

Report of Fisheries Investigations

Basic Survey and Inventory of Species, as Well as Their Distribution
in the Clear Fork of the Brazos River in Region 3-B, Texas

by

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Dingell-Johnson Project F-5-R-6, Job B-16
April 16, 1958 - April 15, 1959

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Job Completion Report

State of TEXAS

Project No. F-5-R-6

Name: Fisheries Investigations and Surveys
of the Waters of Region 3-B.

Job No. B-16

Title: Basic Survey and Inventory of Species,
as Well as Their Distribution in the
Clear Fork of the Brazos River in
Region 3-B, Texas.

Period Covered:

April 16, 1958 - April 15, 1959

Abstract:

Altogether 28 seining stations and 15 netting stations were employed to collect 5,339 specimens of fish life representing 10 families, 18 genera, and 29 species. Redhorse shiners (Notropis lutrensis) dominated the seining sample while gizzard shad (Dorosoma cepedianum) dominated the netting. Channel catfish (Ictalurus punctatus) were found to be the most prevalent of the larger game species. It was concluded that the survey should be extended for another year in an effort to obtain more complete fishery data from the lower areas of the Brazos watershed and more information concerning pollution and water quality.

Objectives:

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

Procedure:

A total of 95 gill nets were set and 28 seine collections were made in an effort to sample the fish population of the Clear Fork of the Brazos River and its watershed. The use of netting as a sampling technique was limited in use in the river and impossible in the river's tributaries due to the shallowness of the water in most places and the narrowness of the river and creek beds. For that reason only 10 netting collections were made at five localities in the river. A total of 85 nets were set in 10 lakes on the river's watershed. Some of the netting collections from lakes were obtained in conjunction with other Dingell-Johnson Projects.

All nets employed were experimental type gill nets measuring 125 feet in length by 8 feet in depth. All seines used were either 20 feet long by 6 feet deep common-sense seines, or 30 feet long by 6 feet deep bag seines.

Specimens collected by seining were taken to the laboratory for identification and study. Samples of each species were preserved in a 10 percent formalin solution.

Since water quality records were available on the Clear Fork of the Brazos River through the Texas Board of Water Engineers, and since time that could be devoted to this job was at a premium, no special chemical analyses were made. Air and water temperatures, pH and turbidity recordings, and physical and botanical observations were made at various netting and seining localities during the course of the survey.

Findings:

Physical Characteristics

The Clear Fork of the Brazos River arises in the south-eastern part of Scurry County from a series of small springs. As the stream progresses through Fisher and Jones Counties a multitude of creeks are added to the watershed. Permian red soils prevail in this area and much of the land is in cultivation. The river in this region usually flows only in periods of heavy rain. For these reasons the water flowing in these areas usually contains much red and brown colloidal suspension. However, the water becomes clearer and the stream becomes more deserving of its name as it continues further east. In times of drouth much of the standing water of the upper watershed dries up completely. This upper area is best characterized as a sporadic, intermittent stream (Figures 1 and 2). On down the river, at the Nugent station, average annual runoff figures for a period of 30.6 years equaled 91,770 acre feet. The minimum flow recorded during this period was 7,830 acre feet and the maximum flow recorded was 518,000 acre feet. (Figures 3 and 4).

The eastern part of the Clear Fork Watershed is chiefly composed of Shackelford, Throckmorton and Stephens Counties. The undulating surface of the land in these counties is used principally for ranching. The vegetative cover on these black and grey soils and the presence of several small ponds and lakes are probably the main reasons for the less turbid waters in the lower Clear Fork Watershed. The stream bed in this area is generally packed sand with limestone projections and the banks of the river are lined with large trees. For the Fort Griffin station, in this lower area, the average annual runoff figures for a period of 30.8 years equaled 173,300 acre feet. The minimum flow recorded during this period was 6,370 acre feet and the maximum flow recorded was 711,000 acre feet.

Aquatic Vegetation

Streambed vegetation varies from the headwaters to the lower reaches of the Clear Fork as the topography and water characteristics. Vegetation in the upper reaches of the watershed is relatively scattered and is composed mainly of mesquite, button willows, and a few hackberry trees with various weeds and grasses intermingled. Small patches of bulrushes (Scirpus) and various forms of algae were the only aquatics noted in the upper area. (Figure 5).

The lower drainage of the Clear Fork supports more profuse vegetation with larger mesquites, pecans, hackberries, post oaks, blackjack oaks, and willows being the principal trees along the river banks. Various grasses, vines, and brambles are likewise abundant. The bulk of the aquatic vegetation appears to be muskgrass (Chara) and coontail (Ceratophyllum).

Pollution

Small scattered patches of oil-well, salt-water, pollution seem to be common in several localities along the Clear Fork of the Brazos River. The areas of most heavy

concentrations apparently lie on California Creek, in Jones County (see Table 53); on the Clear Fork itself, in north-eastern Stephens County; and in the Old Hamlin City Lake. Three nets set in the Old Hamlin City Lake produced no fish and seining yielded only very salt tolerant species (see Tables 26 and 39). A small refinery at Lueders, Texas, is emptying a by-product into the river. Detailed examinations and investigations of these pollutions or possible pollutions has been impossible during the survey thus far due to the lack of available time. It is hoped that more time may be expended on this phase of the survey during the following segment.

Fish Populations

The results of the netting and seining collections can best be given in the following annotated species list and the fishery charts included in this report. For a complete summation of fishery results consult Tables 31 and 51. A total of 5,339 specimens of 29 species were collected. These 29 species represented 10 families and 18 genera.

Annotated Species List

Lepisosteidae (Gars)

Lepisosteus osseus (longnose gar). This species is probably the dominant one in the lower part of the Clear Fork of the Brazos River. In the lower regions there are some sections of stream that have apparently been stripped of practically all small fish by this species. It was also observed that gar in those sections were rather poor and on the average, weighed only one pound. It is possible that they were having a hard time finding enough to eat. In one particular hole of water the gar were so active and perhaps so ravenous that there were approximately 20 of them in the gill net before the survey crew had it completely set out. There were no gar taken in the upper reaches of the watershed. Thus, considering the whole river and all its tributaries, gar composed only 4.42% by number of the total fish netted.

Clupeidae (Herrings)

Dorosoma cepedianum (gizzard shad). This species was very prevalent in the netting collections in some localities and equaled 24.9% of the total number of fish taken by netting. This was the highest percentage, by number, of any species taken by netting. However, it must be mentioned that some lakes and netting localities produced no shad at all. The shad taken from the river were generally very large, 97 of them averaging slightly over 10 ounces. Shad of this size are considered to be highly undesirable. (See Table 47).

Catostomidae (Suckers and buffalofishes)

Ictiobus bubalus (smallmouth buffalo). Most netting stations in the river yielded this species but none were taken from any of the lakes sampled even though they are known to exist in some of the lakes (i.e. Lake Fort Phantom Hill). No buffalo were obtained in any of the seining collections. Although this species has a high commercial value, the difficulty of access and netting in the holes in the river, where the majority of this species exist, probably tends to make the commercial fishing for this fish unprofitable.

Carpiodes carpio (river carpsucker). These fish were taken both by net and seine. The presence of this species constitutes a serious fishery problem in some lakes on the watershed, since no utilization of this species by either man or fish has been observed.

Cyprinidae (Shiners and minnows)

Cyprinus carpio (carp). This species is sub-dominant to the river carpsucker but does constitute a fishery problem in all lakes. Carp are becoming more and more fished for in many West Texas lakes because of their tremendous strength and willingness to fight when caught.

Notemigonus crysoleucas (golden shiner). Although this species was taken by net and seine, it was taken only from lakes. This fish is not believed to be native in the Clear Fork of the Brazos River, or its watershed, but is known to have been introduced as a forage fish by the state fish hatcheries.

Notropis lutrensis (redhorse shiner). This is the dominant shiner in the Clear Fork of the Brazos River. Practically all of the 1,468 individuals collected were taken from the river and its tributaries. Even so they constituted over 33% of the fish taken by seining for the whole watershed. These minnows thrive particularly in the sporadic, intermittent streams of the upper part of the Clear Fork.

Notropis volucellus (mimic shiner). Only one individual of this species was collected. It was taken from the upper part of the river. (See Table 12).

Notropis buchanani (ghost shiner). Only one specimen of this species was collected. This fish was taken from a tributary of the Clear Fork during a muddy run off of rain waters. (See Table 22).

Pimephales vigilax (parrot minnow). All of the small sample of this species were obtained from the bigger waters of the middle and lower reaches of the river.

Pimephales promelas (fathead minnow). This species is fairly abundant but seems to be more prevalent in the upper reaches of the river.

Ameiuridae (Freshwater catfishes)

Ictalurus punctatus (channel catfish). Only occasional specimens of this fish were obtained by seining and netting in the river and its tributaries. The species was very abundant in netting collections taken from the lakes and composed over 21% of the number and over 47% of the weight of the total netting sample. This is one of the most sought after species by West Texas Anglers and is frequently stocked from the state fish hatcheries.

Ictalurus melas (black bullhead). This species was taken by net and seine from both the river and the lakes. It appears to be more abundant in some of the smaller lakes, which apparently have no flathead catfish, than in any other waters.

Ictalurus natalis (yellow bullhead). This species was obtained only by seining. It is fairly common in the river but was not collected from the lakes.

