DISTRIBUTION AND ABUNDANCE OF STRIPED BASS (ROCCUS SAXATILIS, WALBAUM) ON THE FLORIDA GULF COAST

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ABSTRACT

Striped bass, *Roccus saxatilis*, (Walbaum), occurs in all major river systems along the Florida Gulf Coast from the Suwannee River west to the Perdido.

The only striped bass population in West Florida known to spawn successfully was in the Apalachicola River Drainage. The population level for the other rivers was too low to maintain a sport fishery.

The Apalachicola River stock of striped bass is discussed in detail.

INTRODUCTION

Striped bass and other anadromous fishes of Northwest Florida have been the object of a study by the Florida Game and Fresh Water Fish Commission since April, 1959. The study has been made to obtain information which may be used as a basis for recommending management practices toward preserving and increasing the striped bass population in Florida.

History of Striped Bass Studies in Florida

Dr. William M. McLane, formerly a biologist with the Florida Game and Fresh Water Fish Commission, conducted a striped bass study during 1953-55. His findings were not published, but were presented as a mimeographed project completion report during March, 1958.[1]

Although McLane's work was centered mainly in the St. John's River Drainage, he did some field work on six Gulf Coast drainages. He obtained verified occurrence records for all major Gulf drainages from the Ochlockonee to the Perdido, but found no substantial striped bass fishery in Northwest Florida at that time.

Edward Crittenden of the Florida Game and Fresh Water Fish Commission reported that from December, 1957 through December, 1958 many young and adult striped bass were caught by sportfishermen in the tailrace of Jim Woodruff Dam.[2] He found that a large number of the young caught were destroyed when fishermen failed to return them to the water. Crittenden's data indicated the presence of a spawning population and suggested that striped bass might become the basis for an important Florida sport fishery. This prompted the initiation of the Anadromous Fish Study, Florida Dingell-Johnson Project F-10-R.

