Guadalupe River

Report of Fisheries Investigations

Fisheries Problem Determination

by

Elgin M. C. Dietz
Project Leader

Dingell-Johnson Project F-9-R-8, Job D-1
July 1, 1960 - November 30, 1960

H. D. Dodgen - Executive Secretary

Texas Game and Fish Commission
Austin, Texas

Marion Toole
Coordinator

Kenneth C. Jurgens and William H. Brown
Assistant Coordinators

A B S T R A C T

Major fisheries problems for Region 7-B continue to be the overabundance of undesirable fish and plant species and the lack of public access to public waters.

The problem fish species are gizzard shad (Dorosoma cepedianum), sunfish (Lepomis sp.), bullhead catfish (Ictalurus natalis and I. melas), Rio Grande cichlid (Cichlasoma cyanoguttatum), carp (Cyprinus carpio), river carpsucker (Carpiodes carpio), grey redhorse sucker (Moxostoma congestum), and possibly the tilapia (Tilapia mossambica).

The gizzard shad is the most abundant and the major problem species in this region. Selective chemical control of this species is relatively short lived and too expensive, in most cases, to be used every three or four years in large lakes or reservoirs. It is therefore suggested that some form of natural or biological control involving the introduction of efficient and desirable predator fish species might prove more beneficial. Possible species are yellow pike perch (Stizostedion vitreum), snook (Centropomus sp.) and striped bass (Roccus saxatilis).

Stocking experiments with flathead catfish (Pylodictus olivaris) indicate that this species will control and reduce overabundant sunfish, bullhead catfish, and Rio Grande cichlid in small impoundments. It is recommended that a concentrated effort be made to develop and determine procedures to improve the propagation of this species.

Problem plant species are spatterdock (Nuphar advena), sawgrass (Zizanopsis milacea), cattails (Typha latifolia), bulrushes (Scirpus sp.) and water hyacinths (Eichornia crassipes). Spatterdock have been eliminated from five lakes in the Kerrville area. However, this plant is still a major problem along much of the Guadalupe River. Approximately 45 acres of sawgrass and cattails on Belmont Lake have been sprayed with Dowpon with good results. However, these plants are becoming a major problem in all the lakes on the Guadalupe River, south of New Braunfels.

Some possible solutions to the lack of access to public fishing waters are the purchase of access areas, a clearer definition of laws covering public or navigable streams, and the provision of the right of public access to public streams at all road crossings where the state owns the right-of-way.

Job Completion Report

State of TEXAS

Project No. F-9-R-8 Name: Fisheries Investigations and Surveys of the Waters of Region 7-B.

Job No. D-1 Title: Fisheries Problem Determination

Period Covered: July 1, 1960 - November 30, 1960

OBJECTIVES

Analysis of data to determine specific fishery problems in the waters of Region 7-B.

PROCEDURE

Data collected for the different jobs and field notes were analyzed to determine specific fisheries problems which will require additional investigations or experimental methods of resolution.

FINDINGS AND RECOMMENDATIONS

Field collected data and personal observations have been carefully analyzed and investigated and it is apparent that the major fisheries problem for Region 7-B are overabundance of undesirable fish species and aquatic plant species. Chemical plant control work of spatterdock (Nuphar advena) in the Kerrville area on the Guadalupe River had virtually eliminated this plant in the areas treated. Plant control work done during this and the previous segment has reduced and eliminated the cattails (Typha latifolia) and sawgrass (Zizaniopsis milacea) in large areas on Belmont Lake. However, concentrations of noxious vegetation have and are building up in areas of this region and much work will have to be done to control this situation.

Another fisheries problem in this region is the lack of access to public fishing waters.

Overabundant Fish

Problem species in Region 7-B are gizzard shad (Dorosoma cepedianum), sunfish species (Lepomis sp.), bullhead catfishes (Ictalurus natalis and I. melas), Rio Grande cichlid (Cichlasoma cyanoguttatum), carp (Cyprinus carpio), river carpsucker (Carpiodes carpio), grey redhorse shiner (Moxostoma congestum), and possibly Tilapia.

The gizzard shad is the most abundant and the major problem species in this region. Analysis of data collected before and after selective chemical kills of this species in lakes throughout the state show that the benefits of chemical control of this species is relatively short lived. This species has the reproduction potential in most instances to repopulate to previous numbers in from one to two years. For this

reason it seems that some form of biological or natural control would be more beneficial than chemical control. The introduction of a desirable and efficient predator game fish appears to be the logical answer to this problem. This introduction would serve a two fold prupose of controlling the overabundance of shad and the addition of a game fish to our waters.

There are several possible species that might serve this purpose and should be fully investigated. Namely the yellow pike perch or walleye (Stizostedion vitreum) snook (Centropomus sp.), and striped bass (Roccus saxatilis).

This writer believes that another attempt to introduce yellow pike perch or walleye in waters which appear most favorable for their survival in Region 7-B should be made. In checking reports and in conversations with a number of fisheries' workers who have made successful introductions of this species in other states, it appears possible that a successful introduction might be made with fingerling fish.