Pylodictus olivaris (flathead catfish). This very desirable food fish is much sought after by anglers and apparently serves as an effective bullhead control in lakes where it occurs. One specimen, taken from the river, was the only individual of this species collected. The species is known, however, to be fairly common in some of the lakes on the watershed. Possibly these fish lie on the bottom in a lethargic state for long periods of time which might account for their scarcity in netting collections.

Cyprinodontidae (Killifishes and topminnows)

Fundulus notatus (blackstripe topminnow). The only locality in which this topminnow was seined was a tributary of the lower part of the river (See Table 24).

Fundulus kansae (plains killifish). This species was collected from a lake containing large amounts of chlorides which are believed to be the results of nearby oil wells. The killifish was not taken from any other locality. (See Table 26).

Cyprinodon rubrofluviatilis (Red River pupfish). This species appears to be the dominant fish in the lake mentioned above where the water is too salty for many other species.

Poeciliidae (Mosquitofishes)

Gambusia affinis (mosquitofish). The mosquitofish is common in backwater sloughs and quiet pools throughout the watershed. They were the second most common fish in the seining collections, and are considered to be very desirable to man because of their practice of eating mosquitos.

Serranidae (Basses)

Roccus chrysops (white bass) - This species is not indigenous to the Clear Fork but has been introduced in some of the lakes on the watershed. Although not many of these fish were collected, Fort Phantom Hill Lake is known to have a large population.

Centrarchidae (Black basses and sunfishes)

Micropterus salmoides (largemouth bass). The evasive nature of these fish makes them difficult to capture in nets and seines. It is therefore difficult to arrive at an accurate estimate of their occurrence. The data collected would indicate, however, that they are much more common in some of the lakes than they are in the river.

Lepomis cyanellus (green sunfish). This sunfish is common throughout the watershed and is a desirable species to the angler when it attains a reasonable size. However, very few of these sunfish collected were large enough to be fished for and some individuals, only 2 inches long, were fully grown, sexually ripe, fish.

Lepomis microlophus (reardear sunfish). This is one sunfish that generally attains a desirable size in West Texas waters. Only a few individuals of this species were collected. (See Tables 12 and 44). These were present probably because of hatchery stocking and very likely are not native to the stream.

Lepomis macrochirus (bluegill). This species is very common in the lakes and the river. None of these fish were of a desirable size due to overpopulation of this species. Some individuals were sexually mature at a length of 2 inches.

Lepomis humilis (orangespotted sunfish). Under ideal conditions, these sunfish do not attain a very desirable size. All of the individuals collected from the Clear Fork were extremely small. This species is apparently sub-dominant to the other native sunfish.

Lepomis megalotis (longear sunfish). These fish, along with bluegills, are the dominant sunfish. They appear to prefer running stream areas but were very abundant in the upper reaches of the river whether the water was running or was standing in pools. These fish, like the other species of sunfish, were nearly all stunted.

Pomoxis annularis (white crappie). Practically all the bigger waters of the Clear Fork and its watershed contained this species. They were particularly abundant in the lakes. Not many were collected, however, that were a desirable size and many individuals were stunted.

Pomoxis nigromaculatus (black crappie). Two specimens of this species were taken from Lake Sweetwater in a previous segment. (See Table 45). They were very large crappie and in very good condition. It is nearly certain, however, that these fish were stocked in that reservoir and are not indigenous to the watershed.

Percidae (Perches and darters)

Percina caprodes (logperch) - This apparently unimportant species was collected from only one lake on the watershed. (See Table 28).

Conclusions:

Because very limited fish sampling was performed on the lower reaches of the river and since none of the sampling stations were worked but one time, it is concluded that this survey should be continued for another year. There is also a vast amount of investigation that needs to be conducted in regards to water quality and pollution. As much time as can possibly be used for this facet of the project, in conjunction with the pollutions investigations projects, needs to be used.

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Approved by Maurice Toole
Director Inland Fisheries Division

Date September 24, 1959

Table 1. Clear Fork of Brazos River

Type of Collection: Seining
 Location: Springs on A. R. Willingham Ranch in Southeast Scurry
 County
 Date: July 18, 1958
 Weather: Hot

| Species | No. | Percent by No. |
|-----------------|-----|-------------------|
| Redhorse shiner | 6 | 11.11 |
| Fathead minnow | 18 | 33.33 |
| Green sunfish | 20 | 37.04 |
| Bluegills | 10 | 18.52 |
| Totals | 54 | 100.00 |

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Table 2. Clear Fork of Brazos River

Type of Collection: Seining
 Location: Clear Fork on Sterling Willingham Ranch in Southwest
 Fisher County
 Date: July 18, 1958
 Weather: Hot

| Species | No. | Percent by No. |
|------------------|-----|-------------------|
| River carpsucker | 4 | .90 |
| Redhorse shiner | 400 | 90.50 |
| Yellow bullheads | 26 | 5.88 |
| Green sunfish | 10 | 2.26 |
| Longear sunfish | 2 | .46 |
| Totals | 442 | 100.00 |

Table 3. Clear Fork of Brazos River

Type of Collection: Seining
 Location: Nettleton Ranch in Western Fisher County
 Date: July 18, 1958
 Weather: Hot

| Species | No. | Percent by No. |
|-----------------------|-----|-------------------|
| Redhorse shiner | 200 | 72.46 |
| Fathead minnow | 18 | 6.52 |
| River carpsucker | 15 | 5.44 |
| Yellow bullhead | 12 | 4.34 |
| Green sunfish | 20 | 7.25 |
| Bluegill | 3 | 1.09 |
| Orangespotted sunfish | 5 | 1.81 |
| Longear sunfish | 3 | 1.09 |
| Totals | 276 | 100.00 |

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Table 4. Clear Fork of Brazos River

Type of Collection: Seining
 Location: Noles Ranch in North West Fisher County
 Date: July 19, 1958
 Weather: Hot

| Species | No. | Percent by No. |
|-----------------|-----|-------------------|
| Redhorse shiner | 30 | 36.58 |
| Fathead minnow | 40 | 48.78 |
| Black bullhead | 2 | 2.44 |
| Yellow bullhead | 2 | 2.44 |
| Green sunfish | 4 | 4.88 |
| Bluegill | 4 | 4.88 |
| Totals | 82 | 100.00 |

Table 5. Clear Fork of Brazos River

Type of Collection: Seining
 Location: Dirt Road Crossing in North Central Fisher County
 Date: July 19, 1958
 Weather: Hot

| Species | No. | Percent by No. |
|-----------------|-----|-------------------|
| Redhorse shiner | 50 | 40.32 |
| Fathead minnow | 50 | 40.32 |
| Green sunfish | 16 | 12.90 |
| Bluegill | 4 | 3.23 |
| Longear sunfish | 4 | 3.23 |
| Totals | 124 | 100.00 |

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Table 6. Clear Fork of Brazos River

Type of Collection: Seining
 Location: Highway 70 Crossing North of Roby in Fisher County
 Date: July 19, 1958
 Weather: Hot

| Species | No. | Percent by No. |
|-----------------|-----|-------------------|
| Redhorse shiner | 25 | 25.25 |
| Mosquitofish | 50 | 50.51 |
| Green sunfish | 4 | 4.04 |
| Longear sunfish | 20 | 20.20 |
| Totals | 99 | 100.00 |

Table 7. Clear Fork of Brazos River

Type of Collection: Seining
 Location: Roy Eaton's Ranch in North Eastern Fisher County
 Date: July 24, 1958
 Weather: Hot

| Species | No. | Percent by No. |
|-----------------|-----|-------------------|
| Gizzard shad | 2 | 1.80 |
| Redhorse shiner | 15 | 13.51 |
| Fathead minnow | 6 | 5.41 |
| Mosquitofish | 16 | 14.41 |
| Yellow bullhead | 2 | 1.80 |
| Green sunfish | 15 | 13.51 |
| Bluegill | 20 | 18.03 |
| Longear sunfish | 35 | 31.53 |
| Totals | 111 | 100.00 |

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Table 8. Clear Fork of Brazos River

Type of Collection: Seining
 Location: J. R. Murff's Ranch in North Eastern Fisher County
 Date: July 24, 1958
 Weather: Hot

| Species | No. | Percent by No. |
|-----------------|-----|-------------------|
| Redhorse shiner | 75 | 40.32 |
| Fathead minnow | 10 | 5.38 |
| Mosquitofish | 80 | 43.01 |
| Green sunfish | 2 | 1.08 |
| Bluegill | 9 | 4.83 |
| Longear sunfish | 10 | 5.38 |
| Totals | 186 | 100.00 |

Table 9. Clear Fork of Brazos River

Type of Collection: Seining
 Location: Cecil Edward's Ranch in Eastern Fisher County
 Date: July 24, 1958
 Weather: Hot

| Species | No. | Percent by No. |
|-----------------|-----|-------------------|
| Redhorse shiner | 45 | 26.01 |
| Fathead minnow | 50 | 28.90 |
| Mosquitofish | 30 | 17.34 |
| Channel catfish | 5 | 2.89 |
| Black bullheads | 10 | 5.78 |
| Green sunfish | 1 | .58 |
| Bluegills | 12 | 6.93 |
| Longear sunfish | 20 | 11.57 |
| Totals | 173 | 100.00 |

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Table 10. Clear Fork of Brazos River

