

STATE Texas
PROJECT NO. F2R4 - Job B-18
PERIOD February through May, 1956

FILE

Job Completion Report

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TITLE

Inventory of Species Present in Lake Austin, Texas.

OBJECTIVES

To determine the species present and their relative abundance.

JOB TERMINATION

Although originally scheduled to run from February 1, 1956 through January 31, 1957, this project was terminated on June 1, 1956. Material collected during the four month period, combined with data available from Texas Game and Fish Commission records during 1951 and 1952, appeared sufficient for the project.

In addition it was felt that the time allocated to this project could be more profitably spent on Job E-2, Experimental Location of Black Bass in Lake Travis.

METHODS AND MATERIALS

Fish collections and ecological observations were made monthly throughout the study period.

Two collecting methods were employed in obtaining specimens for study. Seine collections were made at random over the lake and 724 specimens were taken by this method. All specimens taken in seines were preserved in 10 percent formalin and taken to the laboratory for identification and study. Both 36 x 6 foot bag seines and 30 x 6 foot straight seines were used for the seine collections.

Experimental type gill nets 125 x 8 feet were used to collect 367 specimens which were identified, weighed, measured and checked for gonadal development in the field.

Observations on bottom type, shoreline, vegetation and cover, and turbidity were made and recorded for each collecting station. Water samples were taken each month and analyzed for dissolved oxygen, dissolved carbon dioxide and pH. The samples were taken from the surface, a depth of 10 feet, and where water depth permitted, from 15 feet.

PHYSICAL DESCRIPTION

Lake Austin, impounded by Tom Miller Dam, is a 20,000 acre foot lake covering

approximately 3,000 surface acres. Although 20 miles in length, the lake has a maximum width of slightly more than one-fourth mile with a maximum depth of slightly over 50 feet near the Tom Miller Dam. With the exception of the old river channel, the lake is relatively shallow and above the confluence of Bull Creek, water depths rarely exceed 15 feet even in the channel.

The lake itself is situated in the rugged limestone hills of eastern Travis County. The surrounding country, with the exception of that portion which lies in a populous area of Austin, is cedar covered ranch country largely used for production of goats and cattle.

The entire lake is incorporated in the city limits of Austin although bank areas in most sections are not included in the city limits.

VEGETATION AND COVER

Aquatic vegetation, particularly Myriophyllum sp., is a constant problem to boat operators and fishermen. The shallow waters encourage luxuriant growth of the aquatics. To combat the vegetation problem the city of Austin lowers the water level of the lake in February and early March for a period of approximately three weeks. The vegetation was definitely retarded during the spring months, although during May the problem was again becoming acute and will undoubtedly be a major problem before the fall months.

The heavy growth of Myriophyllum in the shoreline areas provides abundant cover for the young of many species particularly the centrarchids. Little other natural cover is available in Lake Austin, as the lake is primarily confined to the second bank of the original Colorado River bed which was relatively free of heavy timber and brush.

Some willow, Salix nigra, is present and the heavy root systems provide cover as do the natural rock and rock crevices of the lake. Limited numbers of brush piles have been added by individual land owners in an attempt to improve fishing around private docks. In addition, Game and Fish Commission personnel, with the permission of cooperating land owners, half cut willows to provide cover in the Turkey Creek area of the lake. This work was done in 1951 and some cover was still present during the 1956 segment period.

WATER CONDITION

Lake Austin receives its water from Lake Travis through the generators of Mansfield Dam. The water entering Lake Austin comes from a depth of over 160 feet and at the time of discharge from the generators is cold and oxygen deficient. The water is thoroughly aerated in the first hundred yards by extremely swift currents over rubble and boulder bottom. Two-hundred yards below the actual point of discharge the water contains a satisfactory oxygen content. During the four month study period no adverse thermal or chemical conditions were noted. Water temperatures varied slightly with a 56°F high in February to 61°F high in May. During the segment period no measurable temperature difference was found between the surface and 10 feet.

