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PROGRAM IN SOUTHWESTERN LOUISIANA

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A NOTE ON THE BRACKISH WATER STRIPED BASS PROGRAM IN SOUTHWESTERN LOUISIANA

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ABSTRACT. *The striped bass, Morone saxatilis, is an anadromous fish which occupied a range from the Gulf coast of Louisiana to the Atlantic coast of New England. In the mid-1960's Louisiana became vitally interested in the striped bass as a tool to manage its warm freshwater reservoirs. The fish was no longer found in the state's coastal waters and biologists concluded the best approach to reestablishing the fish in coastal Louisiana was to obtain fry from truly anadromous fish. Striped bass from Chesapeake Bay were selected as the original source. During hatching operations it was observed that salinity in the rivers during spawning ranged from 0.5 to 2.0 ppt. It was decided that brackish water ponds were best for this program. The hatchery, nursery and production techniques which have developed with this program are described herein.*

Key words: striped bass, *Morone saxatilis*, Louisiana's anadromous program, brackish water culture.

The striped bass, *Morone saxatilis*, is an anadromous fish which historically occupied a range from the Gulf Coast of Louisiana to the Atlantic coast of New England. A population of this fish was impounded in the early 1940's in Santee-Cooper Reservoir, South Carolina. In the early 1950's it became evident that the fish in Santee-Cooper were completing their life cycle without returning to the sea (Scruggs 1955). Intensive investigations have been conducted in South Carolina regarding the management implications of this species due to its potential as a large, predaceous sportfish (Bayless 1972).

Louisiana, along with many other states and countries, became vitally interested in this fish as a tool to manage its warm water reservoirs. Fisheries biologists concluded that the best approach to reestablishing the striped bass in its native habitat was to obtain fry from known anadromous stock. Arrangements were made in 1971 with Maryland Fish and Wildlife personnel to obtain fry of striped bass from Chesapeake Bay. During the striped bass hatching operations in Maryland salinity in the Nanticoke River during spawning ranged from 0.5 to 2.0 ppt. Based on this observation, it was determined that brackish water might be desirable to culture fry.

The arrangements with the Maryland Department of Natural Resources were terminated in 1974 due to the energy crisis and the program became dependent upon stock in Louisiana which resulted from earlier stockings of the Santee-Cooper fish. The Toledo Bend Research Station owned and operated by the Louisiana Department of Wildlife and Fisheries then served as the source of striped bass for the anadromous project.

Striped bass in Toledo Bend Reservoir congregated in the main pool of the 73,500 ha reservoir and at the hydroelectric turbines each spring. Brood fish for the hatchery were taken at night by gill nets or by hook and line in front of the turbines. Electro-fishing, as recommended by most workers, was

impractical due to the locations of the fish. Brood fish were transported to the hatchery in a 1 ppt NaCl solution, injected with 150 I.U. of human chorionic gonadotrophin, and held in the NaCl solution until ovulation.

Upon ovulation, eggs were placed in McDonald type hatching jars and in circular tanks (Bonn et al. 1960). Twenty-four to 72 hours after hatching, fry numbers were estimated and packaged in plastic bags at a rate of approximately 13,000/liter of water, supplied with a pure oxygen atmosphere, sealed and placed in insulated boxes for shipment.

Fry used in the anadromous program were cultured at the Rockefeller Wildlife Refuge nursery in southwestern Louisiana. Upon receipt at the nursery, fry (1–3 days old) were acclimated from the soft (≤ 80 ppm) Toledo Bend Hatchery water to the hard brackish waters of the nursery (760–1,400 ppm). This took approximately one hour and was accomplished by floating the shipment bags in the tanks thus permitting an equalization of temperature. The bags were opened, an airstone placed in each, and a gradual exchange of water was begun. Stocking rates in the nursery tanks have varied from 265–1,050/liter; however, in recent years 300–500/liter have been considered desirable.

Fry were checked regularly until they began feeding on brine shrimp, *Artemia* sp., at an age of 4.5–5.0 days. After active feeding began, brine shrimp were offered every four hours to keep the concentration at 3–5/ml until the fish were stocked into hatchery ponds at an age of 160 hours.

Water for the ponds was a mixture of well water (1.4 ppt salinity) and canal water (up to 23 ppt salinity). Neither fertilizer nor food was added as the ponds received runoff from a 32 ha goose pasture holding 2,500–4,000 resident Canada geese, *Branta canadensis*. Approximately one week prior to stocking, water was pumped through a seran filter (20 mesh/cm) into the ponds. Fry were stocked at night at rates of 250,000–740,000/ha.

During the years from 1972 to 1979, the ponds were periodically treated with a mixture of 27 liters of diesel fuel and 0.2 liter of motor oil/ha for control of air-breathing, predacious insects. Since then, survival has not decreased though this treatment has been discontinued. Crawfish, *Procambarus clarki*, which were usually present in the fresher ponds were controlled by treating the ponds with 148 cc/ha of Baytex approximately 10 days before harvest.

Samples of fish were taken after they had been in the ponds for approximately 30 days and thereafter attempts were made to harvest when they weighed 0.6–1.0 g each. This involved a combination of seining and draining of the ponds. A 58 m, 0.6 cm mesh bag seine, which was pulled the entire length of the ponds, removed most of the fish. Those remaining were left in the ponds until fall when the ponds were completely drained with the fish being tagged and released.

Yield of striped bass fingerlings in the brackish water ponds at Rockefeller Refuge ranged from 47 fish/ha in 1972 to 260,500/ha in 1977. However, it usually varied from 49,000 to 148,000/ha. Estimates of sur-