Type of Collection: Seining
 Location: Carriker's Ranch in Eastern Fisher County
 Date: July 24, 1958
 Weather: Hot

| Species | No. | Percent by No. |
|-----------------|-----|-------------------|
| Gizzard shad | 1 | 1.63 |
| Redhorse shiner | 12 | 19.68 |
| Mosquitofish | 24 | 39.34 |
| Channel catfish | 1 | 1.64 |
| Bluegills | 20 | 32.79 |
| Longear sunfish | 3 | 4.92 |
| Totals | 61 | 100.00 |

Table 11. Clear Fork of Brazos River

Type of Collection: Seining
 Location: Highway 180 - Crossing East of Roby
 Date: July 24, 1958
 Weather: Hot

| Species | No. | Percent by No. |
|-----------------|-----|-------------------|
| Redhorse shiner | 12 | 85.72 |
| Bluegills | 1 | 7.14 |
| Longear sunfish | 1 | 7.14 |
| Totals | 14 | 100.00 |

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Table 12. Clear Fork of Brazos River

Type of Collection: Seining
 Location: Turner Ranch in Eastern Fisher County
 Date: July 24, 1958
 Weather: Hot

| Species | No. | Percent by No. |
|-----------------|-----|-------------------|
| Redhorse shiner | 70 | 66.66 |
| Mimic shiner | 1 | .96 |
| Fathead minnow | 1 | .96 |
| Mosquitofish | 20 | 19.03 |
| Green sunfish | 1 | .96 |
| Redear sunfish | 3 | 2.85 |
| Bluegills | 2 | 1.91 |
| Longear sunfish | 7 | 6.67 |
| Totals | 105 | 100.00 |

Table 13. Clear Fork of Brazos River
 Type of Collection: Seining
 Location: Dirt Road in South Western Jones County
 Date: July 24, 1958
 Weather: Hot

| Species | No. | Percent by No. |
|-----------------|-----|-------------------|
| Redhorse shiner | 100 | 52.91 |
| Fathead minnow | 45 | 23.80 |
| Mosquitofish | 40 | 21.17 |
| Channel catfish | 2 | 1.06 |
| Bluegills | 1 | .53 |
| Longear sunfish | 1 | .53 |
| Totals | 189 | 100.00 |

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Table 14. Clear Fork of Brazos River

Type of Collection: Seining
 Location: Dirt Road Crossing in South Western Jones County
 Date: July 24, 1958
 Weather: Hot

| Species | No. | Percent by No. |
|-----------------|-----|-------------------|
| Redhorse shiner | 60 | 38.96 |
| Fathead minnow | 40 | 25.97 |
| Mosquitofish | 30 | 19.48 |
| Green sunfish | 12 | 7.79 |
| Bluegills | 8 | 5.20 |
| Longear sunfish | 4 | 2.60 |
| Totals | 154 | 100.00 |

Table 15. Clear Fork of Brazos River

Type of Collection: Seining
 Location: Farm Road Crossing in Southwestern Jones County
 Date: July 24, 1958
 Weather: Hot

| Species | No. | Percent by No. |
|-----------------|-----|-------------------|
| Redhorse shiner | 60 | 52.17 |
| Fathead minnow | 8 | 6.96 |
| Mosquitofish | 45 | 39.13 |
| Channel catfish | 1 | .87 |
| Longear sunfish | 1 | .87 |
| Totals | 115 | 100.00 |

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Table 16. Clear Fork of Brazos River

Type of Collection: Seining
 Location: Farm Road 707 Crossing at Truby, Texas, in Jones County
 Date: July 24, 1958
 Weather: Hot

| Species | No. | Percent by No. |
|-----------------|-----|-------------------|
| Redhorse shiner | 50 | 64.10 |
| Fathead minnow | 5 | 6.41 |
| Mosquitofish | 20 | 25.64 |
| Bluegills | 1 | 1.28 |
| Longear sunfish | 2 | 2.57 |
| Totals | 78 | 100.00 |

Table 17. Clear Fork of Brazos River

Type of Collection: Seining
 Location: Highway 277, 83 Crossing Southeast of Anson in Jones
 County
 Date: July 23, 1958
 Weather: Hot

| Species | No. | Percent by No. |
|-----------------|-----|-------------------|
| Redhorse shiner | 45 | 84.90 |
| Mosquitofish | 4 | 7.55 |
| Longear sunfish | 4 | 7.55 |
| Totals | 53 | 100.00 |

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Table 18. Clear Fork of Brazos River

Type of Collection: Seining
 Location: Williams' Ranch near Nugent, Texas, in Jones County
 Date: July 24, 1958
 Weather: Hot

| Species | No. | Percent by No. |
|-----------------|-----|-------------------|
| Redhorse shiner | 70 | 53.84 |
| Fathead minnow | 15 | 11.54 |
| Mosquitofish | 25 | 19.23 |
| Channel catfish | 2 | 1.54 |
| Green sunfish | 1 | .77 |
| Bluegills | 15 | 11.54 |
| Longear sunfish | 2 | 1.54 |
| Totals | 130 | 100.00 |

Table 19. Clear Fork of Brazos River

Type of Collection: Seining
 Location: Mack Doty's Ranch near Nugent in Jones County
 Date: January 15, 1959
 Weather: Cold and Cloudy

| Species | No. | Percent by No. |
|-----------------|-----|-------------------|
| Redhorse shiner | 30 | 90.90 |
| Parrot minnow | 2 | 6.06 |
| Mosquitofish | 1 | 3.04 |
| Totals | 33 | 100.00 |

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Table 20. Clear Fork of Brazos River

Type of Collection: Seining
 Location: Ed Davis Ranch near Leuders in Jones County
 Date: March 10, 1959
 Weather: Cool and Sunny

| Species | No. | Percent by No. |
|-----------------|-----|-------------------|
| Redhorse shiner | 1 | 20.00 |
| Parrot minnow | 4 | 80.00 |
| Totals | 5 | 100.00 |

Table 21. Clear Fork of Brazos River

Type of Collection: Seining
 Location: J. C. Putnam Ranch in Southwest Throckmorton County
 Date: March 11, 1959
 Weather: Cool and Sunny

| Species | No. | Percent by No. |
|-----------------|-----|-------------------|
| Redhorse shiner | 65 | 75.58 |
| Parrot minnow | 20 | 23.25 |
| Fathead minnow | 1 | 1.17 |
| Totals | 86 | 100.00 |

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Table 22. Tributaries of the Clear Fork of Brazos River

Type of Collection: Seining
 Location: Highway 277, 83 Crossing on Mulberry Creek Southeast of
 Anson in Jones County
 Date: July 23, 1958
 Weather: Hot

| Species | No. | Percent by No. |
|-----------------|-----|-------------------|
| Redhorse shiner | 6 | 54.54 |
| Ghost shiner | 1 | 9.09 |
| Mosquitofish | 1 | 9.09 |
| Black bullheads | 1 | 9.09 |
| Green sunfish | 2 | 18.19 |
| Totals | 11 | 100.00 |

Table 23.

Tributaries of the Clear Fork of Brazos River

Type of Collection: Seining

Location: Farm Road Crossing of Elm Creek - South of Nugent in
Jones County

Date: July 24, 1958

Weather: Hot

| Species | No. | Percent by No. |
|-----------------|-----|-------------------|
| Gizzard shad | 1 | 1.52 |
| Carp | 4 | 6.05 |
| Redhorse shiner | 20 | 30.30 |
| Mosquitofish | 25 | 37.88 |
| Channel catfish | 1 | 1.52 |
| Black bullheads | 3 | 4.53 |
| Largemouth bass | 1 | 1.52 |
| Green sunfish | 1 | 1.52 |
| Longear sunfish | 10 | 15.16 |
| Totals | 66 | 100.00 |

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Table 24.

Tributaries of the Clear Fork of Brazos River

Type of Collection: Seining

Location: Farm Road Crossing on Salt Prong of Hubbard Creek in
Shackelford County

Date: October 29, 1958

Weather: Cool and Sunny

| Species | No. | Percent by No. |
|-----------------------|-----|-------------------|
| Blackstripe topminnow | 15 | 37.50 |
| Mosquitofish | 12 | 30.00 |
| Green sunfish | 2 | 5.00 |
| Bluegills | 11 | 27.50 |
| Totals | 40 | 100.00 |

Table 25.

Lakes on the Clear Fork of Brazos River Watershed

Type of Collection: Seining

Location: New Hamlin Lake in Jones County

Date: October 17, 1958

Weather: Cool and Sunny

| Species | No. | Percent by No. |
|-----------------|-----|-------------------|
| Golden shiner | 9 | 6.20 |
| Redhorse shiner | 8 | 5.52 |
| Mosquitofish | 50 | 34.48 |
| Black bullheads | 1 | .69 |
| Largemouth bass | 6 | 4.14 |
| Green sunfish | 10 | 6.90 |
| Bluegills | 60 | 41.38 |
| White crappie | 1 | .69 |
| Totals | 145 | 100.00 |

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Table 26.

Lakes on the Clear Fork of Brazos River Watershed

Type of Collection: Seining

Location: Old Hamlin Lake in Fisher County

Date: October 17, 1958

Weather: Cool and Sunny

| Species | No. | Percent by No. |
|-------------------|-----|-------------------|
| Red River pupfish | 160 | 52.80 |
| Plains killifish | 85 | 28.05 |
| Mosquitofish | 58 | 19.15 |
| Totals | 303 | 100.00 |

Table 27.