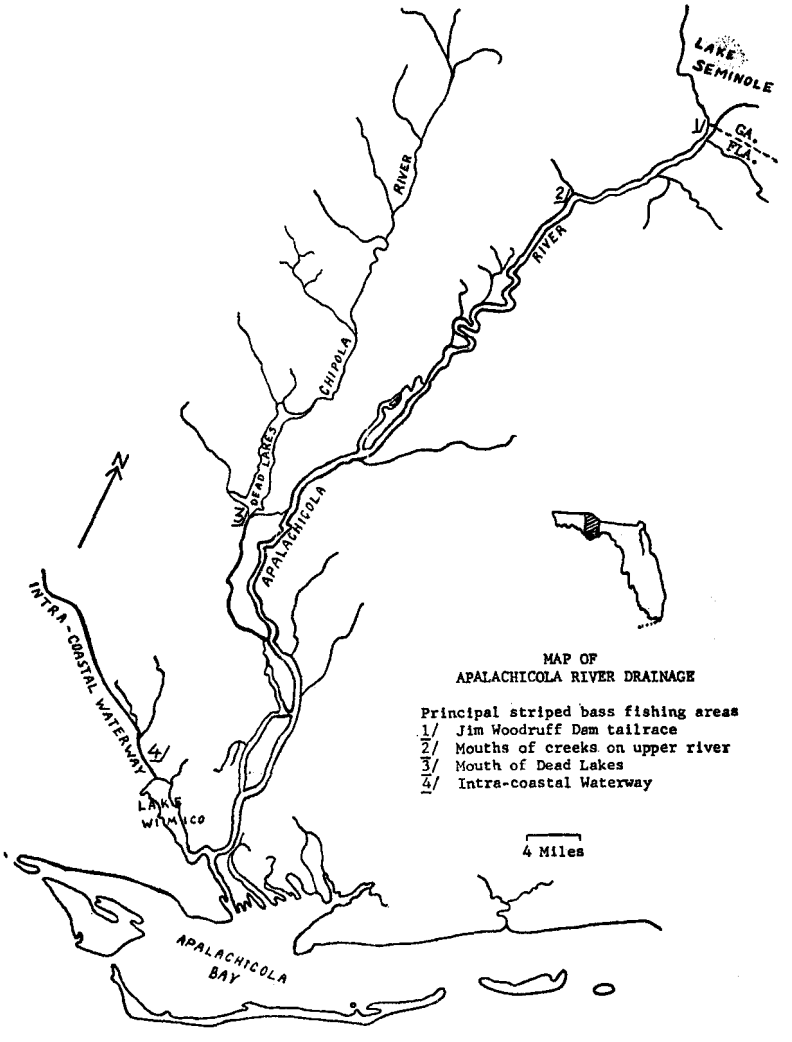
DISTRIBUTION

Striped bass are found in freshwater streams and esturine waters in all major drainages of Northwest Florida. There is, however, no substantial fishery for them in any Florida Gulf Coast drainage except the Apalachicola River. This drainage includes the Chipola River and adjacent Intra-coastal Waterway.

Distribution records were obtained by several methods. Interviews with sportfishermen proved to be the most valuable source of information. Fish camp operator records were especially useful for distribution records where mounted specimens or photographs were available to confirm the reports. A newspaper report was used for a locality record in one instance. Reliable commercial fishing records were valuable for coastal areas where nets were permitted. In addition, Game and Fresh Water Fish Commission personnel used gill and trammel nets, haul seines, minnow seines, and sport fishing gear to collect specimens for tagging and life history studies.

[1] Completion Report for Dingell-Johnson Striped Bass Project F-4-R, 1958.

[2] Quarterly Progress Report for Dingell-Johnson Fisheries Investigations Project F-5-R, January, February, March, 1958.



Locality Records

The southernmost record of striped bass on the Gulf Coast was a 36 inch specimen caught in December, 1956 at the mouth of the Suwannee River. Only two other specimens were known to have been caught from this river. Records for other drainages include:

St. Marks River—(Newspaper report).

Ochlockonee River—Several are caught each year below Jackson Bluff Dam (Verbal reports and photographs). McLane reported a specimen from this river.[1]

Intra-coastal Waterway at Panama City—(Specimens).

Bear Creek in Bay County—(Fishermen interviews).

Choctawhatchee River—(Commercial fishermen interviews and Wildlife Officer reports).

Yellow River—(Fishermen interviews).[1]

Blackwater River—(Verbal reports).[1]

Escambia River—(Verbal reports).[1]

Perdido River—(Specimen reported by McLane).[1]

Apalachicola River Drainage

The Apalachicola River is formed by the junction of the Chattahoochee and Flint Rivers just north of the Georgia-Florida state line. It is approximately 100 miles in length and has an average stream flow of 21,800 cubic feet per second. The river is characterized in this area by high clay and limestone banks with spring-fed creeks entering from both sides.

The U. S. Corps of Engineers completed Jim Woodruff Dam and Lock on the Apalachicola River in 1957. It is located on the Georgia-Florida state line, and forms 37,500 acre Lake Seminole (See Map).

About the time Jim Woodruff Dam was completed, there was a phenomenal increase in fishing success in the tailrace for many species of fish including striped bass.[2] Until that time, there were few striped bass fishermen in the area.

It is estimated that less than 50 persons in Northwest Florida are avid striped bass fishermen. Angling effort for this species is mostly seasonal, however it has been noted that the few who pursue this sport on a year-round basis had a satisfactory rate of success.

The striped bass sport fishery had two peak seasons on the Apalachicola River. The first was during the spawning run from March to May. The second and most productive for sportfishermen was the fall season, which occurred between mid-September and December. Striped bass fishing was good in the Intra-coastal Waterway only during the winter months.

The greater success in fishing for striped bass was at the Jim Woodruff Dam tailrace, the mouths of creeks, the Intra-coastal Waterway, and the Chipola River at the mouth of Dead Lakes (See Map).

Table 1 shows results of successful striped bass fishermen interviews beginning October, 1959 through August, 1961. A regular creel census in the area was not feasible. Therefore, the interviews were conducted at sporadic intervals.

CONCLUSIONS

It is evident that the population level for the Apalachicola stock of adult striped bass is high enough to withstand the sport fishing pressure it now receives. The stock is not considered sufficient to withstand a

TABLE 1.

