

PRELIMINARY REPORT ON METHODS FOR REARING STRIPED BASS, *Roccus saxatilis* (WALBAUM), FINGERLINGS

JOHN R. KELLEY, JR.

Agricultural Experiment Station
Auburn University
Auburn, Alabama

ABSTRACT

Striped bass, *Roccus saxatilis* (Walbaum), fingerlings were stocked in five ponds, three sections of a water control canal, and 14 metal troughs. In trough experiments Purina Trout Chow was found not to contain all nutrients needed for rapid growth of fingerling striped bass. Pond experiments indicated that fathead minnows are among the preferred forage species.

Mortality among trough-reared fish was 14.7 percent. Over a 16-week period, increases in total length averaged 70.6 mm for fish reared in troughs and 54.9 mm for fish in a fed pond. In ponds stocked with redfin pickerel (*Esox americanus americanus* Gmelin) and *Tilapia* sp., increases in total length of striped bass averaged 51.8 mm in 14 weeks.

Aquaria tests indicated that tetracycline hydrochloride is effective against columnaris disease at a concentration of 15 ppm for 72 hours.

Preliminary results indicate that striped bass can be successfully reared in troughs on dry feeds.

INTRODUCTION

This study was undertaken to devise successful techniques for rearing, handling, and controlling diseases of striped bass, *Roccus saxatilis* (Walbaum). Tatum, et al., 1965, discuss some of the problems that were encountered in producing striped bass fingerlings in North Carolina. This work, however, deals primarily with spawning procedures and fry production.

At present many of the factors governing fingerling production are unknown. Also factors affecting natural mortality are not sufficiently known for predicting the success of fingerlings stocked in ponds.

Fingerling striped bass used in this study were obtained from the Fish and Wildlife Service hatchery, Orangeburg, South Carolina. These fish were successfully transported to Auburn University in 3 x 8 x 20-inch plastic bags. Each bag was partially filled with water and contained 200 striped bass fingerlings. The bags were then filled with oxygen, placed in ice chests and transported at a temperature of $65^{\circ} \pm 5^{\circ}\text{F}$.

MATERIALS AND METHODS

Striped bass fingerlings were stocked in five ponds (0.06 to 22 acres), three sections of a water control canal, and 14 stainless steel troughs. The growth in length and weight was checked bi-weekly. Fish in troughs received Purina Trout Chow (floating feed) during the entire experiment and one-half of the fish received beef liver (five percent body weight) beginning September 11, 1966. *Tilapia* sp. and fathead minnows (*Pimephales promelas* Rafinesque) were stocked in ponds as forage species; however, the 0.06-acre pond was fed Purina Trout Chow (5% body weight, adjusted bi-weekly).

Striped bass were 15 to 35 mm total length when stocked into ponds (Table 1) and troughs.

TABLE 1. STOCKING RATES OF FISHES USED IN COMBINATION WITH STRIPED BASS IN EARTHEN PONDS, 1966.

Pond Size		Number of fish stocked per acre			
acres	Date	Striped bass	Tilapia sp.	Redfin pickerel	Fathead minnows
0.06*	12 Jun	2500			
2.60	14 Jul	100	3000	200	
2.20	14 Jul	100	3000	200	
2.20	14 Jul	500	1000		1000
22.00	28 Jun	50	1		1000

* Fish in this pond were fed 5% per day of Purina Trout Chow, adjusted bi-weekly.

Three sections of a water control canal were stocked with 15 striped bass per section. At time of stocking, June 28, 1966, the canal contained large numbers of bluegills, green sunfish fry, fathead minnow fry, and largemouth bass fingerlings.

Fish were stocked in 14 stainless steel troughs at 100 per trough. Each trough measured 10 x 12 x 84 inches and was filled with approximately 26 gallons of water. A flow of 0.7 gallon per minute of filtered water was maintained in each trough throughout the study. Fish were fed Purina Trout Chow at a rate of approximately 10 percent of their body weight per day. The daily ration of food was divided into portions and fed during four periods each day. Beef liver was added to the diet of fish in troughs to increase the growth rate.

Columnaris disease presented a problem in both survival and growth of fingerlings. Successful control of this disease was accomplished by holding the fish in a 15 ppm tetracycline hydrochloride solution for 72 hours. The treatment was divided into three consecutive 24-hour periods. At the end of each period, the tetracycline solution was drained and replaced with a fresh solution. No water flow was maintained during the treatment period. Aquaria tests using roccal, PMA, and tetracycline hydrochloride indicated that striped bass can be treated with tetracycline hydrochloride without the side effects caused by roccal or PMA.

RESULTS

Striped bass were successfully reared in troughs with minimum mortality. Figure 1 illustrates a cessation of growth beginning in the first week of August. The fish fed beef liver demonstrated a marked gain over the fish that remained on a dry feed diet (Figure 1). The broken line in Figure 1 represents growth of fish that received the beef liver supplement. The major nutritional problem was associated with supplying a complete diet to the fish for maintaining maximum growth.

