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 collodal 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 occurence. 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 (redear 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 Marion 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: Netlleton 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	6	.18
Totals	3,304	100.00

Table 32. Clear Fork of the Brazos River

Type of Collcetion: 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.	Total Wt. ozs.	Avg. Wt. lbs.	Avg. Wt. 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.	Total Wt. ozs.	Avg. Wt. lbs.	Avg. Wt. 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	1	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	4	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	2	.66	7.51	2.82
Green sunfish	1	.92		5		5.00	.39	3.19
Bluegills	5	4.58		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.	Total Wt. ozs.	Avg. Wt. lbs.	Avg. Wt. 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.	Total Wt. ozs.	Avg. Wt. lbs.	Avg. Wt. 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

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

Species	No.	Percent by No.	Total Wt. lbs.	Total Wt. ozs.	Avg. Wt. lbs.	Avg. Wt. 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		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		1.12	2.88
Flathead catfish	1	1.04	3	2	3	2.00	3.51	1.49
Largemouth bass	2	2.09	3		1	8.00	3.38	3.24
White crappie	1	1.04		8		8.00	.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

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

Species	No.	Percent by No.	Total Wt. lbs.	Total Wt. ozs.	Avg. Wt. lbs.	Avg. Wt. 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		3.00	.92	2.71
Golden shiners	2	8.00		4		4.00	1.23	2.51
Bluegills	1	4.00		3		3.00	.92	4.35
White crappie	8	32.00		13		1.63	3.99	3.64
Totals	25	100.00	20	6			100.00	

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.	Total Wt. ozs.	Avg. Wt. lbs.	Avg. Wt. ozs.	Percent by Wt.	Avg. K
River carpsucker	13	7.92	16	10	1	4.46	16.51	3.00
Channel catfish	91	55.49	75	3		13.21	74.67	2.28
Black bullheads	5	3.05	1	3		3.80	1.18	2.45
Largemouth bass	1	.61	2	1	2	1.00	2.05	2.57
Longear sunfish	1	.61		13		13.00	.81	4.65
White crappie	53	32.32	4	13		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.	Total Wt. ozs.	Avg. Wt. lbs.	Avg. Wt. 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.	Total Wt. ozs.	Avg. Wt. lbs.	Avg. Wt. 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	6	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
Type of Nets: 125 x 8 x Exp.
Condition of Water: Cool and Clear