SUCCESSFUL STRIPED BASS FISHERMEN INTERVIEWED WITH NUMBER, WEIGHT RANGE, AND AVERAGE WEIGHT OF STRIPED BASS CAUGHT FOR THE ENTIRE APALACHICOLA RIVER DRAINAGE.

Year and month	*Number of successful striped bass fishermen contacted*[1]	*Number of striped bass caught*	*Weight range pounds*	*Average weight pounds*
1959 October	3	4	1.9-16.4	9.4
November	2	2	1.2-19.5	10.3
December	22	47	1.2-33.0	16.6
1960 January	1	1		22.2
February	4	8	2.0-18.0	6.1
March	10	19	0.7-22.0	5.2
May	14	29	1.5-27.5	13.4
July	1	1		3.2
September	1	1		2.2
October	5	8	2.0-22.5	6.8
November	19	22	1.5-28.0	10.4
December	9	15	1.7-35.0	10.9
1961 January	5	6	1.3-13.5	5.3
March	5	30	0.3-3.6	0.7
April	2	2	0.5-23.9	12.2
May	5	4	2.5-36.5	15.2
June	7	11	0.6-9.3	4.6
July	4	11	1.2-36.0	9.4
August	6	8	0.7-12.5	3.5

[1] Catches were frequently incidental to fishing for other species.

commercial fishery, although there are no laws in Florida to prevent the sale of this species.

ACKNOWLEDGMENTS

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THE MINIMUM OXYGEN REQUIREMENTS OF FIVE SPECIES OF FISH UNDER QUIESCENT CONDITIONS [1, 2]

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ABSTRACT

The minimum oxygen requirements of the following five species of fish were studied under quiescent conditions. *Lebistes reticulatus* (Peters); *Gambusia affinis* (Baird and Girard); *Pimephales promelas* (Rafinesques); *Hybognathus placitus* (Girard); and *Notropis girardi* (Hubbs and Ortenburger). Nitrogen gas was bubbled through the waters in the test vessels to remove the dissolved oxygen. The fish were tested under varied temperatures and at different levels of oxygen depletion. All specimens tested were able to live at oxygen tensions of 1.0 ppm. The reactions of the fish varies with (1) the spread of oxygen removal, and (2) the species.

INTRODUCTION

Many of the factors that influence the survival of fish, i.e. oxygen, carbon dioxide, temperature, hydrogen ions, numbers of organisms present, and others, are not fully understood. The main objective of the project, herein reported, was a study of the oxygen concentrations necessary for certain species of fish under quiescent conditions. The oxygen used in the metabolism of fish varies from the minimum required to maintain life to the maximum they are able to tolerate. Quiescent and active conditions were determined by observing the activity of the fish. Quiescent conditions are those in which the fish remain near the minimum metabolic rate most of the time. Active conditions are those in which the fish remain near the maximum metabolic rate most of the time.

A second objective was to determine recognizable signs indicative of oxygen want for the fish. Westfall (1945), Merkens and Downing (1957), and others, have found that some fish can tolerate high concentrations of certain substances in water only under high oxygen tensions. The solution of water and the dissolved substances can vary slightly without our knowledge. If the characteristic signs of oxygen deficiency occurred at oxygen levels normally tolerated by the fish, oxygen could be added. If adding oxygen does not remove the signs, a chemical analysis of the water might determine the limiting factor.

Four species of fish were obtained in ponds and streams near Stillwater, Oklahoma, and one species was raised in the laboratory. Observations were made concerning the habits and reactions of the fish as they were captured, transported, stored, and used in experiments. The study was conducted in the Aquatic Biology Laboratory, Oklahoma State University.

REVIEW OF THE LITERATURE

Respiration in fish has received considerable attention since the turn of the century. Studies of the minimum oxygen requirements of a species are extremely difficult, because oxygen requirements vary with (1) the life history stage, and (2) the composition of the environment. Oxygen consumption of fish is known to vary with (1) the species, (2) within a species, and (3) within one individual from period to period

[1] Contribution 341, Zoology Department, Oklahoma State University.
[2] Project supported in part by the National Institutes of Health Research grant No. RG 6873.