Dissolved oxygen averaged 9.2 ppm with a high of 10.6 ppm and a low of 8.4 ppm. Dissolved carbon dioxide was consistently low with a high of three ppm in March. The pH varied from 7.8 to 8.6 ppm, with an average of 8.2.

Throughout the segment period the water was quite clear due to the filtering action of the five lakes above the impoundment.

FISH COLLECTIONS

A total of 34 species were found to occur in Lake Austin and a checklist of species is included in Table 1.

Records are available on 763 netted specimens from Lake Austin including 396 individuals from the 1951-53 period and the 367 specimens taken during the short 1956 segment period. Of the 763 fish total, 614 or 80.47 percent were rough or forage species. Desirable game species including channel catfish, blue catfish, flathead catfish, white bass, the centrarchid bass and white crappie made up only 11.92 percent of the total, with channel catfish accounting for over half of this figure.

The gizzard shad was the most abundant species with 296 individuals or 35.26 percent of total numbers.

Freshwater drum with 149 individuals or 19.52 percent of total numbers would appear to rank second in abundance. However, one 200 foot gill net set produced 137 of the 149 individuals, predominantly sexually mature males in spawning condition. Quite probably the net set was made in the path of a spawning migration and this figure does not represent a true relative abundance figure for this species.

In total weight rough and forage species, excluding sunfish, contributed 804.43 pounds of the 943.06 total or 85.31 percent. Smallmouth buffalo made up 35.31 percent of the total weight with 336.82 pounds. The gizzard shad was second with 15.99 percent of total weight or 150.76 pounds.

Game species, excluding sunfish, contributed only 13.64 percent of total weight with channel catfish again making up about 50 percent of this figure.

Table 2 gives the number of specimens taken in gill nets, by month during the short 1956 segment period and includes total numbers and percent of total number. Table 3 presents the same information for the 1951-53 period but is broken down into quarterly rather than monthly totals.

Tables 4 and 5 give the total weight and percent of total weight figures for the two collecting periods. Table 6 presents a consolidated total including total number, percent of number, total weight, and percent of total weight by species for all netted specimens from the two collecting periods.

Table 7 shows the success of gill netting in terms of number and pounds of fish for the 1956 segment period only.

A comparison of results from the two collecting periods shows reasonably similar figures for most species. However, smallmouth buffalo, gizzard shad, and freshwater drum show significantly different results. The freshwater drum relative abundance figure has been explained but the great variation in relative abundance of smallmouth buffalo is not understood. From observations of the catch of commercial fishermen it is known that a large population is present and many were seen spawning in shallow sloughs. Although gill nets were set at random over the lake very few buffalo were taken. From observations of commercial catches and spawning concentrations the small mouth buffalo is undoubtedly more abundant than the collecting figures for the 1956 segment period would indicate.

Although netting results for gizzard shad show strikingly different results, it is probably a difference in individual size and not abundance. As shown in the 1951-53

seining collections the gizzard shad was abundant in Lake Austin at that time but the bulk of the population was composed of young shad, too small for gill net capture. During the 1956 segment period few small shad were taken. Although still very abundant in the lake, the population is primarily composed of large adults easily taken by nets. Apparently some factor or combination of factors has reduced the shad spawn or young during the previous year, leaving a population of large individuals.

Seining produced a total of 7,778 specimens during the combined collecting periods. Of this number, only 724 individuals were taken during the 1956 period. Twenty-four seining collections were made and frequently less than 15 specimens would be taken at a station.

The most abundant species taken in the seining collections was the gizzard shad with 2,721 individuals or 34.98 percent of the total. Second in abundance was the spot-tail shiner. Of the more important game species only the spotted and largemouth bass were abundant, with a combined total of 399 individuals or 5.11 percent of the total seined specimens. All sunfish combined made up 23.27 percent, with the bluegill accounting for over 50 percent of the sunfish taken. Table 8 gives the number of specimens taken in seines during the 1956 collecting period. Table 9 presents the same information for the 1951-53 period and Table 10 is a consolidated total for all seining collections.