Species	No.	Percent by No.	Total Wt. lbs.	Total Wt. ozs.	Avg. Wt. lbs.	Avg. Wt. 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.	Total Wt. ozs.	Avg. Wt. lbs.	Avg. Wt. 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.	Total Wt. ozs.	Avg. Wt. lbs.	Avg. Wt. 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	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.	Total Wt. ozs.	Avg. Wt. lbs.	Avg. Wt. 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.	Total Wt. ozs.	Avg. Wt. lbs.	Avg. Wt. 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	8	18.99	2.16
Carp	11	2.29	13	12	1	4	6.70	2.52
Golden shiner	8	1.66	1			2	.49	1.43
Channel catfish	45	9.35	56	4	1	4	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		3		3	.09	3.87
White crappie	23	4.78	10			7	4.87	2.51
Black crappie	2	.42	1	8		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.	Total Wt. ozs.	Avg. Wt. lbs.	Avg. Wt. 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.	Total Wt. ozs.	Avg. Wt. lbs.	Avg. Wt. 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	1	5.80	8.28	2.64
Carp	2	.17	3	13	1	14.50	.41	2.68
Golden shiner	31	2.60	5	10		2.90	.61	1.97
Channel catfish	377	31.65	612	11	1	10.00	66.47	2.25
Black bullheads	170	14.28	36	1		3.39	3.91	2.42
Largemouth bass	13	1.09	26	13	2	1.00	2.91	3.53
Bluegill sunfish	92	7.73	16	6		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	15		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	14	1	9.01	28.31	2.21
Carp	11	1.91	13	12	1	6.00	4.70	2.52
Golden shiner	8	1.39	1			2.00	.34	1.43
Channel catfish	50	8.68	65		1	4.80	22.20	1.77
Black bullheads	20	3.48	12	8		10.00	4.27	2.42
White bass	9	1.56	12	4	1	5.77	4.19	2.16
Largemouth bass	10	1.74	31	13	3	2.90	10.86	2.78
Bluegills	1	.17		3		3.00	.07	3.87
White crappie	37	6.42	17	14		7.72	6.10	2.79
Black crappie	2	.35	1	8		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.	Total Wt. ozs.	Avg. Wt. lbs.	Avg. Wt. 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	1	5.02	7.99	2.55
Smallmouth buffalo	16	1.10	49	1	3	1.06	4.03	2.89
Carp	2	.14	3	13	1	14.50	.31	2.68
Golden shiner	31	2.12	5	10		2.90	.46	1.97
Channel catfish	390	26.73	647	5	1	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	3	2.00	.26	1.49
Largemouth bass	22	1.51	45	6	2	1.00	3.73	3.17
Green sunfish	1	.07		5		5.00	.03	3.19
Bluegills	97	6.65	17	3		2.84	1.41	3.74
Redear sunfish	1	.07		5		5.00	.03	4.01
Longear sunfish	1	.07		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.	Total Wt. ozs.	Avg. Wt. lbs.	Avg. Wt. 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		5.00	.02	3.19
Bluegills	98	4.81	17	6		2.81	1.15	3.74
Redear sunfish	1	.05		5		5.00	.02	4.01
Longear sunfish	1	.05		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	2.95
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	Dissolved Solids ppm	Ca Mg	Hardness $CaCO_3$ Non-carbonate	% Na	Micromhos 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	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.

