

FILE

SEGMENT COMPLETION REPORT

As required by

FEDERAL AID IN FISHERIES RESTORATION ACT

TEXAS

Federal Aid Project No. F-3-17

Region III-B Fisheries Studies

Job No. 15 Fishery Management Recommendations

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ABSTRACT

A preliminary meeting of Department field biologists, game management officers, and supervisory personnel was held in Palestine on April 24, 1969, to discuss proposed regulation changes for the Northeast Texas, Southeast Texas and Trinity-Brazos Regulatory Areas. Public hearings were held in all regulatory counties within Region III-B in June 1969 for the presentation of proposed proclamations. Fisheries regulation changes were proposed for Toledo Bend Reservoir and Lake Palestine. These changes were passed into law by the Parks and Wildlife Commission.

Quarterly field collections were conducted on the seven major reservoirs in regulatory areas of Region III-B. These reservoirs include Sam Rayburn, Dam "B", Murvaul, Striker, Palestine, Caddo and Livingston. Toledo Bend will be surveyed during the coming segment and Lake Livingston will become the responsibility of Region IV fisheries personnel.

A recommendation will be made at the preliminary meeting this year to prohibit the taking of flathead and blue catfish in nets in Sam Rayburn. Other fishery recommendations include the stocking of threadfin shad in Lake Striker and the removal of carp from this lake. A continuation of the channel catfish stocking program at Lake Murvaul is recommended as well as a limited water drawdown if submerged vegetation becomes a renewed problem. Additional stocking of bass and channel catfish is recommended for Lake Palestine upon completion of the third stage construction now in progress. A fall drawdown was recommended for Dam "B" in 1969 and proved effective in controlling aquatic vegetation. An annual drawdown program is recommended for this lake. The continued spot-treatment of water hyacinths with 2,4-D amine is recommended on Caddo Lake to control this noxious species.

It is recommended that this job be continued to provide current fish population data, vegetation control needs and stocking needs in these major reservoirs.

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SEGMENT COMPLETION REPORT

State of Texas Name: Region III-B Fishery Studies  
Project No. F-3-17 Title: Fishery Management Recommendations  
Job No. 15  
Period Covered: February 1, 1969 - January 31, 1970

PS OBJECTIVES:

To determine, in Region III-B waters, the need for:

1. Changes in fish harvest regulations,
2. Fish population control,
3. Stocking of game fish species,
4. Noxious vegetation control, and
5. Emergency measures needed to correct unpredictable events adversely affecting fish populations.

SEGMENT OBJECTIVES:

Same as PS Objectives.

PROCEDURES:

1. A. Field data from quarterly surveys in Sam Rayburn Reservoir, Dam "B" Reservoir, Lake Murvaul, Lake Striker, Lake Palestine, Caddo Lake, and Lake Livingston were analyzed to formulate advantageous fishery regulations.  
B. Proposed fishery regulations will be presented at public hearings in regulatory authority counties within Region III-B.
2. A. Quarterly surveys were made on each of the above listed reservoirs this segment. Experimental gill nets and bag seines were utilized for making fish collections. Rotenone sampling supplemented seining activities in some collections to better determine spawning success of game fish species. Experimental gill nets used in these collections are 150 feet in length and 8 feet in depth, with square mesh ranging from 1 to 3-1/2 inches. Mesh size increased in 1/2 inch increments with every 25 feet. One 16-foot nylon bag seine with 1/4 inch mesh and a 32-foot bag seine with 3/8 inch mesh was used in seining collections.
3. A. Each of the candidate waters in this study contain established game fish populations with the exception of newly impounded Lake Livingston. Criteria for making stocking recommendations consist primarily of food availability and degree of reproduction. Where field sampling indicates little or no successful reproduction, the normal stocking recommendation rate will be 100 bass fry or 50 bass fingerlings and 25 channel catfish per acre. Of course, in large reservoirs such as Sam Rayburn, this rate cannot feasibly be maintained.

4. A. In conjunction with fisheries surveys, visual observations of aquatic vegetation were made and recorded to determine those areas infested with noxious plants detrimental to fisherman access and useage.
- B. Control recommendations for such areas of noxious vegetation were made if feasible.
5. A. Whenever conditions or events that would threaten fish life come to the attention of project personnel, circumstances will be investigated and reported along with recommendations for remedial action.

FINDINGS:

A preliminary meeting was held in Palestine on April 24, between Parks and Wildlife field biologists, game management officers, and supervisory personnel for the discussion of proposed regulation changes.

Inland Fisheries Region III-B includes counties in three regulatory areas: the Northeast Texas Area, the Southeast Texas Area, and the Trinity-Brazos Area. Fisheries regulation changes for 1969 included the removal of size limits on largemouth bass and channel catfish, flathead and blue catfish in Toledo Bend Reservoir and the removal of nets in Lake Palestine.

