Concho River Watershed

JOB COMPLETION REPORT

As required by

FEDERAL AID IN FISHERIES RESTORATION ACT

TEXAS

Federal Aid Project No. F-14-D-6

STATEWIDE ROUGH FISH CONTROL

Job No. 16a39 A Chemical Treatment to Reduce Existing Fish in the Concho River Watershed Above Twin Buttes Project

Project Leader: Lawrence S. Campbell

H. D. Dodgen
Executive Secretary
Texas Game and Fish Commission
Austin, Texas

Marion Toole
D-J Coordinator

Eugene A. Walker
Director, Program Planning

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ABSTRACT

Approximately 151 miles, comprising 95.7 per cent of all major stream areas of the Concho River System located above Twin Buttes Project, were treated with fish toxicants to reduce existing fish life. Many pot holes, located in secondary tributaries, and eight watershed stock tanks were treated. To avoid unwarranted destruction of endemic species, headwater springs and several other spring areas were not treated. These areas were partially cleared of problematic species by seining and gill netting. Toxaphene was used to treat 3,942 acre feet of water. This chemical was only used where flow was negligible and where stream water was not used for human consumption. Powdered rotenone was used to treat 1,834 acre feet of water where flow was pertinent or where the stream was a human water supply. Much of the stream was treated by workers walking in the stream bed and spraying the toxicant from small units placed upon the workers' backs. Larger pools, such as those created by dams, were treated by medium sized units mounted in boats. The lake treating unit developed under project F-7-R was used to treat the two largest pools of the South Concho River. A total of 328 persons was contacted to obtain ingress to difficult-to-reach stream areas and to secure permission to treat private but associated waters. Pretreatment salvage operations captured 1,200 game fish of species not presently available from hatcheries. These fish were returned to various stream areas as part of the post treatment restocking. Post treatment evaluations indicate that existing fish populations were reduced by more than 95 per cent, and that undesirable fish were reduced to less than 1 per cent of their former weight and number. Restocking has been completed insofar as present limitations will permit. Over 111,000 game fish and 250,000 native forage minnows have been released. This timely development effort on 8,000 acre feet of water should greatly enhance the productivity of Twin Buttes project, and extend the period of good sports fishing after the reservoir reaches a capacity of 170,000 acre feet.

JOB COMPLETION REPORT

State of Texas

Project No. F-14-D-6 Name: Statewide Rough Fish Control

Job No. 16a39 Title: A Chemical Treatment to Reduce Existing Fish in the Concho River Watershed above Twin Buttes Project

Period Covered August 1, 1962 - September 31, 1962

Objectives:

To drastically reduce existing fish in the above waters prior to impounding sizable quantities of water in Twin Buttes Reservoir.

Methods and Specifications:

1. Approximately 151 miles, comprising 95.7 per cent of all major stream areas of the Concho River System located above Twin Buttes Project, were treated with fish toxicants to reduce existing fish life. Chemical applications were completed between July 24, 1962 and September 31, 1962. Stream areas treated include the following:

   (1) All waters in the primary stream bed of the Middle Concho River from Twin Buttes Dam to the western limit of the Bar S Ranch, an estimated 62 miles of stream.

   (2) All waters of Spring Creek from its confluence with the Middle Concho River to a point 1 1/2 miles below the headwater springs located on the Reginald Atkinson Ranch, an estimated 37 1/2 miles of stream.

   (3) Waters of Dove Creek located between a point one-fourth mile above the area where water is backed up by Guinn Dam to Knickerbocker Crossing and all waters of Dove Creek located below the most eastward dam on XQZ Ranch to the confluence with Spring Creek, an estimated 16 miles of stream.

   (4) All waters, excepting some springs, of the South Concho River located below Ford Boulware Ranch and the diversion dam on the South Concho River, a stream distance of 24 miles.

2. In addition to the above specified waters, many pot holes located in secondary tributaries, and eight stock tanks were chemically treated.

3. To avoid unwarranted destruction of endemic species, headwater springs and other spring areas were not chemically treated. However, these areas were partially cleared of problematic species by seining and gill netting. Untreated areas comprised approximately 6 1/2 miles or 4.3 per cent of the total stream areas involved.

