SEGMENT COMPLETION REPORT

Investigation Projects

State of TEXAS

Project No. F3R4 Name: Fisheries Investigations and Surveys of the Waters of Region 5-B.

Job No. B-11 Title: Basic Survey and Inventory of Fish Species in the Neches River and its Watershed from its Source in Van Zandt County to its Mouth in Sabine Lake on the Gulf of Mexico.

Period Covered: June 1, 1956 to May 31, 1957

ABSTRACT

This report covers the first segment's work on a basic survey on the Neches River. The Neches River is the third largest river in the state, being surpassed only by the Red and Sabine Rivers, and the largest entirely within the state. The average yearly run-off is 6,548,000 acre feet. During this segment of extremely low water to devastating flooding there was 46 seining collections and 23 gill net collections made. These collections yielded 67 species of fish. There were also 64 water analyses made on these waters. In addition to the river proper, there are several private and club lakes on the watershed wh . are included. Two cases of pollution were encountered, one of which was only a temporary condition, and the other a continuous condition which, however, is due for improvement within the next few years. A complete analysis of the data will be made at the end of the next short-term segment.

OBJECTIVES

To gather fundamental data on the above waters in regard to their physical, chem- and biological aspects. To determine the distribution of the fish species present, their relative abundance and the ecological factors influencing their distribution.

RIVER DESCRIPTION

The Neches River Valley lies between the Sabine River Basin to the east and the Trinity River Basin on the west. The river originates in Van Zandt County and flows in a generally southeastern direction approximately 416 miles and empties into the Gulf of Mexico by way of Sabine Lake. The watershed at the mouth of the river is 10,129 square miles. The average annual run-off is 6,548,000 acre feet thereby making the Neches the largest river entirely within the state. The Red and Sabine Rivers are larger but they are both interstate rivers.

The most imporant tributary of the Neches River is the Angelina River which was surveyed and reported under F3R4, Job B-10. Other important tributaries are Pine Island Bayou (river mile 30.0) and Village Creek (river mile 39.7).

IMPOUNDMENTS

A major impoundment on the Neches River is Dam "B" Reservoir (river mile 113.7) which has a capacity of 94,200 acre feet at top of normal pool. The surface area is 13,700 acres. Impoundments on the watershed include Lake Ioni near Slocum, a 106 surface acre club lake, and Lost Prairie Lake near Palestine, a 100 surface acre club lake. All three of these lakes have been netted and the data is included in the findings.

Big Eddie, which is a natural lake of approximately 100 surface acres, is located on the main river southwest of Tyler. Netting collections have also been made on this lake.

PROCEDURE

During this segment there were two collection methods employed. Experimental type gill nets, 125 feet long, 8 feet deep and mesh size varying from 1 to 3 inches, were used in the lower stretches of the river, in the backwaters, and lakes on the watershed. Bag seines 26 feet long, 6 feet deep and $\frac{1}{4}$ inch mesh, and common sense minnow seines, (cotton and nylon) 20 feet by 4 feet, were used most often to collect specimens. Netted specimens were identified, weighed and measured in the field and the seined specimens were preserved in 10% formalin solution and brought back to the laboratory for identification. Water samples were taken at each collection point and brought back to the laboratory for identification.

Weather conditions, both air and water temperatures, turbidity, color of the water, and a general station description was taken at each collection.

FINDINGS

There have been 35 seining stations selected along the Neches River and its watershed at this time. Many of these stations have been visited twice, once during low water stage and another during flood stage. There are 21 netting stations plus 2 club lake netting collections. All of these netting and seining collections have yielded 67 species. It is felt that there are a few more species present which have not been collected as yet. Additional collections will be made during the final short-term segment in an effort to get a more complete list. Table 1 is a tentative checklist of Neches River species.

Water analysis includes pH, methyl orange alkalinity, total chlorides and in some instances dissolved oxygen. A total of 64 water samples were taken during this segment. In addition the water was analyzed on the two club lakes. The range of pH was from below 6.0 (our indicators only went to 6.0 at that time) to a high of 9.4. The average pH was around 6.7. The chlorides ranged from a low of 21 p.p.m. to 3191 p.p.m. (this was in the lower reaches of the river below the salt water barrier). A low of 10 p.p.m. was recorded for alkalinity with the high of 425 p.p.m. The low-high range of dissolved oxygen was 1.4 p.p.m. to 7.0 p.p.m.

POLLUTION

Pollution on the Neches River has appeared twice during the segment. One occurrence was at Big Eddie when the City of Tyler was allowing their sewage to empty into the river at this point while repairs were being made on their sewage treatment plant. This resulted in a very heavy plankton bloom and apparently did no damage to fish populations.

This was only a temporary condition and a check two months later indicated the water was normal again.

The second case of pollution is an old one on which numerous reports and investigations have been filed. This is the East Texas Pulp and Paper Mill near Evadale. This effluent enters the river above the City of Beaumont and in addition to minor industrial waste in that area makes a dirty looking river. The paper mill, however, is taking steps to improve the situation. Because of this, additional information on chemistry of the water and fish populations is needed for that region.

CONCLUSIONS

During the first nine months of this segment severe drouth conditions caused the Neches River to nearly dry up in places. Many of the tributary streams were dry. Then in the spring of 1957 the drouth broke and the river flooded. Because of this it was felt that an additional short-term segment was needed to gather further information while the river is more near normal than in the past. A fully detailed report will be submitted when all of the data is in and can be analyzed at one time.

Prepared by John N. Dorchester
Assistant Project Leader

Approved by Marion Toole
Chief Aquatic Biologist

Date August 22, 1957

Table 1. A Tentative Checklist of Neches River Species.

Ichthyomyzon castaneus
Lepisosteus spatula
L. platostomus
L. productus
L. osseus
Amia calva
Dorosoma cepedianum
Esox americanus
Ictiobus cyprinellus
I. bubalus
Carpiodes carpio
Moxostoma poecilurum
Minytrema melanops
Erimyzon oblongus
Cyprinus carpio
Notemigonus crysoleucas
Opsopoeodus emiliae
Hybopsis aestivalis
Notropis fumeus
N. brazosensis
N. blennius
N. potteri
N. sabinae
N. amnis
N. venustus
N. lutrensis
N. deliciosus
N. atrocaudalis
N. volucellus
N. maculatus
Hybognathus placita
Pimephales vigilax
Ictalurus punctatus
I. furcatus
I. melas
I. natalis
Pylodictus olivaris
Fundulus pulvereus
F. chrysotus
F. notatus
F. olivaceus
Cyprinodon variegatus
Gambusia affinis
Aphredoderus sayanus
Mugil cephalus
Menidia beryllina
Labidesthes sicculus
Micropterus punctulatus
M. salmoides
Chaenobryttus gulosus
Lepomis cyanellus
L. punctatus
L. microlophus
L. macrochirus
L. auritus
L. megalotis
Pomoxis annularis
P. nigromaculatus
Centrarchus macropterus
Hadropterus maculatus
H. shumardi
Ammocrypta vivax
Etheostoma chlorosomum
E. gracile
E. lepidum
Aplodinotus grunniens
Microgobius gulosus