Lakes on the Clear Fork of Brazos River Watershed

Type of Collection: Seining

Location: Lake McCarthy near Albany in Shackelford County

Date: October 29, 1958

Weather: Cool and Sunny

| Species | No. | Percent by No. |
|-----------------------|-----|-------------------|
| Mosquitofish | 5 | 9.80 |
| Largemouth bass | 5 | 9.80 |
| Bluegills | 30 | 58.83 |
| Orangespotted sunfish | 10 | 19.60 |
| Longear sunfish | 1 | 1.97 |
| Totals | 51 | 100.00 |

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Table 28.

Lakes on the Clear Fork of the Brazos River Watershed

Type of Collection: Seining

Location: Lake Trammell in Nolan County

Date: June and August

Weather: Hot

| Species | No. | Percent by No. |
|-----------------|-----|-------------------|
| Redhorse shiner | 3 | 2.54 |
| Black bullhead | 3 | 2.54 |
| Mosquitofish | 12 | 10.17 |
| Largemouth bass | 23 | 19.49 |
| Bluegill | 60 | 50.85 |
| Green sunfish | 8 | 6.78 |
| Redear sunfish | 3 | 2.54 |
| Logperch | 6 | 5.09 |
| Totals | 118 | 100.00 |

Table 29. Chart Showing Results of all Seining Collections Obtained from the Clear Fork of the Brazos River and its Tributaries during the Period from April 16, 1958 to April 15, 1959.

| Species | No. | Percent by No. |
|------------------------|-------|----------------|
| Gizzard shad | 4 | .15 |
| River carpsucker | 19 | .70 |
| Carp | 4 | .15 |
| Redhorse shiner | 1,457 | 54.22 |
| Mimic shiner | 1 | .04 |
| Ghost shiner | 1 | .04 |
| Parrot minnow | 26 | .97 |
| Fathead minnow | 297 | 11.05 |
| Channel catfish | 12 | .45 |
| Black bullhead | 16 | .59 |
| Yellow bullhead | 42 | 1.56 |
| Blackstriped topminnow | 15 | .56 |
| Mosquitofish | 423 | 15.74 |
| Largemouth bass | 1 | .04 |
| Green sunfish | 111 | 4.13 |
| Redear sunfish | 3 | .11 |
| Bluegill | 121 | 4.51 |
| Orangespotted sunfish | 5 | .18 |
| Longear sunfish | 129 | 4.81 |
| Totals | 2,687 | 100.00 |

Table 30. Chart Showing Results of all Seining Collections Obtained from Lakes on the Watershed of the Clear Fork of the Brazos River during the Period from April 16, 1958 to April 15, 1959. (New Hamlin Lake, Lake McCarthy, Old Lake Hamlin, Lake Trammell.)

| Species | No. | Percent by No. |
|-----------------------|-----|-------------------|
| Golden shiner | 9 | 1.45 |
| Redhorse shiner | 11 | 1.79 |
| Black bullhead | 4 | .64 |
| Plains killifish | 85 | 13.78 |
| Red River pupfish | 160 | 25.93 |
| Mosquitofish | 125 | 20.26 |
| Largemouth bass | 34 | 5.51 |
| Green sunfish | 18 | 2.92 |
| Redear sunfish | 3 | .49 |
| Bluegill | 150 | 24.31 |
| Orangespotted sunfish | 10 | 1.62 |
| Longear sunfish | 1 | .16 |
| White crappie | 1 | .16 |
| Logperch | 6 | .98 |
| Totals | 617 | 100.00 |

Table 31. Chart Showing Results of all Seining Collections Obtained from the Clear Fork of the Brazos River and its Tributaries and Lakes on its Watershed during the Period from April 16, 1958 to April 15, 1959.

| Species | No. | Percent by No. |
|------------------------|----------|----------------|
| Gizzard shad | 4 | .12 |
| River carpsucker | 19 | .57 |
| Carp | 4 | .12 |
| Golden shiner | 9 | .27 |
| Redhorse shiner | 1,468 | 44.44 |
| Mimic shiner | 1 | .03 |
| Ghost shiner | 1 | .03 |
| Parrot minnow | 26 | .78 |
| Fathead minnow | 297 | 8.99 |
| Channel catfish | 12 | .36 |
| Black bullhead | 20 | .61 |
| Yellow bullhead | 42 | 1.27 |
| Blackstriped topminnow | 15 | .45 |
| Plains killifish | 85 | 2.57 |
| Red River pupfish | 160 | 4.85 |
| Mosquitofish | 548 | 16.58 |
| Largemouth bass | 35 | 1.06 |
| Green sunfish | 129 | 3.91 |
| Redear sunfish | 6 | .18 |
| Bluegill | 271 | 8.20 |
| Orangespotted sunfish | 15 | .45 |
| Longear sunfish | 130 | 3.95 |
| White crappie | 1 | .03 |
| Logperch | <u>6</u> | <u>.18</u> |
| Totals | 3,304 | 100.00 |

Table 32. Clear Fork of the Brazos River

Type of Collection: Netting
 Location: Doty Ranch near Nugent, Texas
 Number of Nets: 1
 Weather: Cold and Cloudy

Date: January 15, 1959
 Types of Nets: 125 x 8 x Exp.
 Condition of Water: Still and Slightly Turbid

| Species | No. | Percent by No. | Total Wt. lbs. ozs. | Avg. Wt. lbs. ozs. | Percent by Wt. | Avg. K |
|--------------------|-----|----------------|---------------------|--------------------|----------------|--------|
| Smallmouth buffalo | 5 | 100.00 | 12 13 | 2 9 | 100.00 | 3.32 |
| Totals | 5 | 100.00 | 12 13 | | 100.00 | |

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Table 33. Clear Fork of the Brazos River

Type of Collection: Netting
 Location: Ed Davis Ranch near Lueders
 Number of Nets: 3
 Weather: Cold, Raining and Snowing

Date: January 15, 1959
 Type of Nets: 125 x 8 x Exp.
 Condition of Water: Slightly Flowing and Turbid

| Species | No. | Percent by No. | Total Wt. lbs. ozs. | Avg. Wt. lbs. ozs. | Percent by Wt. | Avg. K |
|--------------------|-----|----------------|---------------------|--------------------|----------------|--------|
| Gizzard shad | 66 | 60.55 | 43 14 | 10.64 | 53.79 | 3.47 |
| Smallmouth buffalo | 5 | 4.58 | 9 3 | 13.40 | 11.26 | 3.25 |
| River carpsucker | 12 | 11.01 | 11 5 | 15.08 | 13.87 | 2.48 |
| Channel catfish | 1 | .92 | 4 13 | 13.00 | 5.90 | 2.26 |
| Black bullheads | 5 | 4.58 | 3 8 | 11.20 | 4.29 | 2.33 |
| Largemouth bass | 3 | 2.76 | 6 2 | .66 | 7.51 | 2.82 |
| Green sunfish | 1 | .92 | | 5.00 | .39 | 3.19 |
| Bluegills | 5 | 4.58 | 1 13 | 2.60 | .99 | 4.88 |
| White crappie | 11 | 10.10 | 1 10 | 2.36 | 2.00 | 3.05 |
| Totals | 109 | 100.00 | 81 9 | | 100.00 | |

Table 34. Clear Fork of the Brazos River

Type of Collection: Netting

Location: J. C. Putnam Ranch near Albany

No. of Nets: 2

Weather: Cool and Sunny

Date: March 12, 1959

Type of Nets: 125 x 8 x Exp.

Condition of Water: Slightly Flowing and Clear

| Species | No. | Percent by No. | Total Wt. lbs. ozs. | Avg. Wt. lbs. ozs. | Percent by Wt. | Avg. K |
|--------------------|-----|-------------------|------------------------|-----------------------|-------------------|-----------|
| Gizzard shad | 5 | 45.45 | 5 13 | 1 2.60 | 21.09 | 2.58 |
| Smallmouth buffalo | 4 | 36.37 | 16 12 | 4 3.00 | 60.77 | 2.28 |
| River carpsucker | 1 | 9.09 | 2 | 2 | 7.26 | 2.51 |
| Channel catfish | 1 | 9.09 | 3 | 3 | 10.88 | 2.29 |
| Totals | 11 | 100.00 | 27 9 | | 100.00 | |

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Table 35. Clear Fork of the Brazos River

Type of Collection: Netting

Location: Morris Ledbetter Ranch - Albany

No. of Nets: 2

Weather: Cool and Sunny

Date: March 12, 1959

Type of Nets: 125 x 8 x Exp.