Public hearings were attended in each regulatory county on June 5-6. Additional hearings were held later in June in newly added regulatory counties concerning Toledo Bend and Lake Palestine.

The following resumes and data tables are submitted for seven major reservoirs included in this study.

Table I is a checklist of all fish species collected during 1969.

TABLE I - A checklist of fish species collected from all waters in 1969.

NOTE: Abbreviations are as follows: SR - Sam Rayburn Reservoir, B - Dam "B" Reservoir, M - Lake Murvaul, S - Lake Striker, P - Lake Palestine, C - Caddo Lake, and L - Lake Livingston.

<u>SCIENTIFIC NAME</u>	<u>COMMON NAME</u>	<u>LOCATION</u>
<u>Lepisosteus spatula</u>	Alligator Gar	SR-B-L
<u>L. oculatus</u>	Spotted Gar	All
<u>L. osseus</u>	Longnose Gar	SR-B-C-L
<u>Amia calva</u>	Bowfin	All

TABLE I (continued):

<u>SCIENTIFIC NAME</u>	<u>COMMON NAME</u>	<u>LOCATION</u>
<u>Alosa chrysochloris</u>	Skipjack herring	C
<u>Dorosoma petenense</u>	Threadfin shad	M-SR-L
<u>D. cepedianum</u>	Gizzard shad	All
<u>Esox americanus</u>	Grass pickerel	M-L
<u>E. niger</u>	Chain pickerel	C
<u>Ictiobus cyprinellus</u>	Bigmouth buffalo	P-C
<u>I. bubalus</u>	Smallmouth buffalo	SR-B-C-L
<u>Carpionodes carpio</u>	River carpsucker	B-C-L
<u>Minytrema melanops</u>	Spotted sucker	SR-B-S-P-C
<u>rimyzon sucetta</u>	Lake chubsucker	SR-M-P-C
<u>Cyprinus carpio</u>	Carp	SR-B-S-P-C-L
<u>Notemigonus crysoleucas</u>	Golden shiner	M-B-C-L
<u>Notropis fumeus</u>	Ribbon shiner	SR-S
<u>N. chalybaeus</u>	Ironcolor shiner	SR
<u>N. venustus</u>	Blacktail shiner	SR-M-S
<u>N. lutrensis</u>	Red shiner	M-L
<u>N. stramineus</u>	Sand shiner	SR-M-S-L
<u>Pimephales vigilax</u>	Bullhead minnow	SR-M-S-L
* <u>Ictalurus punctatus</u>	Channel catfish	All
* <u>I. furcatus</u>	Blue catfish	SR-B-L
* <u>I. melas</u>	Black bullhead	SR M-B-C-L
* <u>I. natalis</u>	Yellow bullhead	SR-M-B-C-L-P

TABLE I (continued):

<u>SCIENTIFIC NAME</u>	<u>COMMON NAME</u>	<u>LOCATION</u>
* <u>Pylodictis olivaris</u>	Flathead catfish	M-B-S-P-C
<u>Schilbeodes gyrinus</u>	Tadpole madtom	SR-M-S
<u>Fundulus chrysotus</u>	Golden topminnow	S-M-L
<u>F. notatus</u>	Blackstripe topminnow	SR-S-L
<u>Gambusia affinis</u>	Mosquitofish	SR-S-L
<u>Labidesthes sicculus</u>	Brook silversides	SR-S-L
<u>Aphredoderus sayanus</u>	Pirate perch	SR
* <u>Roccus chrysops</u>	White bass	B-S-C-L
* <u>R. mississippiensis</u>	Yellow bass	C-L
* <u>Micropterus punctulatus</u>	Spotted bass	SR-B
* <u>M. salmoides</u>	Largemouth bass	All
* <u>Chaenobryttus gulosus</u>	Warmouth	All
* <u>Lepomis punctatus</u>	Spotted sunfish	SR-M
* <u>L. microlophus</u>	Redear sunfish	SR-M-B-S-P-C
* <u>L. macrochirus</u>	Bluegill sunfish	All
* <u>L. humilis</u>	Orangespotted sunfish	All
* <u>L. auritus</u>	Redbreast sunfish	SR-M
* <u>L. megalotis</u>	Longear sunfish	SR-M-S-L
* <u>Pomoxis annularis</u>	White crappie	All
* <u>P. nigromaculatus</u>	Black crappie	All
<u>Hadropterus scierus</u>	Dusky darter	SR

TABLE I (continued):

<u>SCIENTIFIC NAME</u>	<u>COMMON NAME</u>	<u>LOCATION</u>
<u>Etheostoma chlorosomum</u>	Bluntnose darter	SR
<u>Percina caprodes</u>	Logperch	SR-M-L
<u>Ammocrypta vivax</u>	Scaly sand darter	S
<u>Aplodinotus grunniens</u>	Freshwater drum	SR-B-C-L

\*DESIGNATES GAME FISH SPECIES

TABLE II - Table II contains netting collection totals for each water. These data are consolidations of individual field collections conducted this segment.

