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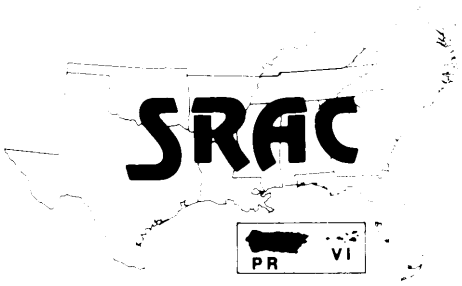


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# Hybrid Striped Bass

## Pond Production of Fingerlings

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Production of hybrid striped bass fingerlings is geared towards maximizing both the number and the size of fish during their first 30 to 45 days of life. This phase of production is done by stocking 2- to 10-day-old fry into fertilized ponds. Intensive culture methods such as recirculating systems are not used by private culturists yet because they are not economical.

Survival and production of fingerlings depend upon the culturists ability to supply the young fish with live food of good quality and quantity. Striped bass female x white bass male fry prefer large crustacean zooplankton, such as cladocerans and copepod nauplii, as their first food. White bass female x striped bass male fry must have an adequate supply of small zooplankters, such as rotifers, because the fry are smaller than fry hatched from striped bass eggs.

Pond management techniques are used to increase zooplankton populations in the nursery ponds. However, pond fertilization is still in the trial-and-error stage, and each culturist will have to work out the techniques that work best for his/her situation. General procedures used to produce Phase I hybrid striped bass fingerlings (35 to 50 mm ) follow. These procedures are also used by state and federal biologists to produce striped bass and hybrid striped bass to stock public waters.

### Pond preparation

Nursery ponds should be filled approximately 2 weeks prior to stocking fry. Ponds filled too early will develop large populations of predacious insects that eat hybrid fry. Most hatcheries use freshwater although brackish water up to 5 mg/liter (ppt) is used in some areas. Generally, hatcheries that use brackish water or hard freshwater (more than 100 ppm Ca hardness) are more successful than those that rely on soft freshwater. Ponds should be dried and disked prior to filling to promote the breakdown of nutrients in the pond bottom. Agricultural limestone may also be applied to the bottom at this time if necessary.

Success in rearing hybrid striped bass depends on the presence of adequate populations of zooplankton. Nursery ponds are usually fertilized with a combination of organic and inorganic fertilizers to enhance the natural production of zooplankters. New ponds or ponds filled with well water may be inoculated with phytoplankton and zooplankton to foster development of the desired zooplankton populations.

### Choosing fertilizers

Approximately 2 weeks before the ponds are to be stocked with fry they should be fertilized with an organic fertilizer. organic materials such as manure and meat scraps are sometimes useful but not generally recommended because they can create dissolved oxygen problems and other management problems. Organic fertilizers such as cottonseed meal, Bermuda hay and alfalfa pellets decay slowly and provide a more sustained production of zooplankton. These fertilizers provide essential nutrients such as carbon, nitrogen and phosphorus, for primary production of phytoplankton and secondary production of zooplankton. Fertilizers should have a low carbon to nitrogen ratio for rapid decomposition. They should also provide an adequate amount of nitrogen and phosphorus in usable forms and be small enough to allow fast colonization by bacteria, algae and protozoans. This small size enables

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quicker decomposition and solubilization of key nutrients.

Inorganic fertilizers commonly used include ammonium nitrate (52 percent N) and phosphoric acid (32 percent $P_2O_2$). These fertilizers are available in liquid and granular form, but liquid forms are preferred because they are easier to apply and work more rapidly. Inorganic fertilizers should contain nitrogen to enhance bacterial growth, which subsequently increases decomposition of the organic fertilizers. They should also contain adequate amounts of phosphorus in soluble form to allow rapid uptake by phytoplankton, and minimize sediment absorption or chelation into unusable inorganic complexes. Phosphorus is usually the limiting nutrient in freshwater systems. Fertilizers should be well mixed with water and dispersed evenly over the pond surface to maximize distribution of nitrogen and phosphorus.

Application rates for fertilizers vary, depending on the type and structure. Generally, organic fertilizers are initially applied 1 to 2 weeks before and twice weekly after stocking fish. Prior to stocking, apply 200 to 500 pounds of fertilizer per acre depending upon specific pond conditions. Two weeks after stocking, apply fertilizer at a rate of 25 pounds per acre. Apply inorganic fertilizers three times per week before and twice weekly for 3 weeks after stocking. Application rates vary depending on water conditions, but are generally around 25 pounds per acre.

## Stocking rate

Fry are generally stocked at a rate of 250,000 to 500,000 fry/hectare at 2 to 10 days of age. Food supply, dissolved oxygen and other water quality factors are especially important to fish survival. Aeration and circulation of pond water help moderate daily water quality shifts, improve dissolved oxygen levels and increase plankton production. As zooplankters are subjected to fish predation, the numbers of cladocerans and copepods decrease and the numbers of rotifers and protozoans increase. An average of 40 to 50 percent survival is good for striped bass female x white bass male fry. Ten to 25 percent survival is more typical for white bass female x striped bass male fry because of difficulty in maintaining a rotifer bloom. Survival of larval fish is affected by rapid changes in temperature, pH or hardness and insufficient dissolved oxygen levels, and can be enhanced by slightly saline waters. Constant monitoring of water quality and food supply and remedying problems quickly will help improve fish survival.

## Feeding pelleted feed

At a size of 25 mm, fish are introduced to prepared food. The transition to pelleted feed is begun at around 14 to 21 days old when fish are presented prepared food. Particle size of prepared food is critical to successful transition. It should be a size that the fish is readily capable of consuming (mash or #1 crumble to start). By 28 days old, fish should be sustained on prepared feed and fed increasing amounts according to growth. Food particle size is increased as fish grow. Food should be offered daily with frequency depending on the amount of natural pond zooplankton.

## Harvesting

At the end of the 30- to 45-day nursery period, fingerlings are harvested by seining and draining the ponds. Survival rates are extremely variable, and 0 to 80 percent of the larvae stocked may be harvested as fingerlings. Fish that are to be sold for aquaculture arc held in tanks or raceways to be graded and trained to feed on pelleted food. Training the fish to take pelleted food is easier if pelleted food has already been presented to the finger-lings in the rearing ponds. Prepared food should contain at least 45 to 50 percent protein, fish oil or whole-processed fish, and be a size that is readily consumed by the fish. No. 1 or 2 crumble is usually satisfactory for fingerlings at this stage. Salmon or trout feed (40 to 48 percent protein) is commonly used.

Grading, or sorting by size, is very important at this stage to prevent cannibalism. Losses of 50 percent or more can occur in 1 to 2 weeks if fingerlings are not graded every day or two. Cannibalism is prevalent because hybrid fingerlings would normally be switching to a fish diet when they are 50 to 75 mm long. Fast-growing fish should be graded out before they learn to cannibalize. Once trained to take pelleted food, fish are ready to be stocked into ponds.

## Transport

Mortalities decrease when fish arc transported in slightly saline water. Before transferring fish from one system to another, they should be gradually acclimated to the temperature and hardness of the new system.

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