# Floating Raceway System for Production of Striped Bass.

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A prototype floating raceway system was developed for striped bass. The unit constructed of wood and steel, consists of two boxes (38 X 1.2 X 1.3 m) that were maintained at the water surface by two floating walkways. Water flow through the raceway was provided by airlift pumps. Each consisted of 14 parallel tubes (7.5 X 7.5 cm) in a panel fitted into one end of the raceway. Air from a 1.8-kw regenerative blower was injected about l-m below the water surface and water was lifted 5 cm into the end of the raceway. The intake was screened to exclude vegetation, debris and large fish. The outflow was released behind a screen to prevent entrance of predators. Water flow rates of 3,284 $\pm$ 28 liter/min could be achieved with an air flow of about 1,000 liters/min.

Two short teals were conducted with striped bass in a warm-water pond. In 1987, fingerlings averaging 5.9 $\pm$ 0.9 cm m standard length and 3.9 $\pm$ 2.3 g in July reached 14.0 $\pm$ 11.0 cm and 55.9 $\pm$ 13.3 g in October after 99 days of growth. During this period fish were fed a commercial salmon diet (55% protein). Cannibalism and predation by birds were major problems: survival of the 5,085 fish stocked was only 64%. The raceway was fitted with grading screens midway through the trial to reduce cannibalism; however, birds continued to prey on the fish indicating the need for bird netting over the structure. A second trial was conducted in June 1988. Approximately 2,500 17-day old striped bass were stocked into one raceway to evaluate screens, water flow rates, and to determine if the zooplankton pumped into the raceway would provide sufficient nutrition Growth appeared to be excellent during the 2-wk trial. The retaining screens were small enough to prevent escape of larval fish, yet large enough to allow passage of zooplankton.

The development of mobile on-site production facilities could eliminate the need to ship fish great distances, would allow fish to imprint on water into which they will be released, and should improve the efficiency of restoration programs. The intake of airlift pumps could be placed at selected depths to provide a flow of buffered saline water in estuarine environments and should protect sensitive larval fish from the low pH conditions commonly found in surface waters such as tributaries of the Chesapeake Bay. Such facilities could also be used to maintain broodstock and stimulate the commercial production of striped bass and hybrids.

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# Transport of Early Life Stages of Fish.

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Juvenile fish require special techniques for transport. Procedures must protect against physical damage due to movement, as well as physiological alterations associated with stress. The ability to osmoregulate may vary with the stage of development, and may be critical to the tolerance of transport Channel catfish fingerlings were maintained in plastic bags with an air or oxygen atmosphere, with or without quinaldine. Changes in water conditions were then monitored in opened bags for 30 min. Generally, fingerling catfish held in bags with air had poor survival and dissolved oxygen was reduced within 30 min. while bags with oxygen had high levels for 24-72 h. Quinaldine apparently increased oxygen demand and reduced survival. Water acidity was most pronounced in bags with oxygen and Quinaldine reflecting carbon dioxide production associated with high metabolic activity. Aeration of opened bags resulted in rapid increases in pH, which could increase the toxicity of ammonia; thus, unopened bags should be tempered in receiving water. Striped bass (1-6 days old) were subjected to a variety of handling stressors in different NaCl and calcium chloride solutions. Larval Striped bass are especially sensitive at 3-4 days of age and should not be transported or handled, others should be handled and transported in 0.5 to 1.0 ppt salts. Calcium chloride provided greater protection against osmotic dysfunction in soft water than did NaCl. Fingerling paddlefish, transported with oxygen in NaCl or calcium chloride solutions, in round or square boxes, were sensitive to transport; the salt solutions and container shapes did not prevent losses.