Columnaris disease was an important factor governing survival and growth of fish in troughs. Figure 1 indicates the growth differential caused by columnaris disease between two groups of fish of the same age and origin. Fish in group B, however, were not stocked into troughs until two weeks after the stocking of group A. After treatment and cure of the disease, the fish in group B almost attained sizes equal to those in group A that did not have columnaris (Figure 1). Mortality of fish in troughs was due almost entirely to columnaris disease (13.4%). The total mortality figure for all fish in troughs was 14.7 percent for the period of June 12 through October 10, 1966.

Only nine of the 45 fish stocked in the water control canal were recovered upon draining. The average increase in length was 96 mm total length for the three-month period. The mortality rate of fingerling striped bass, 15 to 35 mm total length, stocked into a habitat with largemouth bass appears to be very high.

The ponds stocked with fingerlings have not been drained but seining records indicate that the best growth is occurring in the pond stocked

with 500 striped bass, 1000 fathead minnows, and 1000 *Tilapia* sp. per acre; however, this may not be an accurate observation because a 50-foot seine was used to capture fish in this pond. Growth in two ponds

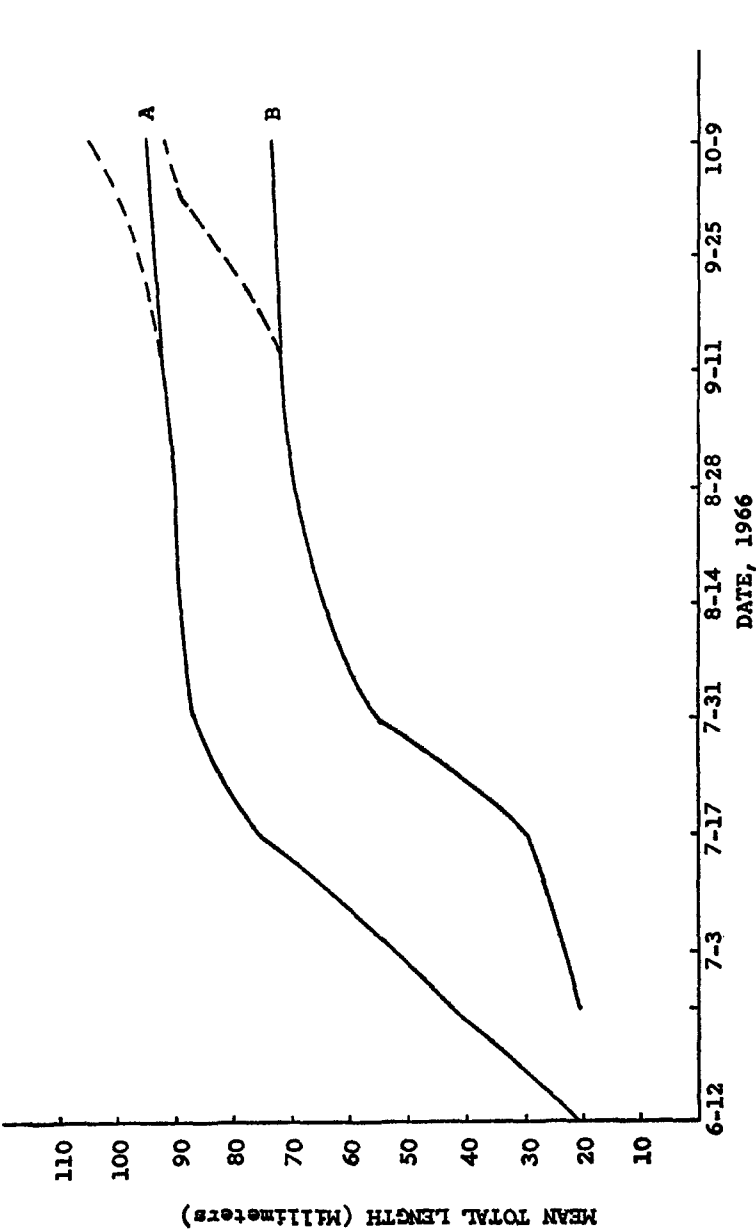


Figure 1. Age-length relationship of striped bass, *Roccus saxatilis* (Walbaum), reared in troughs and fed Purina Trout Chow. The broken line indicates fish fed beef liver beginning September 11, 1966 to supplement regular diet. Fish in group B were stocked 2-weeks later than those in group A and had columnaris disease.

stocked with 100 striped bass, 200 redbfin pickerel, and 3,000 *Tilapia* sp. per acre is less than that of trough-reared fish (Figure 2). Growth of fingerlings in the 0.06-acre pond and fed Purina Trout Chow averaged 22 mm less than fish in troughs fed the same diet (Figure 3).