Condition of Water: Slightly Flowing and Clear

| Species | No. | Percent by No. | Total Wt. lbs. ozs. | Avg. Wt. lbs. ozs. | Percent by Wt. | Avg. K |
|--------------------|-----|-------------------|------------------------|-----------------------|-------------------|-----------|
| Longnose gar | 27 | 57.44 | 35 1 | 1 4.77 | 41.61 | .53 |
| Gizzard shad | 2 | 4.25 | 1 6 | 11.00 | 1.63 | 2.50 |
| Smallmouth buffalo | 2 | 4.25 | 10 5 | 5 2.50 | 12.24 | 2.20 |
| River carpsucker | 3 | 6.39 | 5 10 | 1 14.00 | 6.68 | 1.38 |
| Channel catfish | 9 | 19.15 | 22 7 | 2 7.88 | 26.63 | 2.38 |
| Largemouth bass | 4 | 8.52 | 9 6 | 2 5.50 | 11.21 | 2.65 |
| Totals | 47 | 100.00 | 84 3 | | 100.00 | |

Table 36. Clear Fork of the Brazos River

| Species | No. | Percent by No. | Total Wt. lbs. ozs. | Avg. Wt. lbs. ozs. | Percent by Wt. | Avg. K |
|-------------------|-----|-------------------|------------------------|-----------------------|-------------------|-----------|
| Longnose gar | 63 | 65.61 | 64 4 | 1 31 | 72.19 | .40 |
| Gizzard shad | 24 | 25.00 | 10 12 | 7 16 | 12.07 | 1.94 |
| River carpsuckers | 2 | 2.09 | 2 4 | 1 1 | 2.25 | 2.58 |
| Channel catfish | 2 | 2.09 | 4 6 | 2 3.00 | 4.92 | 1.79 |
| Black bullheads | 1 | 1.04 | 1 1 | 1 1 | 1.12 | 2.88 |
| Flathead catfish | 1 | 1.04 | 3 2 | 2 0.00 | 3.51 | 1.49 |
| Largemouth bass | 2 | 2.09 | 3 3 | 1 8.00 | 3.38 | 3.24 |
| White crappie | 1 | 1.04 | 8 8 | 8 0.00 | .56 | 3.29 |
| Totals | 96 | 100.00 | 89 | | 100.00 | |

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Table 37. Lakes on the Clear Fork of the Brazos River Watershed

| Species | No. | Percent by No. | Total Wt. lbs. ozs. | Avg. Wt. lbs. ozs. | Percent by Wt. | Avg. K |
|-------------------|-----|-------------------|------------------------|-----------------------|-------------------|-----------|
| River carpsuckers | 2 | 8.00 | 4 5 | 2 2.50 | 21.16 | 2.87 |
| Channel catfish | 11 | 44.00 | 14 10 | 1 5.27 | 71.78 | 2.17 |
| Black bullheads | 1 | 4.00 | 3 3 | 3 0.00 | .92 | 2.71 |
| Golden shiners | 2 | 8.00 | 4 4 | 4 0.00 | 1.23 | 2.51 |
| Bluegills | 1 | 4.00 | 3 3 | 3 0.00 | .92 | 4.35 |
| White crappie | 8 | 32.00 | 13 13 | 1 1.63 | 3.99 | 3.64 |
| Totals | 25 | 100.00 | 20 6 | | 100.00 | |

Type of Collection: Netting

Location: N. G. Price Ranch near Eliasville

No. of Nets: 2

Weather: Cold

Date: February 18, 1959

Type of Nets: 125 x 8 x Exp.

Condition of Water: Cold and Clear

Type of Collection: Netting

Location: Old Anson Lake

No. of Nets: 3

Weather: Dry and Freezing

Date: December 10, 1958

Type of Nets: 125 x 8 x Exp.

Condition of Water: Clear and Cold

Table 38. Lakes on the Clear Fork of the Brazos River Watershed

Type of Collection: Netting
 Location: New Anson Lake
 No. of Nets: 3
 Weather: Dry and Freezing

Date: December 9, 1958
 Types of Nets: 125 x 8 x Exp.
 Condition of Water: Clear and Cold

| Species | No. | Percent by No. | Total Wt. lbs. ozs. | Avg. Wt. lbs. ozs. | Percent by Wt. | Avg. K |
|------------------|-----|-------------------|------------------------|-----------------------|-------------------|-----------|
| River carpsucker | 13 | 7.92 | 16 | 1 4.46 | 16.51 | 3.00 |
| Channel catfish | 91 | 55.49 | 75 | 13.21 | 74.67 | 2.28 |
| Black bullheads | 5 | 3.05 | 1 | 3.80 | 1.18 | 2.45 |
| Largemouth bass | 1 | .61 | 2 | 1.00 | 2.05 | 2.57 |
| Longear sunfish | 1 | .61 | 13 | 13.00 | .81 | 4.65 |
| White crappie | 53 | 32.32 | 4 | 1.45 | 4.78 | 3.71 |
| Totals | 164 | 100.00 | 100 | 11 | 100.00 | |

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Table 39. Lakes on the Clear Fork of the Brazos River Watershed

Type of Collection: Netting
 Location: Old Hamlin Lake
 No. of Nets: 3
 Weather: Cool and Sunny

Date: October 17, 1958
 Type of Nets: 125 x 8 x Exp.
 Condition of Water: Cool and Clear

| Species | No. | Percent by No. | Total Wt. lbs. ozs. | Avg. Wt. lbs. ozs. | Percent by Wt. | Avg. K |
|-----------------------|-----|-------------------|------------------------|-----------------------|-------------------|-----------|
| No Fish were Obtained | | | | | | |

Table 40. Lakes on the Clear Fork of the Brazos River

Type of Collection: Netting
 Location: New Hamlin Lake
 No. of Nets: 3
 Weather: Cool and Sunny

Date: October 17, 1958
 Types of Nets: 125 x 8 x Exp.
 Condition of Water: Cool and Slightly Turbid

| Species | No. | Percent by No. | Total Wt. lbs. ozs. | Avg. Wt. lbs. ozs. | Percent by Wt. | Avg. K |
|-----------------|-----|-------------------|------------------------|-----------------------|-------------------|-----------|
| Channel catfish | 5 | 10.63 | 14 | 2.80 | 10.76 | 1.46 |
| Black bullheads | 3 | 6.39 | 6 | 2.00 | 4.62 | 1.87 |
| Largemouth bass | 2 | 4.25 | 3 | 1 11.00 | 41.54 | 2.55 |
| Golden shiners | 2 | 4.25 | 5 | 2.50 | 3.84 | 2.16 |
| Bluegills | 11 | 23.40 | 15 | 1.36 | 11.54 | 3.21 |
| White crappie | 24 | 51.08 | 2 4 | 1.50 | 27.70 | 2.75 |
| Totals | 47 | 100.00 | 8 2 | | 100.00 | |

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Table 41. Lakes on the Clear Fork of the Brazos River Watershed

Type of Collection: Netting
 Location: Lake McCarthy near Albany
 No. of Nets: 4
 Weather: Cool and Sunny

Date: October 30, 1958
 Types of Nets: 125 x 8 x Exp.
 Condition of Water: Cool and Clear

| Species | No. | Percent by No. | Total Wt. lbs. ozs. | Avg. Wt. lbs. ozs. | Percent by Wt. | Avg. K |
|------------------|-----|-------------------|------------------------|-----------------------|-------------------|-----------|
| Gizzard shad | 16 | 21.05 | 2 8 | 2.50 | 6.82 | 1.74 |
| River carpsucker | 10 | 13.16 | 16 8 | 1 10.40 | 45.05 | 2.88 |
| Carp | 1 | 1.31 | 1 | 1 | 2.73 | 2.89 |
| Channel catfish | 5 | 6.58 | 10 2 | 2 .50 | 27.65 | 2.05 |
| Black bullheads | 3 | 3.95 | 1 8 | 8.00 | 4.09 | 2.41 |
| Bluegills | 2 | 2.63 | 10 | 5.00 | 1.71 | 1.17 |
| White crappie | 39 | 51.32 | 4 6 | 1.79 | 11.95 | 2.40 |
| Totals | 76 | 100.00 | 36 10 | | 100.00 | |

Table 42. Lakes on the Clear Fork of the Brazos River Watershed

Type of Collection: Netting

Location: Lake Daniels

No. of Nets: 2

Weather: Cold, Raining and Snowing

Date: February 19, 1959

Type of Nets: 125 x 8 x Exp.

Condition of Water: Cold and Clear

| Species | No. | Percent by No. | Total Wt. lbs. ozs. | Avg. Wt. lbs. ozs. | Percent by Wt. | Avg. K |
|------------------|-----|-------------------|------------------------|-----------------------|-------------------|-----------|
| River carpsucker | 5 | 62.50 | 12 14 | 2 9.20 | 74.63 | 1.99 |
| Channel catfish | 3 | 37.50 | 4 6 | 1 7.00 | 25.37 | 2.85 |
| Totals | 8 | 100.00 | 17 4 | | 100.00 | |

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Table 43. Lakes on the Clear Fork of Brazos River Watershed

Results of Netting Collections Taken from Lake Trammell from April 16, 1958 through April 15, 1959

No. of Nets: 17

Type of Nets: 125 x 8 x Exp.

| Species | No. | Percent by No. | Total Wt. lbs. ozs. | Avg. Wt. lbs. ozs. | Percent by Wt. | Avg. K |
|-----------------|-----|-------------------|------------------------|-----------------------|-------------------|-----------|
| Golden shiners | 25 | 7.31 | 4 11 | 3 | 2.54 | 1.89 |
| Channel catfish | 65 | 19.01 | 138 2 | 2 | 74.71 | 1.66 |
| Black bullheads | 107 | 31.29 | 20 1 | 3 | 10.85 | 2.43 |
| Largemouth bass | 2 | .58 | 6 | 3 | .20 | 1.95 |
| Bluegills | 60 | 17.54 | 11 4 | 3 | 6.09 | 3.82 |
| White crappie | 83 | 24.27 | 10 6 | 2 | 5.61 | 2.55 |
| Totals | 342 | 100.00 | 184 14 | | 100.00 | |

Table 44. Lakes on the Clear Fork of the Brazos River Watershed
 Results of Netting Collections taken from Lake Abilene from April 16, 1958 through April 16, 1959
 N. of Nets: 24
 Type of Nets: 125 x 8 x Exp.

