

TABLE II
NUMBER OF EGGS TAKEN FROM FEMALE STRIPED BASS, WELDON HATCHERY
APRIL-MAY, 1953

<i>Date</i>	<i>Total Length (Inches)</i>	<i>Weight (Lbs.)</i>	<i>Number of Eggs Taken</i>	<i>Number of Fry Hatched</i>	<i>% Hatch</i>
4-29	19.1	3.05	230,000	195,000	84.8
4-26	19.9	3.10	155,000	140,000	90.3
5- 3	20.4	4.11	295,000	265,000	89.8
5- 3	20.6	4.19	305,000	250,000	81.9
4-26	21.5	4.6	365,000	315,000	86.3
5- 2	22.0	5.03	115,000	68,000	59.1
4-24	22.8	5.24	440,000	225,000	51.1
5- 5	22.9	5.77	614,000	466,000	75.9
5- 1	22.9	5.08	15,000	10,000	66.7
4-28	23.0	5.63	195,000	160,000	82.1
4-28	23.1	5.43	305,000	245,000	80.3
4-24	23.2	5.71	395,000	302,000	76.5
5- 4	23.5	6.19	44,000	33,000	75.0
5- 2	23.9	6.32	270,000	215,000	79.6
5- 3	23.9	6.41	415,000	360,000	86.7
4-27	24.3	5.87	505,000	460,000	91.1
4-24	24.3	5.87	630,000	446,000	70.8
5- 5	25.2	7.22	171,000	150,000	87.8
5- 2	25.3	8.27	535,000	405,000	75.7
4-25	25.4	6.81	305,000	235,000	77.0
5- 3	27.6	9.60	385,000	190,000	49.3
5- 4	28.4	10.91	415,000	300,000	72.3
5- 5	28.6	10.91	439,000	315,000	71.8
4-28	29.5	13.61	1,425,000	765,000	53.7
AVERAGE	23.8	6.45	373,666	271,458	72.64

STRIPED BASS (*Roccus saxatilis*) (Walbaum) RESEARCH IN MARYLAND

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FOREWORD

The striped bass fishery of the Maryland Chesapeake Bay (1,500,000 acres) has been an important source of commercial income and recreation, to the people, for many generations. Early investigation work on this fish was started by the U. S. Bureau of Fisheries in 1886, when a hatchery was established and 20,000 fish were reared at Havre de Grace, Maryland. From 1921 to 1924 hatchery fry were reared at Lloyd's Creek, Still Pond, Charlestown and Principio Creek.

John Pearson* biologist of the U. S. Fish and Wildlife Service, initiated investigation work on the Upper Bay in 1931 and carried forward life history and tagging programs until 1938.

Vladykov and Wallace made a major study of striped bass, which included the economics of the fishery, migration, rate of growth, sexual maturity, races, and population structure. Truitt, Hammer and Tiller made studies during 1940 through 1950. During 1954 through 1957, R. Mansueti has studied the early life history of this species and has done some tagging.

Edgar Hollis, Department of Tidewater Fisheries, Project Leader F3R5, is currently studying important biological relationships, and this report centers around his work.

Due to the interstate nature of this anadromous fish, the U. S. Fish and Wildlife Service has cooperated in the Bay and Atlantic Ocean phases of the life history. The Atlantic States Marine Fisheries Commission has coordinated numerous activities. The Department of Research and Education of the Chesapeake Biological Laboratory, and the Department of Tidewater Fisheries, as well as the Maryland Game and Inland Fish Commission, are actively engaged in investigating many phases of the striped bass fishery toward state-wide management.

Much of the general life history of the striped bass has been worked out, and a summary has been published, by Edward C. Raney.**

Many phases of the ecology of this important fishery are not so well understood when legislation and management needs are projected.

SOCIO ECONOMIC PROBLEMS

A keen interest by commercial fishermen, sports fishermen and party boat operators has brought about a tremendous pressure for legislative action in recent years, which requires the best diplomatic-biological approach in the management of this resource. It is because of these intensive forces that it became necessary for the Department of Tidewater Fisheries (Administrator of tide-water fishery management in Maryland) to seek funds through Federal Aid sources (Administered by the Maryland Game and Inland Fish Commission) whereby FA-3R, "An Investigation of Striped Bass," was established. The studies center around the following major fields of investigation:

1. Spawning
2. Areas of production
3. Migration
4. Evaluation of the 15 pound limit and
5. Evaluation of net fishing on spawning areas