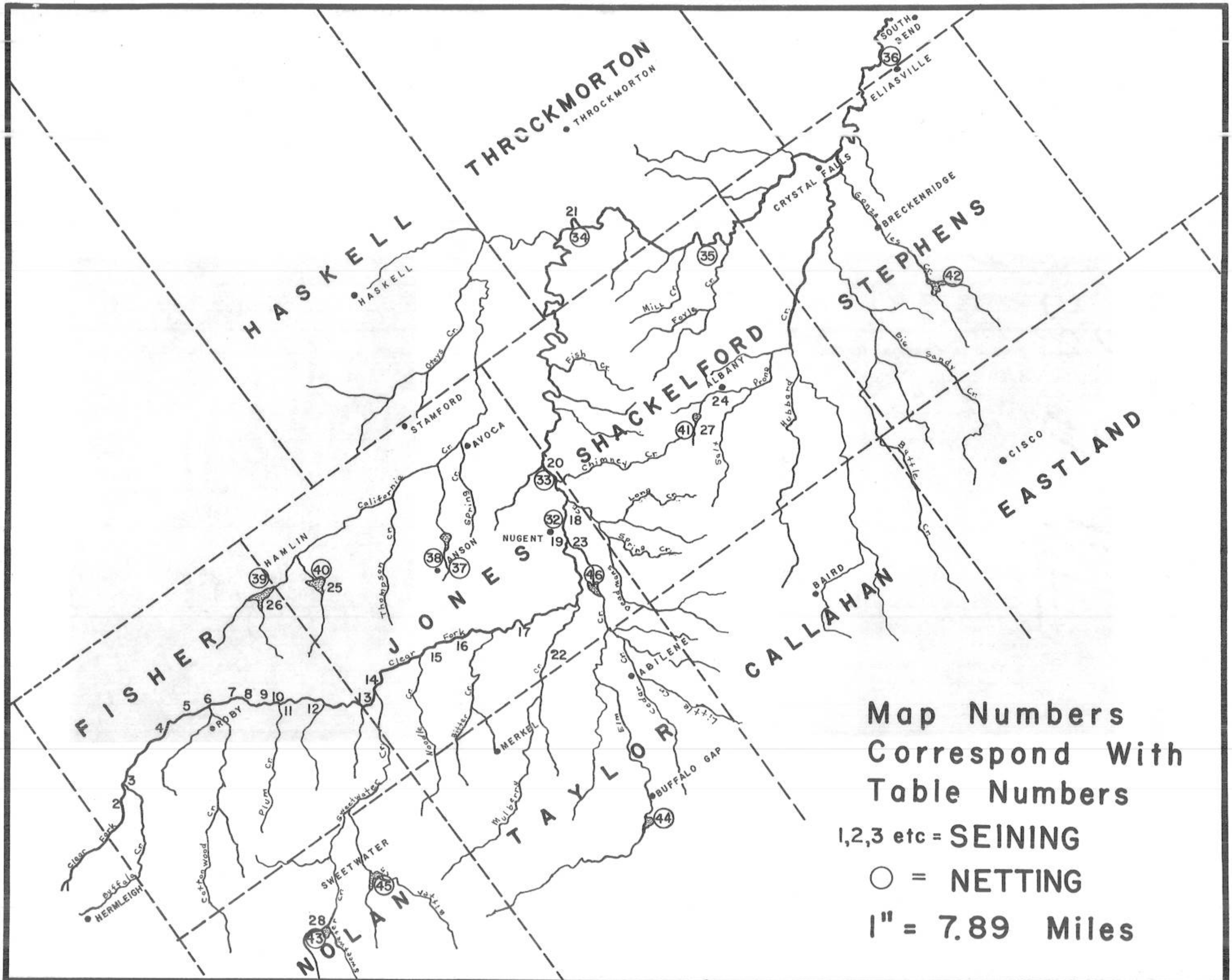
Scientific Name	Common Name
Lepisosteidae (Gar)	
Lepisosteus osseus	longnose gar
Clupeidae (Herrings)	
Dorosoma cepedianum	gizzard shad
Catostomidae (Suckers and buffalofishes)	
Ictiobus bubalus	smallmouth buffalo
Carpiodes carpio	river carpsucker
Cyprinidae (Shiners and minnows)	
Cyprinus carpio	carp
Notemigonus crysoleucas	golden shiner
Notropis lutrensis	redhorse shiner
Notropis volucellus	mimic shiner
Notropis buchanani	ghost shiner
Pimephales vigilax	parrot minnow
Pimephales promelas	fathead minnow
Ameiuridae (Freshwater catfishes)	
Ictalurus punctatus	channel catfish
Ictalurus melas	black bullhead
Ictalurus natalis	yellow bullhead
Pylodictus olivaris	flathead catfish
Cyprinodontidae (Killifishes and topminnows)	
Fundulus notatus	blackstripe topminnow
Fundulus kansae	plains killifish
Cyprinodon rubrofluviatilis	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
Poeciliidae (Mosquitofishes)	
Gambusia affinis	mosquitofish
Serranidae (Basses)	
Roccus chrysops	white bass
Centrarchidae (Black basses and sunfishes)	
Micropterus salmoides	largemouth bass
Lepomis cyanellus	green sunfish
Lepomis microlophus	redear sunfish
Lepomis macrochirus	bluegill
Lepomis humilis	orangespotted sunfish
Lepomis megalotis	longear sunfish
Pomoxis annularis	white crappie
Pomoxis nigromaculatus	black crappie
Percidae (Perches and darters)	
Percina caprodes	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.



