

Report of Fisheries Investigation  
Resurvey and Appraisal of Several  
Public Waters in Region 3-B

by

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Dingle-Johnson Project F-5-R-8, Job B-22  
April 1, 1960 - February 28, 1961

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#### A B S T R A C T

Lake Kirby and Lake Sweetwater, on the Clear Fork of the Brazos River Watershed, were resurveyed. The Colorado River in Mitchell County, and Lakes Santana, Sealy, Nasworthy, North Concho, Oak Creek, Colorado City, Champion Creek and J. B. Thomas, on the Colorado River Watershed, were resurveyed. Imperial Reservoir and three spring areas near Balmorhea on the Pecos River Watershed were resurveyed. Nets were set in Lake Ascarate, on the Rio Grande River Watershed, after management work had been conducted. Devil's Lake and Lake Walk, on the Devil's River Watershed, were resurveyed. A total of 202 netting collections and 14 seining collections was obtained.

Although several minor proposals were recommended for some of the lakes resurveyed, no major reclamation work was proposed for the next segment.

JOB COMPLETION REPORT

State of Texas

Project No. F-5-R-8

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

Job No. B-22

Title Resurvey and Appraisal of Several  
Public Waters in Region 3-B

Period Covered April 1, 1960 - February 28, 1961

Objectives:

- A. To study changes in abundance and in the physical condition of the principal fishery populations within the waters previously surveyed and as may occur.
- B. To determine the ecological succession of dominance of various species, and to evaluate the conditions that influence and/or create such trends.
- C. To more accurately determine and define the extent and duration of conditions affecting the dominance, and to determine what methods may be employed to bring about conditions favorable to the propagation and harvesting of game species.
- D. To maintain an up-to-date knowledge of the various waters so that reliable and accurate data will be available in considering future management plans and recommendations.

Procedure:

A total of 202 netting collections and 14 seining collections was obtained during the segment. A netting collection is one gill net set overnight in a single location. A seining collection is considered to be the effective and/or thorough seining of a small area, such as a beach, inlet, hole, or bar, regardless of the number of drags involved. The fish populations of 14 lakes, one area of the Colorado River, and three spring areas on the Pecos River Watershed were sampled by netting or seining, or by both methods.

Most nets used were experimental type nylon gill nets, measuring 125 feet in length, and 8 feet in depth. They were made up in five 25-foot sections with mesh sizes varying from 1-inch square mesh to 3-inch square mesh. The nets increased by  $\frac{1}{2}$ -inch intervals in each succeeding section. Several other nets were used for more specific sampling that had similar dimensions to the experimental type nets, except that they were made up entirely of 1,  $1\frac{1}{2}$ , 2 or 3-inch meshes.

Various types of seines were employed, including a 12-foot commonsense seine, a 25-foot  $\frac{1}{4}$ -inch mesh straight seine, and a 30-foot  $\frac{1}{4}$ -inch mesh bag seine.

Hoop and/or fyke nets were not employed because these devices require more time to produce an adequate sample than was normally available.

Findings:

Lake Kirby This lake is located on the southern outskirts of Abilene. It contains 8,754 acre feet of water, and covers 800 acres at spillway capacity. The principal purpose of Lake Kirby is for municipal water.

Sixteen netting collections indicated that the fish population is still much as it was during the initial inventory of 1959 and 1960. The use of two 1-inch mesh gill nets must be taken into consideration when analyzing the data obtained during resurvey, since only experimental type nets were used during the initial inventory. These two nets produced large numbers of gizzard shad (Dorosoma cepedianum) and white crappie (Pomoxis annularis). Netting samples previously taken from the lake had indicated large populations of each of these species. Together these species composed over 90 per cent of the resurvey netting collection. The white crappie averaged only 4.5 ounces in weight, and in this average were included several crappie weighing from 1 to slightly more than 2 pounds. Even with these few large individuals, it appears that most crappie in Lake Kirby never reach a desirable size.

The results of the resurvey netting further validates the contention expressed in the initial survey job completion report that largemouth bass (Micropterus salmoides) do not successfully reproduce in Lake Kirby. No bass were captured in netting, and very few are reported caught by fishermen. Those few taken by fishermen are probably the result of stocking by the state hatcheries.

The average weight of river carpsucker (Carpiodes carpio) was, as in the initial survey, extremely low. Carp (Cyprinus carpio) and river carpsucker constituted about the same percentage of the netting sample as they had previously.