An investigation to determine the possibility of introducing snook into the waters of Region 7-B was initiated during this segment. Very little or no information exists in regards to this species habitat requirements, spawning habits, feeding habits and food requirements. Some information has been found in regards to the water temperature limitations of this species. In a conference with Dr. Henry Hildebrand, Department of Marine Science, University of Corpus Christi, he expressed the belief that quick temperature changes rather than the moderately low temperatures typical of this region during winter months affect this species. It is possible that this species could be successfully introduced into the spring fed streams and lakes in this region. It is the writer's belief that a brood stock or fingerlings should be secured for the San Marcos Fish Hatchery for experimental stocking. Also, a thorough investigation should be made of this species' native and prospective habitats.

A check of all available literature on the striped bass should be made. This species also has been reported to live and to propagate itself in fresh water streams in northeast Florida. It has been taken in completely fresh waters in this region by Dr. Kirk Strawn, formerly of Texas A. & M. College, and other fisheries workers. If the introduction of this species is feasible, a thorough investigation of their native habitat should be made prior to any attempt to transplant them into the waters of this region. The indiscriminate stocking or introduction of exotic or non-native fish species has many times proved very undesirable and points up the fact that a thorough investigation should be made first.

Stocking experiments with flathead catfish (Pylodictus olivaris) indicate that this species will control and reduce overabundant sunfish and bullhead catfish. The major problem in working with this species has been the difficulty of securing this species in sufficient numbers for stocking in lakes and streams. For this reason, it is believed that a contrated effort should be made to develop and determine procedures to improve the propagation of this species. Kermit Sneed, while at the U.S. Fish Cultural Station, Tishomingo, Oklahoma, successfully spawned the flathead catfish by injecting a form of chorionic gonadotrophin to induce spawning. His method and technique should be studied and used, possibly with a more recently developed synthetic gonadotrophin compound.

The major problem experience by Sneed, as well as by Texas fish hatchery personnel who have also spawned this fish, was the very poor survival of the young after they

hatched. An investigation should be made to determine the feeding habits, food requirements and food preference of the young flathead catfish.

The control of bottom feeding fish such as buffalo, carp, suckers, and carp-suckers with orally taken gas producing chemicals would be very beneficial. The major problem at present is to get calcium carbide into a capsule form for use in this experiment. When this has been accomplished, work will need to be done to attract these fish into areas by fish baits or fish attractants. The chemical attractants will probably have to be mixed with some of the bait coverings to make them more acceptable to these rough fish.

More effective and desirable chemical compounds for the total elimination of fish populations and the selective control of undesirable fish species are being tested and will be continued. New chemicals and compounds are being manufactured almost daily and need to be investigated for fisheries control work. Along with this work, bioassays need to be conducted with waters of various physical and chemical properties to determine their effect on the toxicity and effectiveness of the chemicals. A complete chemical analysis of the waters including dissolved oxygen, total alkalinity pH, and any other suspected influencing factor needs to be made of the different waters. A chemical which will yield a complete or total elimination of fish populations will be beneficial in our work. This type of work may seem very slow at times and also time consuming, but the results will be of great benefit in fisheries management.

Overabundant Vegetation

An overabundance of undesirable aquatic plants is present in many of the waters of Region 7-B. The most troublesome are spatterdock, sawgrass, cattails, bulrushes (*Scirpus* sp.), and water hyacinths (*Eichornia crassipes*).

Spatterdock plants have been almost completely eliminated in the five lakes on the Guadalupe River and the portion of stream area between these lakes in the Kerrville area. However, this plant is still a major problem along much of the Guadalupe River in this and other areas of this region.

Another major plant problem will come into existence when Canyon Reservoir is completed and starts to impound flood waters. The river and its five lakes, located below this point, are periodically flooded and scoured. This tends to somewhat control the overabundance of aquatic plants in this area. It is feared that when this flooding and scouring is controlled by the new dam, these plants will present a real problem. Attempts to control or eradicate these plants should be made before they present a real problem. At present there are approximately 20 acres of yellow water lilies in Lake McQueeney. These plants are making some of the best fishing water inaccessible. In addition there are scattered patches of sawgrass, cattails, and water hyacinths.

Approximately 45 acres of sawgrass and cattails on Belmont Lake have been sprayed with Dowpon (Radapon) with good results. This work will be continued on a limited basis for complete control or elimination of these plants.

Scattered patches of water hyacinths are present in most lakes and on the Guadalupe River. Constant vigilance is necessary to prevent this plant from becoming a major fishery problem. It is suggested that a cooperative job between personnel of Regions 7-B and 8-B might possibly control or eradicate the plant before flood waters

are reduced by new impoundments and the plants can build up in the downstream sections of the Guadalupe River.

Lack of Access to Public Waters

The lack of access by fishermen to public waters in this region was reported on during the previous segment. This problem still exists throughout most of this region. It is hoped that some of the possible solutions offered by this writer will come into being. These possible solutions are: the purchase of access areas to some of the more productive stream fishing waters, a clearer definition of the laws covering public or navigable streams, and the possibility of obtaining the right of free public access to public streams at all road crossings where the state owns the right of way.

Prepared by Elgin M. C. Dietz
Project Leader

Approved by Marion Toole
Director Inland Fisheries Division

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