| Species | No. | Percent by No. | Total Wt. lbs. ozs. | Avg. Wt. lbs. ozs. | Percent by Wt. | Avg. K |
|------------------|-----|-------------------|------------------------|-----------------------|-------------------|-----------|
| Gizzard shad | 20 | 3.79 | 2 8 | 2 | .45 | 1.62 |
| River carpsucker | 26 | 4.91 | 26 | 1 | 4.69 | 2.48 |
| Carp | 1 | .19 | 2 13 | 2 13 | .50 | 2.47 |
| Golden shiners | 2 | .38 | 6 | 3 | .07 | 1.92 |
| Channel catfish | 197 | 37.24 | 369 6 | 1 14 | 66.69 | 1.94 |
| Black bullheads | 51 | 9.64 | 13 5 | 4 | 2.32 | 2.44 |
| Largemouth bass | 8 | 1.51 | 21 | 2 10 | 3.79 | 4.30 |
| Bluegills | 18 | 3.40 | 3 6 | 3 | .60 | 3.77 |
| Redear sunfish | 1 | .19 | 5 | 5 | .06 | 4.01 |
| White crappie | 205 | 38.75 | 115 5 | 5 | 20.83 | 5.18 |
| Totals | 529 | 100.00 | 554 6 | | 100.00 | |

Table 45. Lakes on the Clear Fork of Brazos River Watershed

Results of Netting Collections Taken from Lake Sweetwater from April 16, 1957 through April 15, 1958
 No. of Nets: 20
 Type of Nets: 125 x 8 x Exp.

| Species | No. | Percent by No. | Total Wt. lbs. ozs. | Avg. Wt. lbs. ozs. | Percent by Wt. | Avg. K |
|-------------------|-----|-------------------|------------------------|-----------------------|-------------------|-----------|
| Gizzard shad | 337 | 70.06 | 42 2 | 2 | 20.52 | 1.14 |
| River carpsuckers | 26 | 5.41 | 39 | 1 | 18.99 | 2.16 |
| Carp | 11 | 2.29 | 13 12 | 1 | 6.70 | 2.52 |
| Golden shiner | 8 | 1.66 | 1 | 2 | .49 | 1.43 |
| Channel catfish | 45 | 9.35 | 56 4 | 1 | 27.40 | 1.53 |
| Yellow bullheads | 20 | 4.16 | 12 8 | 10 | 6.09 | 2.42 |
| Largemouth bass | 8 | 1.66 | 29 3 | 10 | 14.12 | 2.92 |
| Bluegill sunfish | 1 | .21 | 10 | 3 | .09 | 3.87 |
| White crappie | 23 | 4.78 | 1 8 | 7 | 4.87 | 2.51 |
| Black crappie | 2 | .42 | 1 | 12 | .73 | 2.95 |
| Totals | 481 | 100.00 | 205 5 | | 100.00 | |

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Table 46. Lakes on the Clear Fork of the Brazos River Watershed

Results of Netting Collections Taken from Lake Fort Phantom Hill from April 16, 1956 through April 15, 1957
 No. of Nets: 6
 Types of Nets: 125 x 8 x Exp.

| Species | No. | Percent by No. | Total Wt. lbs. ozs. | Avg. Wt. lbs. ozs. | Percent by Wt. | Avg. K |
|-------------------|-----|-------------------|------------------------|-----------------------|-------------------|-----------|
| Gizzard shad | 38 | 40.00 | 15 | 5 | 13.56 | 1.86 |
| River carpsuckers | 27 | 28.60 | 43 14 | 1 10 | 50.10 | 2.26 |
| Channel catfish | 5 | 5.20 | 8 12 | 1 12 | 9.99 | 2.00 |
| White bass | 9 | 9.40 | 12 6 | 1 6 | 14.13 | 2.16 |
| Largemouth bass | 2 | 2.10 | 2 13 | 1 6.5 | 3.22 | 2.24 |
| White crappie | 14 | 14.70 | 7 14 | 9 | 9.00 | 3.26 |
| Totals | 95 | 100.00 | 90 11 | | 100.00 | |

Table 47. Chart Showing Results of all Netting Collections Obtained from the Clear Fork of the Brazos River during the Period from April 16, 1958 to April 15, 1959.

| Species | No. | Percent by No. | Total Wt. lbs. ozs. | Avg. Wt. lbs. ozs. | Percent by Wt. | Avg. K |
|--------------------|-----|-------------------|------------------------|-----------------------|-------------------|-----------|
| Longnose gar | 90 | 33.58 | 99 5 | 1 1.65 | 33.64 | .43 |
| Gizzard shad | 97 | 36.19 | 61 13 | 10.19 | 20.94 | 3.02 |
| Smallmouth buffalo | 16 | 5.97 | 49 1 | 3 1.06 | 16.62 | 2.89 |
| River carpsucker | 18 | 6.72 | 20 15 | 1 2.61 | 7.09 | 2.27 |
| Channel catfish | 13 | 4.85 | 34 10 | 2 10.61 | 11.73 | 2.27 |
| Black bullheads | 6 | 2.24 | 4 8 | 12.00 | 1.53 | 2.42 |
| Flathead catfish | 1 | .37 | 3 2 | 3 2.00 | 1.06 | 1.49 |
| Largemouth bass | 9 | 3.36 | 18 9 | 2 1.00 | 6.28 | 2.65 |
| Green sunfish | 1 | .37 | 5 | 5.00 | .11 | 3.19 |
| Bluegills | 5 | 1.87 | 13 | 2.60 | .28 | 4.88 |
| White crappie | 12 | 4.48 | 2 2 | 2.83 | .72 | 3.07 |
| Totals | 268 | 100.00 | 295 3 | | 100.00 | |

Table 48.

Chart Showing Results of all Netting Collections Obtained From Lakes on the Watershed of the Clear Fork of the Brazos River during the Period from April 16, 1958 to April 15, 1959. (Lakes Abilene, Trammell, Daniels, McCarthy, Old Hamlin City Lake, New Hamlin City Lake, Old Anson Lake, New Anson Lake.)

| Species | No. | Percent by No. | Total Wt. lbs. ozs. | Avg. Wt. lbs. ozs. | Percent by Wt. | Avg. K |
|------------------|-------|-------------------|------------------------|-----------------------|-------------------|-----------|
| Gizzard shad | 36 | 3.02 | 5 | 2.22 | .54 | 1.67 |
| River carpsucker | 56 | 4.70 | 76 | 5.80 | 8.28 | 2.64 |
| Carp | 2 | .17 | 3 | 14.50 | .41 | 2.68 |
| Golden shiner | 31 | 2.60 | 5 | 2.90 | .61 | 1.97 |
| Channel catfish | 377 | 31.65 | 612 | 10.00 | 66.47 | 2.25 |
| Black bullheads | 170 | 14.28 | 36 | 3.39 | 3.91 | 2.42 |
| Largemouth bass | 13 | 1.09 | 26 | 1.00 | 2.91 | 3.53 |
| Bluegill sunfish | 92 | 7.73 | 16 | 2.84 | 1.78 | 3.68 |
| Redear sunfish | 1 | .08 | 5 | 5.00 | .03 | 4.01 |
| Longear sunfish | 1 | .08 | 13 | 13.00 | .09 | 4.65 |
| White crappie | 412 | 34.60 | 137 | 1.61 | 14.97 | 4.02 |
| Totals | 1,191 | 100.00 | 921 | 12 | 100.00 | |

Table 49. Chart Showing Results of all Netting Collections Obtained from Lakes on the Watershed of the Clear Fork of the Brazos River Prior to April 16, 1958 (Lakes Sweetwater and Ft. Phantom Hill).

| Species | No. | Percent by No. | Total Wt. lbs. ozs. | Avg. Wt. lbs. ozs. | Percent by Wt. | Avg. K |
|------------------|-----|-------------------|------------------------|-----------------------|-------------------|-----------|
| Gizzard shad | 375 | 65.10 | 54 | 2.30 | 18.44 | 1.21 |
| River carpsucker | 53 | 9.20 | 82 | 9.01 | 28.31 | 2.21 |
| Carp | 11 | 1.91 | 13 | 6.00 | 4.70 | 2.52 |
| Golden shiner | 8 | 1.39 | 1 | 2.00 | .34 | 1.43 |
| Channel catfish | 50 | 8.68 | 65 | 4.80 | 22.20 | 1.77 |
| Black bullheads | 20 | 3.48 | 12 | 10.00 | 4.27 | 2.42 |
| White bass | 9 | 1.56 | 12 | 5.77 | 4.19 | 2.16 |
| Largemouth bass | 10 | 1.74 | 31 | 2.90 | 10.86 | 2.78 |
| Bluegills | 1 | .17 | 3 | 3.00 | .07 | 3.87 |
| White crappie | 37 | 6.42 | 17 | 7.72 | 6.10 | 2.79 |
| Black crappie | 2 | .35 | 1 | 12.00 | .52 | 2.95 |
| Totals | 576 | 100.00 | 292 | 12 | 100.00 | |

Table 50. Chart Showing Results of all Netting Collections Obtained from the Clear Fork of the Brazos River and its Watershed During the Period from April 16, 1958 to April 15, 1959.