CONSOLIDATED NETTING DATA RATIOS FOR 1969

<u>II-A Sam Rayburn Reservoir</u>				
	<u>NUMBER COLLECTED</u>	<u>PER CENT BY NUMBER</u>	<u>TOTAL WEIGHT (lbs.)</u>	<u>PER CENT BY WEIGHT</u>
ROUGH FISH	696	64.21	1,109.51	84.09
GAME FISH	<u>388</u>	<u>35.79</u>	<u>209.94</u>	<u>15.91</u>
TOTAL	1,084	100.00	1,319.45	100.00
<u>II-B Dam "B" Reservoir</u>				
ROUGH FISH	409	63.02	703.80	81.48
GAME FISH	<u>240</u>	<u>36.98</u>	<u>159.94</u>	<u>18.52</u>
TOTAL	649	100.00	863.74	100.00
<u>II-C Lake Murvaul</u>				
ROUGH FISH	679	58.18	687.13	54.35
GAME FISH	<u>488</u>	<u>41.82</u>	<u>577.23</u>	<u>45.65</u>
TOTAL	1,167	100.00	1,264.36	100.00

TABLE II (continued)

II-D Lake Striker

	<u>NUMBER COLLECTED</u>	<u>PER CENT BY NUMBER</u>	<u>TOTAL WEIGHT (lbs.)</u>	<u>PER CENT BY WEIGHT</u>
ROUGH FISH	136	35.70	169.89	52.96
GAME FISH	<u>245</u>	<u>64.30</u>	<u>150.91</u>	<u>47.04</u>
TOTAL	381	100.00	320.80	100.00

II-E Lake Palestine

ROUGH FISH	367	61.38	376.25	68.23
GAME FISH	<u>231</u>	<u>38.62</u>	<u>175.16</u>	<u>31.77</u>
TOTAL	598	100.00	551.41	100.00

II-F Caddo Lake

ROUGH FISH	499	74.04	659.77	84.05
GAME FISH	<u>175</u>	<u>25.96</u>	<u>125.20</u>	<u>15.95</u>
TOTAL	674	100.00	784.97	100.00

II-G Lake Livingston

ROUGH FISH	944	68.80	878.38	80.08
GAME FISH	<u>428</u>	<u>31.20</u>	<u>218.49</u>	<u>19.92</u>
TOTAL	1,372	100.00	1,096.87	100.00

II-H Region Totals

ROUGH FISH	3,693	63.71	4,534.73	74.95
GAME FISH	<u>2,104</u>	<u>36.29</u>	<u>1,515.88</u>	<u>25.05</u>
TOTAL	5,797	100.00	6,050.61	100.00

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Individual percentages by weight and number for each species, K-factor data for game fish species and seining-rotenone collection data were also compiled but are not listed in table form. Significant aspects of these field data are included in the resumes for given waters.

Sam Rayburn Reservoir:

Sam Rayburn Reservoir has now achieved full recognition as one of the finest bass fishing lakes in the nation. Largemouth bass collections this segment were higher than those of 1968, but still not indicative of the reservoir's bass population according to fishing success.

Largemouth bass fry and fingerlings collected by seine and spot rotenone samples indicated continued successful bass reproduction in the lake. It is anticipated that nearby Toledo Bend Reservoir will reduce somewhat the fishing pressure on Sam Rayburn bass during the next few years. The effects of professional fishermen and bass clubs on new reservoirs are not fully known but could be significant on Sam Rayburn. Rayburn has excellent potential for producing a new State record largemouth bass in the near future.

In 1967, a fishery recommendation was presented at public hearings to exclude the taking of channel, flathead and blue catfish in nets on Sam Rayburn. This recommendation was not passed into law. Netting data from the 2-year basic survey conducted in 1965-66 (Job B-22) included only 28 channel catfish, 8 blue catfish and 14 flathead catfish. It was on the basis of these low catfish collections that the recommendation to exclude catfish from nets was made. Netting collections of this study in 1968-69, made with comparable equipment and collection effort, contained 25 channel catfish, 1 blue catfish, and no flathead catfish. These data comparisons suggest that while the channel catfish population in Sam Rayburn has remained relatively stable, the flathead and blue catfish have declined. It is concluded that commercial netting has been primarily responsible. Recommendations will again be made to prohibit the netting of these catfish species in the reservoir. Four-inch nets are very effective in taking adult flathead and blue catfish. These species are in need of protection in Sam Rayburn because of their effective predation on large forage fish and also, they should be utilized by sport fishermen.