HASKELL
THROCKMORTON
FISHER
JONES
SHACKELFORD
STEPHENS
NOLAN
TAYLOR
CALLAHAN
EASTLAND
HASKELL
THROCKMORTON
STAMFORD
AVOCA
HAMLIN
ANSON
NUGENT
ROBY
HERMLEIGH
SWEETWATER
MERKEL
ABILENE
BUFFALO GAP
BAIRD
ALBANY
CRYSTAL FALLS
BRECKENRIDGE
ELIASVILLE
SOUTH BEND
CISCO
Clear Fork
Buffalo Cr.
Cottonwood Cr.
Plum Cr.
Sweetwater Cr.
Bitter Cr.
Noodle Cr.
Mulberry Cr.
Elm Cr.
Cedar Cr.
Little Cr.
Deadman Cr.
Thompson Cr.
California Cr.
Spring Cr.
Oteys Cr.
Fish Cr.
Mill Cr.
Foyle Cr.
Chimney Cr.
Long Cr.
Salt Prong
Hubbard Cr.
Gonzales Cr.
Big Sandy Cr.
Battle Cr.
Map Numbers Correspond With Table Numbers
1,2,3 etc = SEINING
○ = NETTING
1" = 7.89 Miles

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

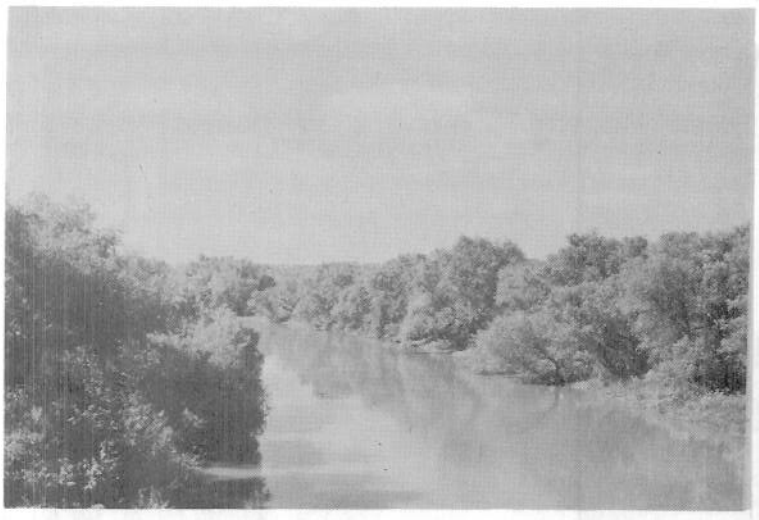


Figure 4. Semi-permanent Water of the Clear Fork of the Brazos River at Highway 180 Crossing in Eastern Jones County.

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

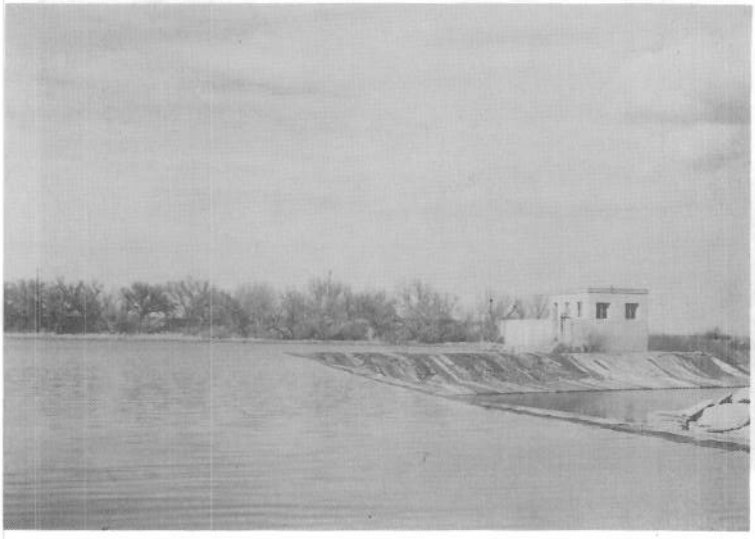


Figure 6. The Leuders Dam on the Clear Fork of the Brazos River near Leuders, Texas, in Eastern Jones County.