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STATE Texas
PROJECT NO. F-5-R-1, Job B-7
PERIOD June 22, 1953 - June 22, 1954

Job Completion Report

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TITLE

Inventory of species present in those portions of the North Concho River occurring within Tom Green, Coke, Sterling and Glasscock Counties, Texas.

OBJECTIVES

To determine the distribution of species present, their relative abundance and the ecological factors influencing their distribution.

PROCEDURE

Forty-six seining collections were made at fifteen locations on the North Concho watershed. In nearly all collections both 26 ft. $\frac{1}{4}$ " bag seines and 15 ft. $\frac{1}{4}$ " mesh common sense seines were used. To estimate relative abundance a count was made of all individuals taken in sixteen collections. Four collections were taken in each type stream habitat and the resulting data analyzed on a seasonal basis. In other collections data pertaining to species distribution only was recorded and in addition to the above equipment, 6 ft. and 4 ft. common sense seines and $\frac{1}{8}$ " mesh fry seines were employed.

Ten gill net collections were made. Experimental nylon gill nets measuring 125 ft. long x 8 ft. in depth and made up in five, 25 ft. sections, were set at three stations. Mesh size for these nets increased progressively in each following section at one-half inch intervals beginning with one inch mesh and terminating with a 3" mesh section.

Two rotenone collections were made, one for the stream area previously treated in 1952 and one for the untreated stream area. Data pertaining to numerical and weight percentages was taken for each species recovered and the volume of water treated estimated.

In all collections most of the fish taken were identified and counted in the field. However, some individuals whose identity was questionable were preserved in 10% formalin and a sample of each species collected saved for laboratory study.

FINDINGS

For reasons discussed in the completion report for Job A-2 and to illustrate the differences in population abundance and species distribution for stream areas previously treated with rotenone, as compared with untreated areas, all fishery data obtained is organized and presented in accordance with that arbitrary division in the watershed.

1. Stream Areas Treated with Rotenone in 1952. Primarily clear water and murky water associations described in report for Job A-2. On appended map stations 15 to 5, inclusive.

Seining Collections

Estimate based on four seasonal collections. Stations 5, 7, 11, 13 and 15

Species	Number	% Total
Dorosoma cepedianum	211	10.3
Carpiodes carpio	21	1.0
Moxostoma congestum	4	.1
Cyprinus carpio	8	.3
Aplodinotus grunniens	8	.3
Pimephales vigilax	84	4.1
Gambusia affinis	154	7.6
Notropis lutrensis	571	28.4
Notropis venustus	262	13.1
Ictalurus punctatus	114	5.6
Micropterus salmoides	48	2.3
Lepomis megalotis	108	5.2
Lepomis cyanellus	143	7.1
Lepomis macrochirus	140	6.9
Lepomis auritus	22	1.0
Lepomis microlophus	51	2.5
Pomoxis annularis	89	4.4
Totals	2,038	100.2

Netting Collections

Species	Number	% Total
Dorosoma cepedianum	82	30.2
Carpiodes carpio	61	22.4
Moxostoma congestum	11	4.1
Lepisosteus osseus	15	5.5
Cyprinus carpio	9	3.3
Aplodinotus grunniens	14	5.2
Pomoxis annularis	21	7.8
Ictalurus punctatus	38	14.0
Lepomis cyanellus	8	2.9
Lepomis auritus	4	1.5
Lepomis macrochirus	9	3.3
Totals	272	100.2

Totals for four seasonal collections, Station 7 and 10.

Rotenone Collection

Pool treated approx. $1\frac{1}{2}$ acre ft., approx. 200 yds. east of Station 12

Species	Number	Total		% by	% by
		Wt.	No.	No.	Wt.
Dorosoma cepedianum	31	3	1	6.89	4.9
Carpiodes carpio	12	18	0	2.67	29.6
Aplodinotus grunniens	8	5	1	1.78	8.3
Micropterus salmoides	17	3	9	3.78	5.8
Ictalurus punctatus	12	6	15	2.67	11.5
Lepomis cyanellus	41	5	8	9.12	9.1
Lepomis megalotis	13	1	10	2.82	2.7
Lepomis auritus	6	1	2	1.33	1.9
Lepomis microlophus	11		9	2.45	.8
Lepomis macrochirus	38	2	7	8.45	4.1
Pomoxis annularis	21	11	4	4.67	18.5
Notropis and other small forage fish	240	1	12	53.40	2.9
Totals	450	60	14	100.03	100.1

Species	Number	% Total
Dorosoma cepedianum	47	21.6
Carpiodes carpio	38	17.4
Moxostoma congestum	10	3.2
Lepisosteus osseus	11	5.1
Ictiobus bubalus	4	1.9
Aplodinotus grunniens	13	5.9
Ictiobus niger	2	.9
Pilodictus olivaris	1	.5
Amerius natalis	47	21.6
Ictalurus punctatus	9	4.9
Pomoxis annularis	2	1.0
Lepomis cyanellus	8	3.7
Lepomis auritus	8	3.7
Lepomis macrochirus	13	5.9
Lepomis punctatus	4	1.9
Chaenobryttus coronarius	3	1.7
Totals	217	100.1

Rotenone Collection

Station 4. Area treated approx. 3 acre ft.