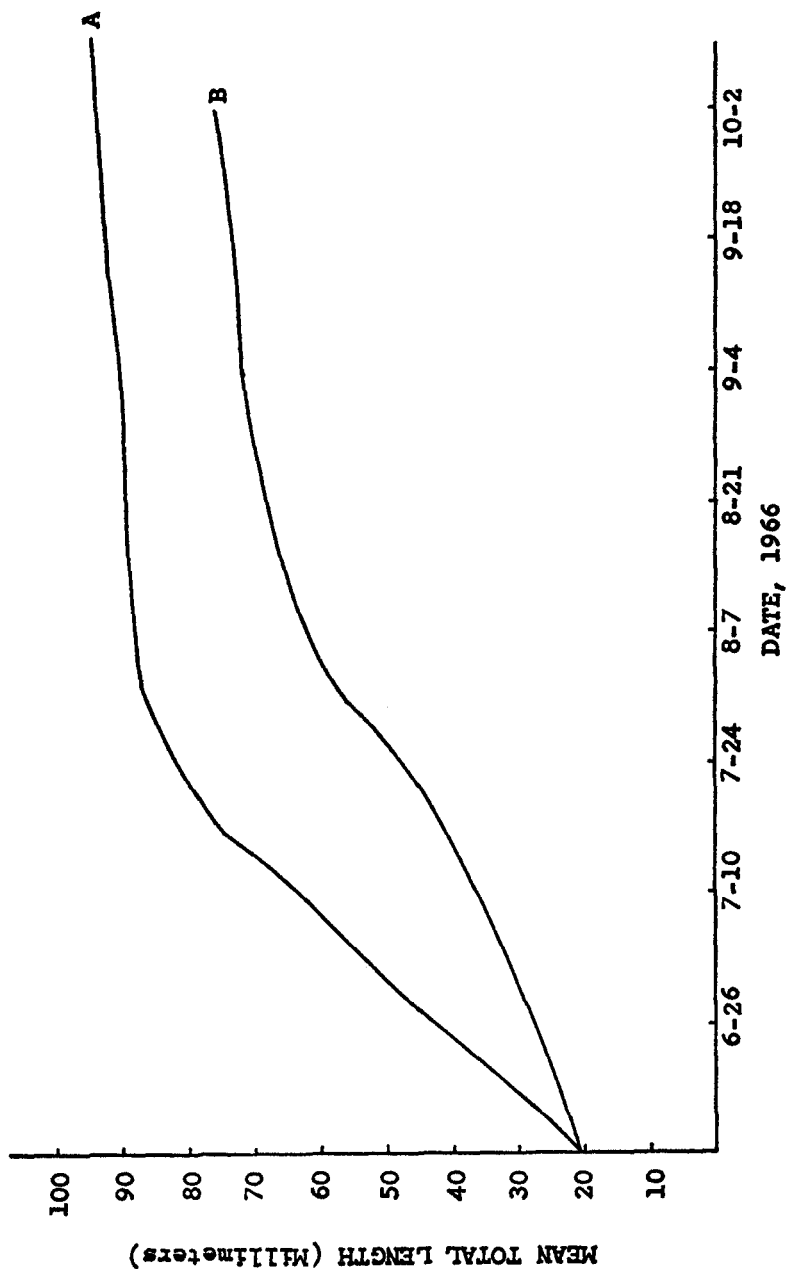


Figure 2. Age-length relationship of striped bass, *Roccus saxatilis* (Walbaum), reared in troughs (A) and a 0.06 acre pond (B). Both groups of fish were fed Purina Trout Chow.