Channel catfish (Ictalurus punctatus) are still abundant in the lake, and are frequently taken by anglers. Although no flathead catfish (Pylodictus olivaris) are reported in the netting tabulations (Figures 1 and 2), there were 11 of these fish captured for experimental purposes by personnel from Project F-9-R. These fish were taken in larger mesh than that used for resurvey. Anglers continue to catch flatheads even though trotlining is prohibited by local ordinance.

During the resurvey period, the water in Lake Kirby was over 12 feet below spillway elevation. Turbidity was characteristically high. No new species and no new fisheries problems were discovered. No recommendations for fishery management procedures are made at this time.

Lake Sweetwater This lake is located 9 miles southeast of Sweetwater. At spillway capacity, the lake contains 11,500 acre feet of water.

During August, 1961, a complete eradication of fish was effected. Complete details of this treatment are given in the completion report for Job No. 16a23 of Project No. F-14-D-4. Although 1,875 feet of gill net were set after the treatment, the only fish captured was one small channel catfish.

The details of the restocking of this lake with hatchery reared game fish are given in the job completion report for Job No. 18a11 of Project No. F-14-D-5.

#### Colorado River Watershed

Colorado River Two seining collections were obtained at Pecan Crossing on the Upper Colorado River in southeastern Mitchell County. A new dam is to be constructed by the Upper Colorado River Municipal Water District at a site immediately below the seining stations. The results of this seining is given in Figure 3.

The primary purpose of this seining was to capture native minnows to restock in Lake Sweetwater. This work is reported on in the completion report for Job S-1 of Project No. F-5-R-8. It is also desirable to have the information gathered by seining for future reference when the time comes for preimpoundment management recommendations to be made.

Construction work on the new dam will not commence until salt water wells on the watershed have been plugged. This work is being undertaken by the Upper Colorado Municipal Water District with headquarters in Big Spring. The job completion reports for Job C-1 of Project F-5-R report this pollution.

Lake Santana This lake is located  $4\frac{1}{2}$  miles northeast of Santa Anna. At spillway capacity, the lake covers 92 surface acres. The exact volume of water contained at this level is unknown.

A complete eradication of fish species and restocking with hatchery reared game fish was effected under Project F-14-D-4 during September and October, 1959. Nets set in the clear waters of Lake Santana during April and June, 1960, failed to catch any fish. However, in February, 1961, four  $1\frac{1}{2}$ -inch mesh gill nets, measuring 125 feet in length and 8 feet in depth, were set. These nets captured the 20 largemouth bass reported in Figure 4. These fish were in excellent physical condition, and many were sexually mature. Although channel catfish and redear sunfish (Lepomis microlophus) have been stocked, no fish other than largemouth bass were captured in the nets.

The only explanations that can be given for not catching any fish in April and June are that the water was too clear for bass to enter the nets, or that they were too small at that time to be captured in the experimental type gill nets used. If these fish were too small to be captured, the reason might be that the toxephene used in the treatment procedure kept the fishes' food supply eradicated for several months during which time they failed to grow. If this condition existed, it would also explain the failure of the nets to capture redear bream and channel catfish. Other reasons for the absence of sunfish and catfish might be that the toxephene was still active and on the bottom of the lake, thus killing the fish. It is also possible that the bass caught and ate most of them.

Seining collections were impossible to obtain due to the abrupt slope of the shore and obstructions in the water.

Lake Santana was filled to near spillway capacity during the winter and spring following the eradication program. This factor probably accounts for the high coefficient of condition (k) of largemouth bass the next winter.

It is recommended that more intensive reconnaissance be conducted at this lake during the following segment, and that additional channel catfish be stocked from the state hatcheries.

Lake Sealy This lake is owned by the City of Santa Anna, who also owns Lake Santana, and is used primarily for a municipal water supply. The lake covers approximately 45 surface acres and contains 380 acre feet of water when full. It is located  $5\frac{1}{2}$  miles northeast of Santa Anna, and 1 mile north of Lake Santana.

A complete eradication and restocking program was conducted at this lake in November, 1957, under Project F-14-D-1. Five experimental nylon gill nets were set in June, 1960, and two more were set in February, 1961. Gizzard shad, black bullheads, bluegills, and white crappie have become reintroduced in the lake. A water line from Lake Brownwood, which is used to help fill Lake Sealy, is probably responsible for this reintroduction. The average size of these bluegills and crappie was very small. No largemouth bass were captured in the nets, although anglers reported some good catches. Seven channel catfish captured averaged only four ounces. These were probably young fish. More intensive netting would have undoubtedly produced some larger channel catfish. Figures 5 and 6 report the results of the netting collections.