DISCUSSION

Lying within the city limits of Austin and easily accessible from all sections of the city, Lake Austin has become a major recreational area. The lake shore is extensively developed with both permanent homes and weekend cottages.

With the tremendous increase in boat traffic, water skiing and other aquatic sports over the past few years, the ardent fishermen have turned to the quieter waters of the larger lakes in the Colorado chain. The configuration of the lake itself leaves little room for the fishermen. Narrow and lacking the sloughs and inlets of the larger lakes, it is very difficult to escape the violent wakes of the fast moving motor boats.

Netting on Lake Austin was accomplished by setting nets as near dark as possible and retrieving them before daylight in the morning, as working with nets during daylight hours was seriously hampered by the heavy traffic.

Fishing pressure on Lake Austin was extremely light during the short segment period considering the lakes proximity to a population center of nearly 200,000.

Overabundant aquatic vegetation, a large rough fish population, crowding of available water by many boating enthusiasts, all combine to discourage the fishermen.

Because of its location near a population center of this size, Lake Austin could again become a very popular lake and draw a far larger share of the local anglers. Several years ago fishing was very popular on the lake as it was possible for Austin Residents to fish the lake before working hours in the morning and after five in the afternoon.

To draw the fishing public back to the lake, some form of equalization for available water between fishermen and other aquatic sports enthusiasts would be necessary. Speed boating and heavy fishing pressure are not compatible on this lake.

The one most important problem in restoring good fishing is undoubtedly rough fish control. The extremely large rough fish and forage fish population supplies the lake with an overabundant natural food source for the game fish population.

What effect the annual lowering of the lake, during the early spring, has on the game fish population was not ascertained but it is doubtful that there is any adverse effect..

Further study of Lake Austin is recommended when a feasible plan for rough fish control has been proven. Present procedures for rough fish eradication would be difficult to carry out on Lake Austin because of the city water supply and the number of residences and business establishments on or near the lake shore.

SUMMARY

1. Lake Austin, a 3,000 surface acre impoundment on the Colorado River was inventoried for species present. In addition, relative abundance estimates were made for the fish population.
2. Collections from the 1956 short segment period and data from 1951-1953 Texas Game and Fish Commission records were used for this report.
3. Rough and forage species excluding sunfish were found to constitute over 80 percent of the collected material.
4. The most abundant species was the gizzard shad.
5. Channel catfish were the most numerous game fish taken by gill nets while black bass were the most numerous in the seine collections.
6. Heavy boat traffic and numerous water skiers tend to discourage fishermen from using the lake.

Table 1. Checklist of Species Found to Occur in Lake Austin.