OBSERVATIONS

Spawning: After four years of observations, with the assistance of Tidewater Enforcement Officers and with the use of plankton tows, the major spawning areas in Maryland have been located. They have been found in the Potomac, Patuxent, Choptank, Nanticoke, Chester and Pocomoke Rivers, and the Upper Bay. The Blackwater, Transquaking and Manokin Rivers reveal young-of-the-year and ripe females but no eggs, to date, have been collected. Intensive studies have been carried out by the Department of Research and Education in the Patuxent River. Lack of salinity records have previously retarded some phases of our work. There has been a noticeable variation in production of "rock" from year to year. This conclusion has been reached as a result of four years of professional observations. No significance has been attached so far to the variation in run-off as it effects spawning grounds. Spawning occurs during the months of April, May and June, varying throughout the Bay area, in consonance with many physical, chemical and biological changes. It has generally been established that eggs will hatch in thirty-six hours at 70° F. temperature.

Areas of Production: Young-of-the-year fish have been seined from major spawning areas with 100' x 3' x ¼ net and specimens sent to Dr. Edward Raney of Cornell University for a study of racial characteristics and analysis of the stock mixture. It is observed that the production of striped bass in recent years is better than the 1940 indices. Due to the broad areas of study, this sampling method is open to question from a statistical standpoint and much more work is needed in this field to accomplish the goals intended. The abundance of striped bass in Maryland waters has been studied by the Chesapeake Biological Laboratory through catch-per-unit effort index from commercial records of thirteen years.

* Pearson, John C.: "The Life History of the Striped Bass or Rock Fish", *Roccus saxatilis* (Walbaum), Bureau of Fisheries Bulletin, Vol. XLIX, No. 28, 1938.

** Raney, Edward C.: "The Life History of the Striped Bass", *Roccus saxatilis* (Walbaum), Bulletin Bingham Oceanographic Collection, Vol. XIV, Art. 1, pp 5-97.

Migration: A considerable amount of fish tagging has been accomplished over the last twenty-five years, a summary of which has been issued by the Department of Research and Education, entitled "Recaptures of Tagged Striped Bass" by R. Mansueti; Resource Study Report No. 10, October, 1956. Cooperative efforts by Maryland and Virginia, and the U. S. Fish and Wildlife Service, with nylon streamer tags, Peterson discs and Vladykov ring tags indicate that in 1957, 3,188 fish were marked. Project Leader Hollis reports 2,408 fish tagged during the four years of this project; with a total of 17.7% returned. More than 300 striped bass over 30" have been tagged and released.

Evaluation of Maximum 15 Pound Limit: There exists, in the Chesapeake Bay region, a common controversy of many years standing, namely, the 15 pound legal limit currently used in Maryland. To settle this long-standing discussion, ovaries from 115 large bass have been sent to the University of Maryland for egg count and histological studies.

Evaluation of Net Fishing on Spawning Areas: IBM records developed by the Department of Research and Education and the U. S. Fish and Wildlife Service show a Maryland catch of 2,500,000 pounds in 1955, a commercial catch of 400,000 increase over 1954. About 68% of Maryland striped bass are caught in the months of January through April; 60% of the fish are caught by gill nets (Anchor 8%, Drift 22%, Stake 30%). The project, at this point, is in the process of determining where nets are fished in relation to recently determined spawning areas.

RELATED PROJECTS

Emphasis is being placed on five major striped bass investigations, by the Department of Research and Education, centering about:

1. Tagging.
2. Rearing eggs and larvae through the young stages in an overall study of fish spawning in tidal, fresh or slightly brackish waters, for the purpose of distinguishing striped bass from white and yellow perch, walleye and sunfish.
3. Review of the abundance index of striped bass in Maryland waters according to catch-per-unit index from thirteen years of commercial records.
4. Study of the sport fishing harvest, which involves a creel census on the Magothy and Susquehanna Rivers.
5. An intensive study of the Patuxent River system as it concerns all phases of striped bass management.

FRESH WATER FISHERY PROGRAMS

Very recently because of popular demand for striped bass in fresh waters of Maryland fingerling and adult striped bass have been stocked in several experimental areas. Plans for 1958 call for the stocking of fry, fingerling and adult fish in state-controlled impoundments. Cooperative studies will be carried out with Maryland institutions and neighboring State Commissions, for the purpose of collecting and field testing all available information and experience on fresh water striped bass management. Tagging reports from several Maryland areas have been encouraging.

The development of a fresh water striped bass fishery has infinite possibilities, and a reasonable chance of success.