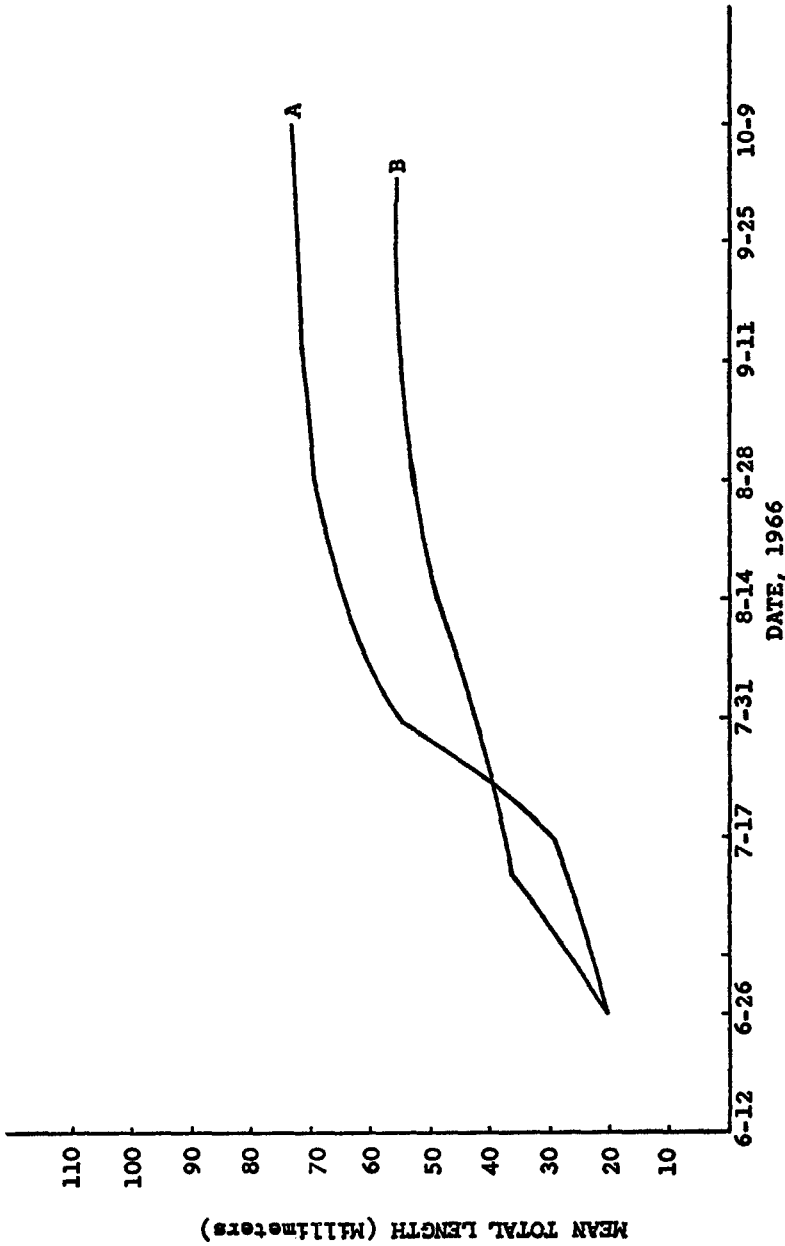


Figure 3. Age-length relationship of striped bass, *Morone saxatilis* (Walbaum), comparing trough reared fish (A) with pond reared fish (B).

SUMMARY

From the data presently available it appears that striped bass fingerlings can be successfully reared in troughs. Trough culture allows the biologist to control the following factors:

1. The diet and amount of feed used can be controlled.
2. Mortality can be held to a minimum by exclusion of predators.
3. Diseases and parasites can be effectively controlled before epidemic or epizootic proportions are reached.
4. Larger numbers of fish can be reared in less space.
5. Fish become adjusted to handling and mortality from shock is reduced in subsequent transportation.

At present fathead minnows appear to be the best natural food for fingerling striped bass. The major limiting factor in pond culture appears to be keeping a quantity of suitable size forage fish present.

LITERATURE CITED

- Tatum, B. L., J. D. Bayless, E. G. McCoy, and W. B. Smith. 1965. Preliminary experiments in the artificial propagation of striped bass, *Roccus saxatilis*. Presented at 19th Ann. Conf. Southeast. Assoc. Game and Fish Comm., Tulsa, Okla. (In press).

PROGRESS REPORT OF VIRGINIA'S TROUT FEE-FISHING PROGRAM

CHARLES H. PEERY

District Game Biologist

Commission of Game and Inland Fisheries

Background

The first opportunity to launch into a fee-fishing program came in 1962 when the General Assembly of Virginia authorized the Commission of Game and Inland Fisheries to establish not more than three such streams. After having viewed similar operations in the State of Missouri, Robert G. Martin, Chief of the Fish Division, made initial preparations for the opening of Virginia's first fee-fishing stream in 1964. Big Tumbling Creek located in the southwestern part of the state was selected and opened on May 2 of that year. Since 1964, trout anglers have had fee-fishing available from the first Saturday in April through Labor Day each year hence. To date, only one stream has been operated in this manner.

Description of Stream

Big Tumbling Creek is a large stream ranging in width from twenty to forty feet along the 3.5 miles being utilized for the fee-fishing program. A good perennial water flow stems from sandstone soils with a small amount of shale parent material in one tributary. Two of the three tributaries of the stream are noted for wild trout production. The stream bed is made of shelving rock and round boulders creating pools and rapid falls essential for trout cover. Through one section of the stream approximately 5,500 feet in length, water cascades down 600 feet before reaching more moderate slopes. Elevations of the stream reach 3,000 feet above sea level and graduate down to 2,300 feet at the lower end. Approximately 1.7 miles of the stream is situated on private lands where perpetual public fishing rights have been obtained. The remaining 1.8 miles upstream is located on the state-owned Clinch Mountain Wildlife Management Area.