| Scientific Name | Common Name |
|---------------------------------|------------------------|
| <u>Lepisosteus osseus</u> | longnose gar |
| <u>Dorosoma cepedianum</u> | gizzard shad |
| <u>Ictiobus bubalus</u> | smallmouth buffalo |
| <u>Carpionodes carpio</u> | river carpsucker |
| <u>Moxostoma congestum</u> | gray redhorse sucker |
| <u>Cyprinus carpio</u> | European carp |
| <u>Notemigonus crysoleucas*</u> | golden shiner |
| <u>Opsopoeodus emiliae*</u> | pugnose minnow |
| <u>Notropis roseus</u> | central weed shiner |
| <u>Notropis venustus</u> | spottail |
| <u>Notropis lutrensis</u> | redhorse shiner |
| <u>Pimephales vigilax*</u> | parrot minnow |
| <u>Pimephales promelas*</u> | fathead minnow |
| <u>Campostoma anomalum*</u> | stoneroller |
| <u>Ictalurus punctatus</u> | channel catfish |
| <u>Ictalurus furcatus</u> | blue catfish |
| <u>Ameiurus natalis</u> | yellow bullhead |
| <u>Pilodictus olivaris</u> | flathead catfish |
| <u>Fundulus notatus</u> | blackstripe topminnow |
| <u>Gambusia affinis</u> | common mosquitofish |
| <u>Morone chrysops</u> | white bass |
| <u>Micropterus punctulatus*</u> | Kentucky spotted bass |
| <u>Micropterus treculi</u> | Texas spotted bass |
| <u>Micropterus salmoides</u> | largemouth black bass |
| <u>Chaenobryttus coronarius</u> | warmouth |
| <u>Lepomis cyanellus</u> | green sunfish |
| <u>Lepomis punctatus*</u> | spotted sunfish |
| <u>Lepomis microlophus</u> | reardear sunfish |
| <u>Lepomis macrochirus</u> | bluegill sunfish |
| <u>Lepomis auritus</u> | yellowbreasted sunfish |
| <u>Lepomis megalotis</u> | longear sunfish |
| <u>Pomoxis annularis</u> | white crappie |
| <u>Percina caprodes*</u> | logperch |
| <u>Aplodinotus grunniens</u> | freshwater drum |
| <u>Cichlasoma cyanogutta</u> | Rio Grande perch |

* Species taken in Lake Austin in 1951-1952 by Texas Game and Fish Commission personnel but not taken in this segment.

Table 2. Number of Specimens Taken by Gill Nets From Lake Austin, February 1956 through May 1956.

| Fish Species | February | March | April | May | Total | % of Total |
|-----------------------|----------|-------|-------|-----|-------|------------|
| Longnose gar | 0 | 0 | 3 | 31 | 34 | 9.25 |
| Gizzard shad | 46 | 49 | 57 | 56 | 208 | 56.68 |
| Smallmouth buffalo | 0 | 3 | 2 | 2 | 7 | 1.90 |
| River carpsucker | 4 | 11 | 5 | 6 | 26 | 7.09 |
| Gray redhorse sucker | 0 | 3 | 0 | 0 | 3 | 0.81 |
| European carp | 0 | 2 | 0 | 2 | 4 | 1.09 |
| Channel catfish | 6 | 2 | 4 | 5 | 17 | 4.64 |
| Blue catfish | 0 | 1 | 3 | 0 | 4 | 1.09 |
| Yellow bullhead | 1 | 1 | 0 | 0 | 2 | 0.54 |
| White bass | 1 | 2 | 1 | 0 | 4 | 1.09 |
| was spotted bass | 0 | 0 | 2 | 0 | 2 | 0.55 |
| Largemouth black bass | 0 | 1 | 1 | 1 | 3 | 0.81 |
| Warmouth | 0 | 1 | 3 | 0 | 4 | 1.09 |
| Redear sunfish | 0 | 1 | 0 | 1 | 2 | 0.55 |
| Bluegill sunfish | 0 | 0 | 13 | 22 | 35 | 9.54 |
| Longear sunfish | 0 | 0 | 1 | 0 | 0 | 0.28 |
| White crappie | 0 | 1 | 5 | 1 | 7 | 1.91 |
| Freshwater drum | 0 | 0 | 2 | 1 | 3 | 0.81 |
| Rio Grande perch | 0 | 0 | 1 | 0 | 1 | 0.28 |
| Totals | 58 | 78 | 103 | 128 | 367 | 100.00 |

Table 3. Number of Specimens Taken by Gill Nets From Lake Austin, May 1951 through January 1953.

