceed 0.8 cm/sec (Chang 1966).

Presumably in its native habitat, floodlands provide nursery areas for young fish.

Juvenile fishes consume a variety of foods including zooplankton, phytoplankton, detritus, and blue-green algae (Lazereva et al. 1997; Sukhoverkhov 1963; and Verigin 1963). Of interest to researchers at the University of Arkansas at Pine Bluff (UAPB) was what velocities juvenile bighead carp could traverse. It was anticipated that juvenile bighead carp might be placed in circular tanks for raising to a larger size.

MATERIAL and METHODS

Ten juvenile bighead carp were obtained from the UAPB experimental hatchery to use in assessing swimming performance. The fish were held in the laboratory in 20-gallon aquaria and allowed to acclimate for a one week period.

A flow-through velocity apparatus, the ichthyonatometer, was used to assess velocity endurance of each fish. The apparatus used consists of a submersible pump and a clear PVC pipe for fish observation (Ralston and Layher 1997).

Fish were placed one at a time in the flow chamber at near 0 cm/sec velocity. Velocity was increased slowly to allow the fish to adjust adequately. Fishes used in the tests ranged in size from 62 mm to 119 mm in total length. Velocity was increased until the fish showed signs of erratic movement which usually quickly terminated in exhaustion. The velocity at this point was recorded.

RESULTS and DISCUSSION

Bighead carp juvenile showed no relation between total length and velocities at which they became exhausted ($R^2=0.217$; $p>F=0.174$). Mean length of all fish tested was 93.3mm; s.d.=19.51. Little difference was found for velocities at failure points ($\bar{x}=24.766$ cm/sec; s.d.=3.841).

These data would suggest that juvenile fishes cannot traverse high velocities. In their native habitats the fish may grow to a larger size in floodwater areas and enter rivers once a larger size is attained. It is unlikely that juvenile bighead carp could forage efficiently in circular tanks if velocities are high enough that fish would continually be swept with the current.

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