| Species | No. | Percent by No. | Total Wt. lbs. ozs. | Avg. Wt. lbs. ozs. | Percent by Wt. | Avg. K |
|--------------------|-------|-------------------|------------------------|-----------------------|-------------------|-----------|
| Longnose gar | 90 | 6.16 | 99 5 | 1 1.65 | 8.16 | .43 |
| Gizzard shad | 133 | 9.12 | 66 13 | 8.03 | 5.49 | 2.65 |
| River carpsucker | 74 | 5.07 | 97 4 | 5.02 | 7.99 | 2.55 |
| Smallmouth buffalo | 16 | 1.10 | 49 1 | 1.06 | 4.03 | 2.89 |
| Carp | 2 | .14 | 3 13 | 14.50 | .31 | 2.68 |
| Golden shiner | 31 | 2.12 | 5 10 | 2.90 | .46 | 1.97 |
| Channel catfish | 390 | 26.73 | 647 5 | 10.55 | 53.20 | 2.24 |
| Black bullheads | 176 | 12.06 | 40 9 | 3.87 | 3.33 | 2.42 |
| Flathead catfish | 1 | .07 | 3 2 | 2.00 | .26 | 1.49 |
| Largemouth bass | 22 | 1.51 | 45 6 | 1.00 | 3.73 | 3.17 |
| Green sunfish | 1 | .07 | 5 5 | 5.00 | .03 | 3.19 |
| Bluegills | 97 | 6.65 | 17 3 | 2.84 | 1.41 | 3.74 |
| Redear sunfish | 1 | .07 | 5 5 | 5.00 | .03 | 4.01 |
| Longear sunfish | 1 | .07 | 13 13 | 13.00 | .06 | 4.61 |
| White crappie | 424 | 29.06 | 140 1 | 5.28 | 11.51 | 3.99 |
| Totals | 1,459 | 100.00 | 1,216 15 | | 100.00 | |

Table 51. Chart Showing Results of all Netting Collections Obtained from the Clear Fork of the Brazos River and its Watershed During the Period from April 16, 1958 to April 15, 1959 and Prior to that Period.

| Species | No. | Percent by No. | Total Wt. lbs. ozs. | Avg. Wt. lbs. ozs. | Percent by Wt. | Avg. K |
|--------------------|-------|-------------------|------------------------|-----------------------|-------------------|-----------|
| Longnose gar | 90 | 4.42 | 99 5 | 1 6.65 | 6.57 | .43 |
| Gizzard shad | 508 | 24.96 | 120 13 | 3.80 | 8.01 | 1.58 |
| River carpsucker | 127 | 6.24 | 180 2 | 1 6.69 | 11.93 | 2.40 |
| Smallmouth buffalo | 16 | .79 | 49 1 | 3 1.06 | 3.25 | 2.89 |
| Carp | 13 | .64 | 17 9 | 1 5.61 | 1.16 | 2.54 |
| Golden shiner | 39 | 1.91 | 6 10 | 2.71 | .44 | 1.85 |
| Channel catfish | 440 | 21.62 | 712 5 | 1 9.90 | 47.18 | 2.18 |
| Black bullheads | 196 | 9.64 | 53 1 | 4.33 | 3.52 | 2.42 |
| Flathead catfish | 1 | .05 | 3 2 | 3 2.00 | .20 | 1.49 |
| White bass | 9 | .44 | 12 4 | 1 5.77 | .82 | 2.16 |
| Largemouth bass | 32 | 1.57 | 77 3 | 2 6.59 | 5.11 | 3.04 |
| Green sunfish | 1 | .05 | 5 5 | 5.00 | .02 | 3.19 |
| Bluegills | 98 | 4.81 | 17 6 | 2.81 | 1.15 | 3.74 |
| Redear sunfish | 1 | .05 | 5 5 | 5.00 | .02 | 4.01 |
| Longear sunfish | 1 | .05 | 13 13 | 13.00 | .05 | 4.61 |
| White crappie | 461 | 22.66 | 157 15 | 5.48 | 10.47 | 3.89 |
| Black crappie | 2 | .10 | 1 8 | 12.00 | .10 | .95 |
| Totals | 2,035 | 100.00 | 1,509 11 | | 100.00 | |

Table 52. Chemical Analysis of Water Samples Taken at Various Stations on the Clear Fork of the Brazos River from October 1, 1950 through September 30, 1956, (Analysis Courtesy of Texas Board of Water Engineers.)

| | c.f.s. | SiO ₂ | Ca | Mg | Na | HCO ₃ | SO ₄ | Cl | NO ₃ | Dis-solved Solids ppm | Ca Mg | Hardness CaCO ₃ Non-carbonate | % Na | Micro-mhos at 25°C | pH Range |
|---------------------|--------|------------------|----|-----|----|------------------|-----------------|-----|-----------------|-----------------------|-------|--|------|--------------------|----------|
| | | | | | | | | | | | | | | | |
| Nugent 50-51 | 43.8 | 17 | 77 | 24 | 76 | 136 | 197 | 96 | 4.4 | 569 | 290 | 179 | 36 | 871 | 7.2-8.4 |
| Ft. Griffin 50-51 | 88.7 | 16 | 58 | 15 | 44 | 119 | 101 | 67 | 3.5 | 393 | 206 | 108 | 32 | 630 | 7.3-8.3 |
| Nugent 51-52 | 10.8 | 12 | 65 | 28 | 81 | 165 | 165 | 106 | 2.8 | 558 | 277 | 142 | 39 | 895 | 7.6-8.4 |
| Nugent 52-53 | 12.4 | 15 | 40 | 10 | 29 | 124 | 48 | 37 | 3.4 | 260 | 141 | 40 | 31 | 419 | 7.7-8.4 |
| Hubbard Creek 54-55 | 249 | 11 | 37 | 3.7 | 25 | 109 | 9.5 | 41 | 3.4 | 192 | 108 | 18 | 34 | 331 | 7.4-8.2 |
| Hubbard Creek 55-56 | 22.7 | 11 | 38 | 4.4 | 32 | 106 | 11 | 58 | 2.7 | 212 | 113 | 26 | 38 | 386 | 7.5-8.2 |

Table 53. Chemical Analyses of Water Samples on California Creek in the Avoca Oil Fields of Jones County (Courtesy of Texas Board of Water Engineers.)

| Sampling Point | Location of Point | Cl | Na | SiO ₂ | Mg | HCO ₃ | SO ₄ | Specific Conductance | Remarks |
|---|--|--------|---------------------------|------------------|-------|------------------|-----------------|----------------------|--|
| 1. California Creek | On Eckenstam property, below old washed-out rock dam, approximately 0.7 miles upstream from F. A. S. Highway 600. | 6,780 | 3,010 | 7 | 360 | 59 | 417 | 18,600 | Sample taken from shallow, swift run below first pool downstream from old rock dam; flow estimated at 20-25 gpm; dying fish were seen in the pool. |
| 2. California Creek | At bridge on F. A. S. Highway 600. 5 mile east of junction with Highway 142. | 1,830 | $\frac{\text{Na/K}}{837}$ | - | 111 | 122 | 200 | 5,920 | Sample from long pool on downstream side; width is approximately 20' at this point, averaging 2-3' deep; unable to estimate flow; slight evidence of aquatic life noted. |
| 3. Artesian spring in bank of California Creek. | On Carlson property at intersection with Olson-Carlson property line running east and west; 0.3 miles above old dam described in item 1., above. | 43,800 | 20,890 | 12 | 1,850 | 83 | 1,510 | 84,100 | Sample taken from salty spring sporadically emitting gas bubbles; temperature of water 66°F, flow estimated at 3-5 gpm; small fish were dead below spring. |

Table 54. A Checklist of Fish Species Caught by Netting and Seining from the Clear Fork of the Brazos River from April 16, 1958 through April 15, 1959 and Prior to that Period.

| Scientific Name | Common Name |
|---|-----------------------|
| <u>Lepisosteidae</u> (Gar) | |
| <u>Lepisosteus osseus</u> | longnose gar |
| <u>Clupeidae</u> (Herrings) | |
| <u>Dorosoma cepedianum</u> | gizzard shad |
| <u>Catostomidae</u> (Suckers and buffalofishes) | |
| <u>Ictiobus bubalus</u> | smallmouth buffalo |
| <u>Carpiodes carpio</u> | river carpsucker |
| <u>Cyprinidae</u> (Shiners and minnows) | |
| <u>Cyprinus carpio</u> | carp |
| <u>Notemigonus crysoleucas</u> | golden shiner |
| <u>Notropis lutrensis</u> | redhorse shiner |
| <u>Notropis volucellus</u> | mimic shiner |
| <u>Notropis buechanani</u> | ghost shiner |
| <u>Pimephales vigilax</u> | parrot minnow |
| <u>Pimephales promelas</u> | fathead minnow |
| <u>Ameiuridae</u> (Freshwater catfishes) | |
| <u>Ictalurus punctatus</u> | channel catfish |
| <u>Ictalurus melas</u> | black bullhead |
| <u>Ictalurus natalis</u> | yellow bullhead |
| <u>Pylodictus olivaris</u> | flathead catfish |
| <u>Cyprinodontidae</u> (Killifishes and topminnows) | |
| <u>Fundulus notatus</u> | blackstripe topminnow |
| <u>Fundulus kansae</u> | plains killifish |
| <u>Cyprinodon rubrofluviatilis</u> | Red River pupfish |

Table 54. (Continued) A Checklist of Fish Species Caught by Netting and Seining from the Clear Fork of the Brazos River from April 16, 1958 through April 15, 1959, and Prior to that Period.