| Fish Species | May 1 through | Aug. 1 through | May 1 through | Aug. 1 through | Nov. 1 1952 | Total % of Total | |
|-----------------------|---------------|----------------|---------------|----------------|--------------------------|------------------|--------|
| | July 31, 1951 | Oct. 30, 1951 | July 31, 1952 | Oct. 30, 1952 | through Jan. 31, 1953 | | |
| Longnose gar | 2 | 1 | 5 | 0 | 2 | 10 | 2.53 |
| Gizzard shad | 6 | 6 | 37 | 1 | 11 | 61 | 15.40 |
| Smallmouth buffalo | 0 | 0 | 33 | 35 | 2 | 70 | 17.68 |
| River carpsucker | 12 | 5 | 11 | 3 | 2 | 33 | 8.33 |
| Gray redbhorse sucker | 0 | 1 | 1 | 0 | 0 | 2 | 0.51 |
| European carp | 0 | 0 | 4 | 0 | 0 | 4 | 1.01 |
| Channel catfish | 10 | 4 | 6 | 2 | 11 | 33 | 8.33 |
| Blue catfish | 1 | 2 | 1 | 1 | 2 | 7 | 1.77 |
| Flathead catfish | 1 | 0 | 0 | 0 | 1 | 2 | 0.50 |
| White bass | 2 | 2 | 1 | 1 | 1 | 7 | 1.77 |
| Largemouth black bass | 0 | 0 | 1 | 0 | 1 | 2 | 0.51 |
| Redear sunfish | 0 | 0 | 1 | 0 | 0 | 1 | 0.25 |
| Bluegill sunfish | 8 | 0 | 5 | 0 | 0 | 13 | 3.28 |
| Longear sunfish | 2 | 0 | 0 | 0 | 0 | 2 | 0.51 |
| White crappie | 1 | 0 | 1 | 0 | 1 | 3 | 0.75 |
| Freshwater drum | 137 | 4 | 5 | 0 | 0 | 146 | 36.87 |
| Totals | 182 | 25 | 112 | 43 | 34 | 396 | 100.00 |

Table 4. Pounds of Each Fish Species Taken by Gill Nets From Lake Austin, February 1956 through May 1956.

| Fish Species | February | March | April | May | Total | % of Total |
|----------------------|----------|-------|-------|--------|--------|------------|
| Longnose gar | 0.00 | 0.00 | 5.06 | 52.44 | 57.50 | 15.88 |
| Gizzard shad | 29.48 | 26.50 | 34.50 | 33.56 | 124.44 | 34.36 |
| Smallmouth buffalo | 0.00 | 9.38 | 5.69 | 10.50 | 25.57 | 7.07 |
| River Carpsucker | 7.13 | 19.94 | 10.25 | 11.00 | 48.32 | 13.34 |
| Gray redhorse sucker | 0.00 | 11.00 | 0.00 | 0.00 | 11.00 | 3.04 |
| European carp | 0.00 | 12.81 | 0.00 | 8.13 | 20.94 | 5.78 |
| Channel catfish | 9.81 | 2.94 | 5.75 | 16.00 | 34.50 | 9.53 |
| Blue catfish | 0.00 | 9.44 | 8.19 | 0.00 | 17.63 | 4.87 |
| Yellow bullhead | 0.63 | 0.81 | 0.00 | 0.00 | 1.44 | 0.40 |
| White bass | 0.63 | 2.50 | 0.50 | 0.00 | 3.63 | 1.00 |
| Teal spotted bass | 0.00 | 0.00 | 0.50 | 0.00 | 0.50 | 0.14 |
| Largemouth bass | 0.00 | 0.69 | 2.88 | 0.50 | 4.07 | 1.12 |
| Warmouth | 0.00 | 0.13 | 0.38 | 0.00 | 0.51 | 0.15 |
| Redear sunfish | 0.00 | 0.06 | 0.00 | 0.19 | 0.25 | 0.06 |
| Bluegill sunfish | 0.00 | 0.00 | 2.38 | 3.06 | 5.44 | 1.51 |
| Longear sunfish | 0.00 | 0.00 | 0.13 | 0.00 | 0.13 | 0.03 |
| White crappie | 0.00 | 0.13 | 2.94 | 0.25 | 3.32 | 0.92 |
| Freshwater drum | 0.00 | 0.00 | 1.75 | 0.50 | 2.25 | 0.62 |
| Rio Grande perch | 0.00 | 0.00 | 0.63 | 0.00 | 0.63 | 0.18 |
| Totals | 48.08 | 96.33 | 81.53 | 136.13 | 362.07 | 100.00 |