Species	Number	Total		% by No.	% by Wt.
		Wt.	lbs. oz.		
Dorosoma cepedianum	38	4	0	6.8	5.7
Carpiodes carpio	21	7	9	3.8	10.7
Moxostoma congestum	8	2	0	1.4	2.9
Ictiobus bubalus	8	14	2	1.4	20.3
Cyprinus carpio	8	18	4	1.4	26.6
Aplodinotus grunniens	14	3	5	2.5	4.7
Lepisosteus osseus	4	6	9	.7	9.4
Ameiurus natalis	13	1	5	2.3	1.8
Ameiurus melas	7		11	1.2	1.0
Ictalurus punctatus	4		14	.7	1.3
Pilodictus olivaris	1	1	2	.2	1.6
Micropterus salmoides	5	2	2	.9	3.0
Micropterus punctulatus	2		14	.4	1.3
Lepomis cyanellus	12	1	0	2.1	1.4
Lepomis megalotis	12		13	2.1	1.1
Lepomis humilis	4		3	.7	.3
Lepomis macrochirus	31	1	10	5.5	2.3
Lepomis microlophus	7		15	1.2	1.3
Lepomis auritus	2		5	.4	.4
Pimephales, Notropis and other small forage fishes	362	2	1	64.3	3.0
Totals	563	69	12	99.9	100.1

The turbid intermittent pool associations found in the untreated portions of the upper watershed are apparently dominated by river carp suckers (*Carpiodes carpio*), German carp (*Cyprinus carpio*), smallmouth buffalo (*Ictiobus bubalus* and *I. niger*) and by bullheads (*Ameiurus natalis* and *A. niger*.) Gizzard shad and game species are less abundant than in treated areas and lack of condition in bass (*Micropterus salmoides* and *M. punctulatus*) was evident. In some pools stunted sunfish populations were observed. A greater number of species were found in turbid waters and log perch (*Percina caprodes*), Texas shiners (*Notropis amabilis*) and mimic shiners (*Notropis volueellus*) were found in the untreated areas only.

SUMMARY

1. Field work for this job was done in conjunction with Job A-2. (Basic Survey of the North Concho River.
2. Forty-seven seining collections were made at fifteen stations, ten gill net collections were made. Experimental gill nets were used.
3. Two areas were rotenoned and a record made of the number and total weight of each species taken.
4. Thirty-two species were taken by all methods of collection from the watershed.
5. In 1952 all areas of stream below Cret Clark Ranch Stations 15 to 5, inclusive, were treated with rotenone. Species distribution and population ratios differ between this area and untreated pools.
6. The treated portion of the watershed is a series of reservoirs and pools and is clear water and murky water association. Clear water communities are dominated by sunfishes and shiners and to a lesser extent by gizzard shad. Murky associations are dominated by river carp suckers and gizzard shad. However, southern channel catfish and white crappie become the most important predacious species in this environment.
7. Stream areas untreated with rotenone in 1952 are turbid intermittent pool associations. Although a greater number of species are found in this association, untreated portions of the upper watershed are apparently dominated by river carp suckers, German carp, smallmouth buffalo and by bullheads. Game species are less abundant than in treated areas. Largemouth black bass were in poor condition and some pools had stunted sunfish populations.

Checklist of Species of Fish from North Concho River, July 22, 1953
to June 30, 1954

Common Name	Scientific Name
1. Longnose gar	<i>Lepisosteus osseus</i>
2. Gizzard shad	<i>Dorosoma cepedianum</i>
3. Smallmouth buffalo	<i>Ictiobus bubalus</i>
4. Black buffalo	<i>Ictiobus niger</i>
5. River carpsucker	<i>Carpionodes carpio</i>
6. Gray redhorse sucker	<i>Moxostoma congestum</i>
7. German carp	<i>Cyprinus carpio</i>
8. Golden shiner	<i>Notemigonus crysoleucas</i>
9. Blacktail shiner	<i>Notropis venustus</i>
10. Red shiner	<i>Notropis lutrensis</i>
11. Texas shiner	<i>Notropis amabilis</i>
12. Mimic shiner	<i>Notropis volucellus</i>
13. Plains minnow	<i>Hybognathus placitus</i>
14. Parrot minnow	<i>Pimephales vigilax</i>
15. Southern channel catfish	<i>Ictalurus punctatus</i>
16. Black bullhead	<i>Ameiurus melas</i>
17. Yellow bullhead	<i>Ameiurus natalis</i>
18. Flathead catfish	<i>Pilodictus olivaris</i>
19. Common mosquitofish	<i>Gambusia affinis</i>
20. Spotted black bass	<i>Micropterus punctulatus</i>
21. Largemouth black bass	<i>Micropterus salmoides</i>
22. Warmouth bass	<i>Chaenobryttus coronarius</i>
23. Green sunfish	<i>Lepomis cyanellus</i>
24. Spotted sunfish	<i>Lepomis punctatus</i>
25. Redear sunfish	<i>Lepomis microlophus</i>
26. Bluegill	<i>Lepomis macrochirus</i>
27. Orangespotted sunfish	<i>Lepomis humilis</i>
28. Yellowbelly sunfish	<i>Lepomis auritus</i>
29. Western longear sunfish	<i>Lepomis megalotis</i>
30. White crappie	<i>Pomoxis annularis</i>
31. Logperch	<i>Percina caprodes</i>
32. Freshwater drum	<i>Aplodinotus grunniens</i>

Hybrids

Lepomis macrochirus x *L. punctatus*

Lepomis humilis x *L. cyanellus*