4. Selection of toxicants used was determined by circumstances that prevailed in particular stream areas. In order to minimize costs, toxaphene was used in all waters where stream flow was negligible and where the waters were unassociated with public drinking water. Virtually all of the Middle Concho River and Spring Creek were treated with toxaphene, as well as all pot holes and stock tanks. Six hundred fifty seven gallons of 6 pound toxaphene were used. The total volume of water treated with toxaphene was estimated at 3,942 acre feet. The dosage calculated for specific areas was never less than .19 parts per million. Powdered rotenone was used in areas where stream flow was pertinent and where the stream was a source of water for human consumption. It was also necessary to use powdered rotenone for all work done after August 24, 1962, so that more rapid detoxification would occur to permit restocking of the waters in the fall of 1962. The rotenone used varied in toxicity from Prentiss 60W, having an equivalent of 20 per cent active ingredients, to more commonly used powders, having 5.67 and 6.71 per cent active ingredients. The equivalent of 5,500 pounds of 5 per cent powdered rotenone was used to treat 1,834 acre feet of water. All areas previously described for Dove Creek and South Concho River were treated with rotenone, and the calculated dosage for specific areas was always greater than 2 parts per million.

5. The means of application of toxicant varied according to circumstances. Where minor quantities of water extended for significant distances, the stream was treated by personnel walking in the stream bed and spraying the toxicant into the water by means of small manually-operated sprayers. These small capacity units were strapped to the backs of the workers. In larger pools, such as those created by low water impoundments, the areas were treated by medium capacity units mounted in boats. These units controlled the release of chemical by means of globe valves, functioning through siphoning action and employing the action of outboard motor propellers to aid in dispersal. The largest pools of the South Concho River, the pools at Christoval County Park and above Gardner Dam, were treated by the lake treating unit developed under project F-7-R.

6. Three hundred twenty eight persons were contacted to obtain access to difficult-to-reach stream areas and to secure permission to treat private but associated waters. Local and national authorities concerned with the project were contacted to inform them of the work proposed and to secure their cooperation.

7. Limited salvaging operations were also included. This work was undertaken in order to secure brood fish of several game species that are not presently available from state fish hatcheries.

8. Limited evaluation procedures were also included. However, the urgency of completing the work before flooding could occur did not permit extensive evaluation of the work while it was in progress.

Results:

Results of the treatment confirmed sampling data obtained from the pre-impoundment survey, and indicated that previous evaluation of the fishery problem may have been conservative. Many tons of undesirable and problematic fish were destroyed and relatively few desirable game fish.

Total existing fish populations were drastically reduced, probably by more than 95 per cent, and undesired or problematic fish were reduced to less than 1 per cent of their former weight and number. In untreated areas game fish ratios were higher than was common for the watersheds.

Discussion:

At this time there is every reason to be optimistic about the gross success of the management work. Pools being created by the dams are expanding. Over 2,000 acre feet of water are impounded by the South Concho Dam, and approximately 1,500 acre feet are contained in the Middle-Concho-Spring Creek Basin. This increase is expected to continue. The spring fed tributaries increase in flow during the winter months and there is less withdrawal for irrigation. Even if run-off does not occur the combined structures should impound over 12,000 acre feet of water before May 1963. If the normal spring flooding occurs at that time over 40,000 acre feet of water should be impounded within the next six months. Seining and observations have also indicated that the control effort was highly successful. By exercising timely management in waters whose total volume was less than 8,000 acre feet, a temporary control has been effected upon problematic fish populations that would ultimately have adversely affected game fish produced in waters totaling 170,000 acre feet.

Restocking of all watersheds has been completed insofar as the present limitations will permit. A total of 111,700 game fish made up of 40,000 largemouth bass fingerlings (Micropterus salmoides), 30,000 redear sunfish (Lepomis microlophus), 30,000 channel catfish (Ictalurus punctatus), 8,000 blue catfish (I. furcatus), 2,500 flathead catfish (Pylodictus olivaris), and 1,200 adult native sunfish salvaged through pretreatment effort have been distributed in the cleared areas of the stream. In addition to these fish over 250,000 native minnows have been trapped and released.

Estimated Costs:

A. Salaries and Wages

Leader, 30 days @ $26.05 per day	$ 781.00
Fisheries Technician, 20 days @ $14.55 per day	291.00
Field Assistants (4), 80 days @ $13.55 per day	1,084.00
	$ 2,156.00

B. Traveling Expenses

Mileage - 3,000 miles @ $ .08 per mile	$ 240.00
	$ 240.00

C. Operation of Equipment

Gas, oil, lubricants, etc.	$ 75.00
	$ 75.00

D. Materials and Supplies

1. 657 gallons of 6 pound toxaphene @ $2.20 per gallon	$ 1,445.00
2. Equivalent of 5,500 lbs. of 5% powdered rotenone @ $ .31 per lb.	1,705.00
	$ 3,150.00
Total Costs	$ 5,621.00

Recommendations:

Studies should be made to evaluate the results of this work in order to provide a logical basis for determining when the reservoirs should be opened for fishing.

Prepared by Lawrence S. Campbell
Project Leader
Date December 3, 1962

Approved by Marion Toole
Coordinator
Leo D. Lewis
Regional Supervisor