Table 5. Pounds of Each Fish Species Taken by Gill Nets From Lake Austin, May 1951 through January 1953.

| Fish Species | May 1 through | Aug. 1 through | May 1 through | Aug. 1 through | Nov. 1, 1952 | Total lbs. | % of Total |
|-----------------------|---------------|----------------|---------------|----------------|--------------------------|---------------|------------|
| | July 31, 1951 | Oct. 30, 1951 | July 31, 1952 | Oct. 30, 1952 | through Jan. 31, 1953 | | |
| Longnose gar | 8.56 | No Recorded | 20.63 | 0.00 | 8.89 | 38.08 | 6.55 |
| Gizzard shad | 3.94 | Weights | 17.06 | 0.69 | 4.63 | 26.32 | 4.53 |
| Smallmouth buffalo | 0.00 | for this | 146.94 | 155.75 | 8.56 | 311.25 | 53.57 |
| River carpsucker | 45.06 | Period | 14.88 | 4.13 | 3.56 | 67.63 | 11.64 |
| Gray redbhorse sucker | 0.00 | | 3.19 | 0.00 | 0.00 | 3.19 | 0.55 |
| European carp | 0.00 | | 6.31 | 0.00 | 0.00 | 6.31 | 1.09 |
| Channel catfish | 12.81 | | 8.75 | 2.75 | 5.38 | 29.69 | 5.11 |
| Blue catfish | 4.75 | | 2.75 | 4.94 | 9.13 | 21.57 | 3.71 |
| Flathead catfish | 1.69 | | 0.00 | 0.00 | 0.94 | 2.63 | 0.45 |
| White bass | 3.06 | | 1.94 | 1.94 | 1.25 | 8.19 | 1.41 |
| Largemouth black bass | 0.00 | | 0.81 | 0.00 | 0.75 | 1.56 | 0.27 |
| Redear sunfish | 0.00 | | 0.13 | 0.00 | 0.00 | 0.13 | 0.02 |
| Bluegill sunfish | 1.88 | | 1.06 | 0.00 | 0.00 | 2.94 | 0.51 |
| Longear sunfish | 0.50 | | 0.00 | 0.00 | 0.00 | 0.50 | 0.09 |
| White Crappie | 0.31 | | 0.75 | 0.00 | 0.33 | 1.44 | 0.24 |
| Freshwater drum | 54.06 | | 5.50 | 0.00 | 0.00 | 59.56 | 10.26 |
| Totals | 136.62 | | 230.70 | 170.20 | 43.47 | 580.99 | 100.00 |

Table 6. Combined 1951-53 and 1956 Netting Totals.

