

## Reproduction of a Domestic Striped Bass Brood Stock

L. CURRY WOODS III

Maryland Agricultural Experiment Station  
Crane Aquaculture Facility  
Post Office Box 1475  
Baltimore, Maryland 21203, USA

RICHARD O. BENNETT

U.S. Fish and Wildlife Service  
4401 North Fairfax Drive  
Arlington, Virginia 22203, USA

CRAIG V. SULLIVAN

Department of Zoology  
North Carolina State University  
Campus Box 7617  
Raleigh, North Carolina 27695, USA

**Abstract.**—Fingerlings of striped bass (*Morone saxatilis*) were reared to sexual maturity in tanks, during which time they were fed only commercial trout and salmon diets. Spawning trials were conducted with two of the 6-year-old domestic females. They ovulated after being injected with 330 IU of human chorionic gonadotropin (HCG) per kilogram of body weight, and their eggs were manually stripped and fertilized with the milt from four HCG-injected males (150 IU/kg body weight). Approximately 41% of the eggs were fertilized. Aside from accidental losses or deliberate cropping of the population, no significant mortality of the progeny was observed after they hatched. The larvae were fed live brine shrimp (*Artemia* sp.) for 30 d after hatching and then adapted to commercial salmon or trout diets. Several hundred of these F<sub>1</sub> domestic brood stock have been reared for 3 years in intensive culture and most of the males are now sexually mature. These results conclusively demonstrate the viability of the progeny of domestic brood stock produced under intensive culture conditions and fed only dry commercial diets.

Federal, state, and private hatcheries currently are dependent on limited or threatened stocks of wild striped bass (*Morone saxatilis*) to support their hatchery operations. Mature fish are captured on or near their spawning grounds for hatchery propagation. Obtaining suitably mature brood stock for spawning is uncertain, and the timing of natural spawning of wild brood stock at various geographic locations is unpredictable. Spawning varies with the prevailing climatic conditions, including water temperature and precipitation. At

many hatcheries, variation in annual climatic conditions often limits production of striped bass and hybrid striped bass.

Dependence on wild stocks imposes limitations on the commercial development of striped bass aquaculture (Smith 1989). The lack of domestic brood stocks and the resulting insecure and unpredictable supply of available stock has been cited as the major constraint to expansion of the striped bass aquaculture industry (JSA 1983). Controlled spawning of domestic brood stock (fish reared in captivity from juvenile stage to mature adult stage) would provide the best alternative source of fry for hatcheries currently dependent upon wild stocks of striped bass for spawning (Smith and Jenkins 1984; Woods et al. 1990). The characteristics of these stocks could likely be improved for aquaculture after these stocks were reproduced for several generations in captivity (domesticated). Production of domestic stocks of *Morone* spp. would eliminate or reduce the need for collecting wild fish for aquacultural purposes.

Several recent publications document efforts to develop captive populations of mature striped bass (Smith 1987; Smith and Jenkins 1987; Woods et al. 1990) or to condition wild stocks for future use as captive brood stock (Henderson-Arzapalo and Colura 1987). We have taken 1-d-old striped bass and reared them to sexual maturity at the Crane Aquaculture Facility, a single-pass, intensive-culture system (Woods and Kraeuter 1984). Newly hatched striped bass were offered live brine shrimp (*Artemia* sp.) for 30 d, and they were subsequently fed only formulated, commercial trout and salmon diets. This article documents the viability of the gametes and progeny of a domestic striped bass brood stock produced under intensive-culture conditions and fed only dry commercial diets.

### Methods

Six-year-old domestic striped bass, maintained at the Crane Aquaculture Facility, were the parental stock used in this study. All fish were received as 1-d-old fry between May 1 and May 17, 1983. The striped bass were of mixed origin, specifically from the Chesapeake and Delaware Canal, the Choptank River, and the Nanticoke River.