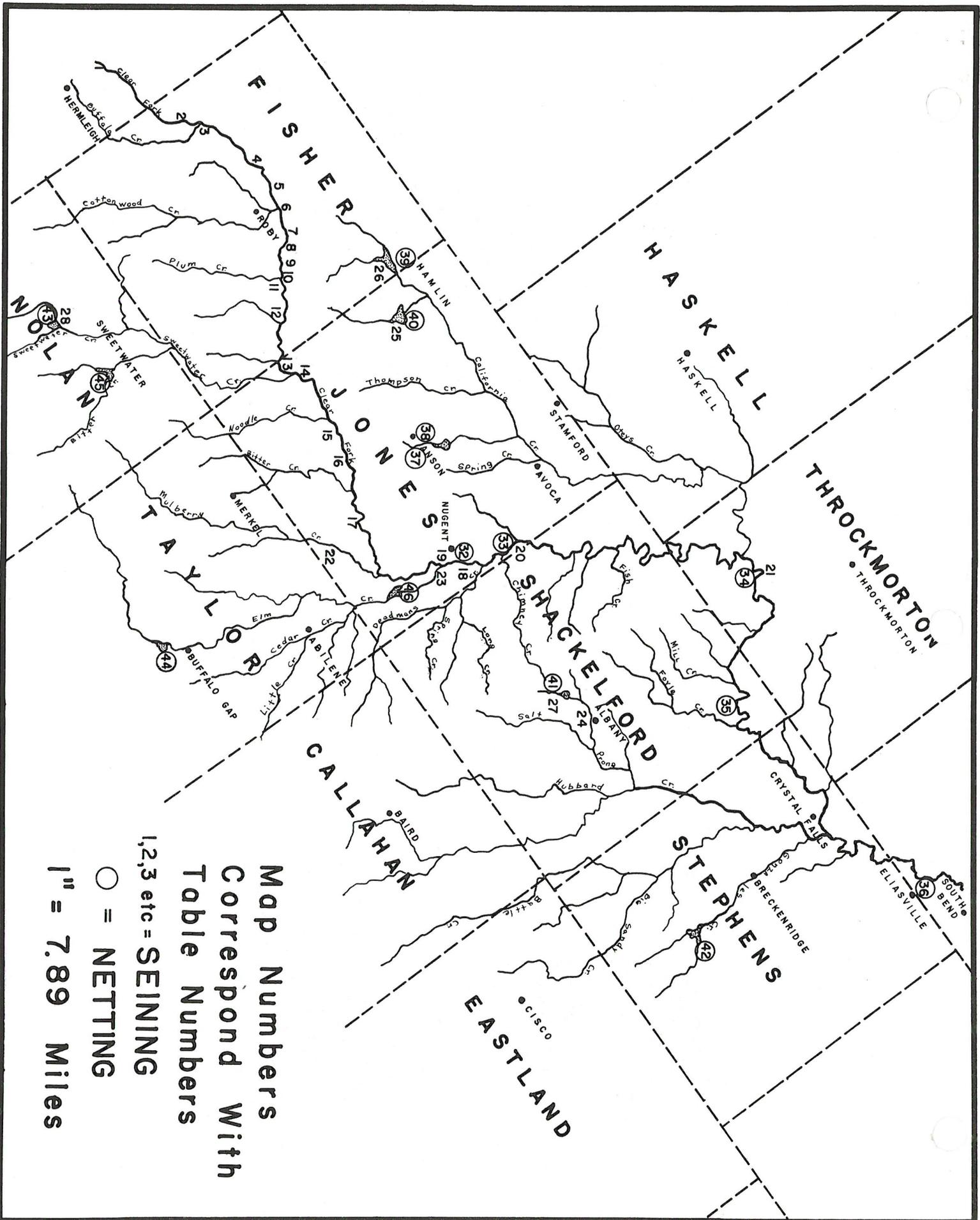
| Scientific Name | Common Name |
|---|-----------------------|
| <u>Poeciliidae</u> (Mosquitofishes) | |
| <u>Gambusia affinis</u> | mosquitofish |
| <u>Serranidae</u> (Basses) | |
| <u>Roccus chrysops</u> | white bass |
| <u>Centrarchidae</u> (Black basses and sunfishes) | |
| <u>Micropterus salmoides</u> | largemouth bass |
| <u>Lepomis cyanellus</u> | green sunfish |
| <u>Lepomis microlophus</u> | redeer sunfish |
| <u>Lepomis macrochirus</u> | bluegill |
| <u>Lepomis humilis</u> | orangespotted sunfish |
| <u>Lepomis megalotis</u> | longear sunfish |
| <u>Pomoxis annularis</u> | white crappie |
| <u>Pomoxis nigromaculatus</u> | black crappie |
| <u>Percidae</u> (Perches and darters) | |
| <u>Percina caprodes</u> | logperch |



Figure 1. Intermittent stream area of the Clear Fork of the Brazos River in Western Fisher County.



Figure 2. Pool on the Clear Fork of the Brazos River in Eastern Fisher County.



Map Numbers
 Correspond With
 Table Numbers

○ = NETTING

1,2,3 etc = SEINING

1" = 7.89 Miles

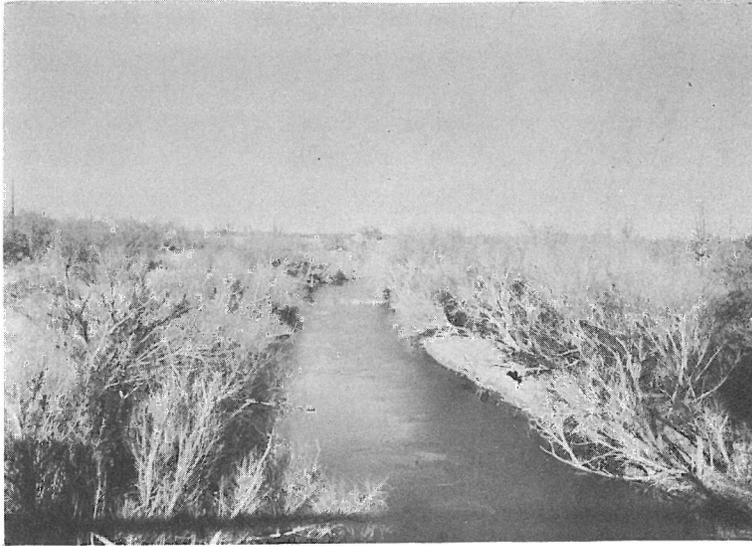


Figure 3. Semi-permanent Water of the Clear Fork of the Brazos River near Nugent, Texas, in Jones County.

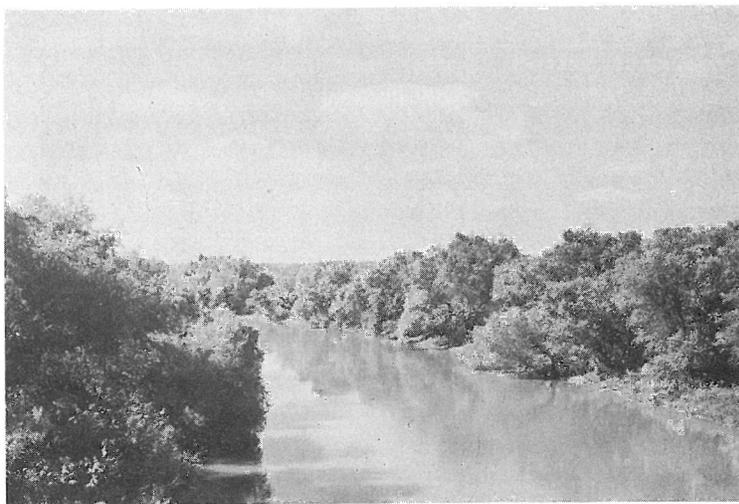


Figure 4. Semi-permanent Water of the Clear Fork of the Brazos River at Highway 180 Crossing in Eastern Jones County.



Figure 5. Patches of Bulrushes Along the Banks of the Brazos River above the Leuders Dam in Eastern Jones County.

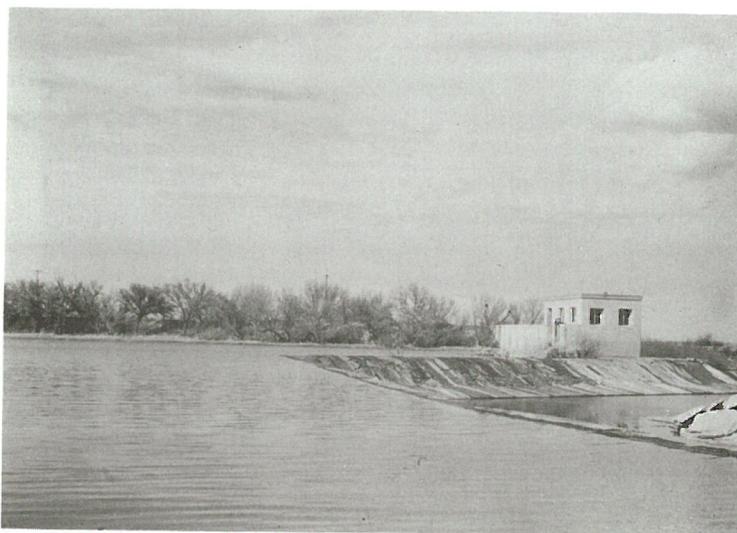


Figure 6. The Leuders Dam on the Clear Fork of the Brazos River near Leuders, Texas, in Eastern Jones County.