| Fish Species | Number | % Total No. | Pounds | % Total Lbs. |
|-----------------------|--------|-------------|--------|--------------|
| Longnose gar | 44 | 5.76 | 95.58 | 10.13 |
| Gizzard shad | 269 | 35.26 | 150.76 | 15.99 |
| Smallmouth buffalo | 77 | 10.09 | 336.82 | 35.71 |
| River carpsucker | 59 | 7.73 | 115.95 | 12.30 |
| Gray redhorse sucker | 5 | 0.66 | 14.19 | 1.50 |
| European carp | 8 | 1.05 | 27.25 | 2.89 |
| Channel catfish | 50 | 6.55 | 64.19 | 6.81 |
| Blue catfish | 11 | 1.44 | 39.20 | 4.15 |
| Yellow bullhead | 2 | 0.26 | 1.44 | 0.16 |
| Flathead catfish | 2 | 0.26 | 2.63 | 0.28 |
| White bass | 11 | 1.45 | 11.82 | 1.25 |
| Texas spotted bass | 2 | 0.26 | 0.50 | 0.05 |
| Largemouth black bass | 5 | 0.65 | 5.63 | 0.60 |
| Warmouth | 4 | 0.53 | 0.51 | 0.05 |
| Redear sunfish | 3 | 0.39 | 0.38 | 0.04 |
| Bluegill sunfish | 48 | 6.29 | 8.38 | 0.89 |
| Longear sunfish | 3 | 0.40 | 0.63 | 0.07 |
| White crappie | 10 | 1.31 | 4.76 | 0.50 |
| Freshwater drum | 149 | 19.52 | 61.81 | 6.56 |
| Rio Grande perch | 1 | 0.14 | 0.63 | 0.07 |
| Totals | 763 | 100.00 | 943.06 | 100.00 |

Table 7. Success of Gill Netting in Terms of Number and Pounds of Fish, February 1956 through May 1956.

| Month | Number of Nets Set | Number of Foot Net Set | Number of Fish Caught | Number lbs. Fish Caught | Average Number Fish/Net | Average No. Fish Ft. of Net | Average No. lbs. Fish/Net | Average No. lbs. Fish per Ft. of Net |
|----------|--------------------------|------------------------------|-----------------------------|-------------------------------|-------------------------------|-----------------------------------|---------------------------------|--|
| February | 6 | 750 | 58 | 48.06 | 9.67 | .08 | 8.01 | 0.06 |
| March | 6 | 750 | 78 | 96.31 | 16.00 | .10 | 16.05 | 0.13 |
| April | 6 | 750 | 103 | 81.50 | 13.50 | .14 | 13.58 | 0.11 |
| May | 6 | 750 | 128 | 136.13 | 22.67 | .17 | 22.69 | 0.18 |
| Total | 24 | 3000 | 367 | 362.00 | 15.29 | .12 | 15.08 | 0.12 |

Table 8. Number of Specimens Taken in Seines from Lake Austin, March 1956 through May 1956.

| Fish Species | March | April | May | Total | % of Total |
|-----------------------|-------|-------|-----|-------|------------|
| <u>D. cepedianum</u> | 87 | 0 | 3 | 90 | 12.43 |
| <u>N. roseus</u> | 6 | 2 | 0 | 8 | 1.10 |
| <u>N. venustus</u> | 61 | 256 | 46 | 363 | 50.14 |
| <u>N. lutrensis</u> | 1 | 1 | 14 | 16 | 2.21 |
| <u>F. notatus</u> | 6 | 3 | 3 | 12 | 1.66 |
| <u>G. Affinis</u> | 12 | 0 | 0 | 12 | 1.66 |
| <u>M. treculi</u> | 0 | 0 | 1 | 1 | 0.14 |
| <u>M. salmoides</u> | 7 | 9 | 14 | 30 | 4.15 |
| <u>L. cyanellus</u> | 1 | 0 | 0 | 1 | 0.13 |
| <u>L. microlophus</u> | 16 | 2 | 8 | 26 | 3.59 |
| <u>L. macrochirus</u> | 92 | 14 | 48 | 154 | 21.28 |
| <u>L. auritus</u> | 9 | 0 | 0 | 9 | 1.24 |
| <u>L. megalotis</u> | 0 | 1 | 0 | 1 | 0.14 |
| <u>F. annularis</u> | 0 | 0 | 1 | 1 | 0.14 |
| Total | 298 | 288 | 138 | 724 | 100.00 |

Table 9. Number of Specimens Taken in Seines from Lake Austin, April 1951 through April 1952.