Overall game fish percentages for Sam Rayburn remained stable in comparison to the 1968 data.

Aquatic vegetation is not a serious problem in the reservoir. However, a few scattered individual water hyacinths have been observed and removed from the lake. This plant may require control in the future.

Lake Murvaul:

This 3,800-acre reservoir in Panola County continues to produce a phenomenal number of lunker largemouth bass. Experimental gill nets used for field sampling normally collect limited numbers of this species. However, in two collections from Lake Murvaul this year, 99 bass were netted with a total weight of 279.75 pounds. This is an average weight of 2.83 pounds. These bass collections far exceed any others from Region III-B reservoirs.

As contained in the previous segment completion report, a program of raising and stocking channel catfish in Murvaul was initiated in 1967 by the Panola County Freshwater District, owners of the lake. This program is continuing with possible success, as 8 channel catfish were collected this segment. It is recommended that this stocking program be continued.

Submerged vegetation did not become a serious problem in Murvaul this year due to increased turbidity and higher water levels in the spring. A variety of submerged aquatics did reach noxious levels in the lake in 1968.



Lake Livingston:

This newly impounded reservoir on the Trinity River will contain 92,000 surface acres when filled. Reservoir level was approximately 20 vertical feet below conservation level during the survey period in 1969. The fertile waters of the Trinity River are apparently conducive to catfish production. A total of 294 yellow and black bullhead catfish were netted, as were 78 channel catfish and 56 blue catfish. No flathead catfish were collected but it is anticipated that this species will soon become prevalent in the reservoir.

White and black crappie and white bass were also collected in significant numbers from the new reservoir. Game fish species comprised 31.20 per cent by number and 19.92 per cent by weight of the four collections this year. Rapidly expanding populations of all fishes are indicated by increased total numbers collected from each quarterly survey.

Lake Livingston will become the responsibility of Region IV fisheries personnel in 1970 as a major portion of the reservoir lies within that Region.

Dam "B" Reservoir: (B. A. Steinhagen Reservoir)

Dam "B" Reservoir continues to be a good producer of game fish species. Netting data for 1969 included good representations of bass, crappie and channel catfish.

Aquatic vegetation, both submerged and emergent, has long been a serious problem in Dam "B". Alligator weed (Althernenthera philoxeroides) and water hyacinth (Eichornia crassipes) are the principal emergent species in the lake while the most common submerged plant is (Elodea sp.).

In September, 1969, the author recommended a six-week water drawdown to control excessive vegetation. An excellent drawdown was achieved through the cooperation of the Lower Neches River Authority and the U. S. Army Corps of Engineers, Fort Worth District. The low elevation of 59.37 feet above M.S.L., which is approximately 22 vertical feet below normal lake elevation of 82 feet, was reached on November 8, 1969. During the drawdown period, the Corps of Engineers contracted an aerial spraying program of 500 surface acres for control of the alligator weed and hyacinths in the lake. The reservoir filled to elevation 82.0 in December, 1969, and is now in excellent condition. It is strongly recommended that an annual drawdown program each fall be continued. It is anticipated that game fish percentages during the coming segment will reflect a fisheries benefit from this vegetation control program through increased predation due to less cover for forage species.

CONCLUSIONS AND RECOMMENDATIONS:

1. The recommendation to prohibit the taking of flathead and blue catfish with nets in Sam Rayburn Reservoir will be made.
2. It is recommended that the channel catfish stocking program be continued in Lake Murvaul.
3. Limited winter drawdown is recommended for Lake Murvaul in the event submerged aquatics again reach noxious levels.

4. The stocking of threadfin shad is recommended at Lake Striker to provide additional forage for game fish species.
5. It is recommended that carp be removed from Lake Striker with the use of 3-1/2 or 4-inch square mesh nets by a contract fisherman during the early spring.
6. Additional stocking of game fish, particularly channel catfish, is recommended for Lake Palestine upon completion of third stage construction.
7. Continued spot treatment of water hyacinths is recommended at Caddo Lake with 2,4-D amine.
8. An annual fall water drawdown is recommended for Dam "B" Reservoir to provide continued control of submerged and emergent aquatic vegetation.

It is recommended that this job be continued to provide valid fish harvest regulations through population sampling data, vegetation control needs and stocking needs where feasible. Field data compiled from this study is vital in continuing these objectives.

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Date March 17, 1970

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