| Fish Species | April thru July, 1951 | August thru October 1951 | February thru April 1952 | Total Number | % of Total |
|------------------------|--------------------------|-----------------------------|-----------------------------|--------------|------------|
| <u>D. cepedianum</u> | 2519 | 109 | 3 | 2631 | 37.29 |
| <u>Cyprinus carpio</u> | 2 | 0 | 0 | 2 | .03 |
| <u>N. crysoleucas</u> | 2 | 0 | 0 | 2 | .03 |
| <u>O. emiliae</u> | 2 | 0 | 0 | 2 | .03 |
| <u>N. roseus</u> | 2 | 14 | 10 | 26 | .37 |
| <u>N. venustus</u> | 1429 | 420 | 102 | 1951 | 27.65 |
| <u>N. lutrensis</u> | 143 | 7 | 8 | 158 | 2.25 |
| <u>P. vigilax</u> | 45 | 4 | 4 | 53 | .76 |
| <u>F. promelas</u> | 1 | 0 | 0 | 1 | .01 |
| <u>C. anomalum</u> | 4 | 0 | 0 | 4 | .06 |
| <u>L. notatus</u> | 1 | 2 | 2 | 5 | .07 |
| <u>G. affinis</u> | 94 | 9 | 29 | 132 | 1.87 |
| <u>M. punctulatus</u> | 41 | 0 | 6 | 47 | .67 |
| <u>M. salmoides</u> | 118 | 185 | 17 | 320 | 4.53 |
| <u>C. coronarius</u> | 11 | 17 | 3 | 31 | .44 |
| <u>L. cyanellus</u> | 1 | 0 | 0 | 1 | .02 |
| <u>L. punctatus</u> | 30 | 71 | 0 | 101 | 1.43 |
| <u>L. microlophus</u> | 97 | 186 | 80 | 363 | 5.14 |
| <u>L. macrochirus</u> | 602 | 458 | 63 | 1123 | 15.92 |
| <u>P. annularis</u> | 0 | 0 | 1 | 1 | .02 |
| <u>P. caprodes</u> | 15 | 14 | 3 | 32 | .45 |
| <u>C. cyanoguttata</u> | 18 | 50 | 0 | 68 | .97 |
| Totals | 5177 | 1546 | 331 | 7054 | 100.00 |

Table 10. Combined 1951-53 and 1956 Seining Totals.

| Fish Species | Number | Percent of Number |
|------------------------|--------|-------------------|
| <u>D. cepedianum</u> | 2721 | 34.98 |
| <u>Cyprinus carpio</u> | 2 | 0.02 |
| <u>N. crysoleucas</u> | 2 | 0.03 |
| <u>O. emilise</u> | 2 | 0.03 |
| <u>N. roseus</u> | 34 | 0.43 |
| <u>N. venustus</u> | 2314 | 29.75 |
| <u>N. lutrensis</u> | 174 | 2.24 |
| <u>P. vigilax</u> | 53 | 0.68 |
| <u>P. promelas</u> | 1 | 0.01 |
| <u>G. anomalum</u> | 4 | 0.06 |
| <u>F. notatus</u> | 17 | 0.21 |
| <u>C. affinis</u> | 144 | 1.86 |
| <u>M. treculi</u> | 1 | 0.01 |
| <u>M. punctulatus</u> | 47 | 0.60 |
| <u>M. salmoides</u> | 350 | 4.50 |
| <u>C. coronarius</u> | 31 | 0.40 |
| <u>L. cyanellus</u> | 2 | 0.03 |
| <u>L. punctatus</u> | 101 | 1.30 |
| <u>L. microlophus</u> | 389 | 5.00 |
| <u>L. macrochirus</u> | 1277 | 16.42 |
| <u>L. auritus</u> | 9 | 0.11 |
| <u>L. megalotis</u> | 1 | 0.01 |
| <u>P. annularis</u> | 2 | 0.03 |
| <u>C. caprodes</u> | 32 | 0.42 |
| <u>C. cyanogutta</u> | 68 | 0.87 |
| Totals | 7778 | 100.00 |