More extensive netting of this lake should be done during the coming reconnaissance in order to determine the relative abundance of largemouth bass, and the status of channel catfish. The shores of Lake Sealy are not compatible with the use of long seines. If largemouth bass are not captured in significant numbers in gill nets, then fingerlings should be stocked from the state hatcheries.

Lake Nasworthy This lake is located approximately 6.5 miles southwest of San Angelo. At spillway capacity, it contains 12,390 acre feet of water and covers 1,300 acres. It is used for a municipal water supply and has, in recent years, been a heavily utilized recreational area.

The results of 39 nets set indicate that this lake is becoming progressively more dominated by rough and undesirable species. These nets were set during September and December, 1960, and February, 1961. Many of the fish captured were saved alive for use in Job E-43. Gizzard shad and river carpsuckers constituted over 72 per cent of the collections (Figure 7). Over 80 per cent of the fish in the netting sample (Figure 8) were rough species. In the resurvey data collected under F-5-R-7, river carpsuckers did not appear to be as abundant (16.02 per cent) as had been previously indicated. However, in the current resurvey sampling, this species constituted again a large percentage (47.48 per cent) of the total captured.

In spite of the great dominance by rough species in Lake Nasworthy, there are still many desirable channel catfish and flathead catfish taken by anglers. The proximity of this lake to the City of San Angelo enables many local citizens to keep trotlines baited, and this factor probably accounts for much of the fishing success on these species, even though the fish caught per man hour of fishing is likely very low. There is probably a higher percentage of flathead catfish in the lake than the netting sample indicates, however, as no mesh larger than three inches was available to sample these larger fish. Some success is occasionally reported by fishermen in catching white crappie. Most of the crappie captured by netting were very small.

The water level has been maintained at or near spillway level during most of the reporting period. Bulrushes (*Scirpus*) and to a lesser extent cattails (*Typhus*) are still a major problem in that they restrict shoreline areas. Yellow water lilies (*Numphar* sp.) are becoming more prevalent each year in the shallow water areas. However, many acres of shoreline have been made available to the public by the management effort conducted under Project F-15-D-2, Job 15a7.

The construction of a large new dam immediately above Lake Nasworthy has been started. This new lake will serve to keep the water in Lake Nasworthy at a constant level. It may also afford the opportunity to eradicate the existing fish populations. Much of the water in Lake Nasworthy could be released and the remaining pools treated very economically. The lake could then be refilled from the new lake immediately above it on the watershed and restocked with game fish. A recommendation to this effect has been presented to and endorsed by the City of San Angelo, who owns and operates the lake.

San Angelo Reservoir This lake, located adjacent to the northwest residential section of San Angelo, contains 119,188 acre feet at conservation capacity. The primary use of the dam is for flood control, although the water contained in the lake serves as a reserve for the City of San Angelo.

Ten nets were set in November, 1960, in this lake. River carpsuckers dominated the sample of fish obtained. Large carp and gizzard shad constituted the rest of the rough fish captured in the nets. These species composed 65.55 per cent of the netting sample (Figure 10). The results of the netting by individual species is given in Figure 9. Channel catfish were the principal game species taken. Many large channel catfish are caught on trotlines by local anglers. Also, a great many white bass (*Roccus chrysops*) are hooked by fishermen in this lake. No white bass were captured in the small netting sample, but this is undoubtedly a sampling error induced by insufficient data. Besides channel catfish, and white bass, the other game species most often taken by anglers is white crappie. Most of these fish are very small. The average weight of those taken by netting was only one ounce.

San Angelo Reservoir has contained about 90,000 acre feet of water throughout the segment. This level is approximately 30,000 acre feet below conservation pool capacity. Even at this reduced level, the lake covers a large area. This area is all in one vast expanse with few sloughs or islands. Because of this large open area, the lake is always rough when the wind is blowing, which is detrimental to fishing. Even so, this lake is heavily utilized by the public and on many weekends, the launching areas and other facilities are overcrowded. Because of this heavy use by people from all over West Texas, it may be advisable in time of drought and low water to recommend that either partial or complete fisheries renovation work be attempted.

Oak Creek Lake This lake is located three miles southeast of Blackwell. At emergency spillway, there are 1,500 acres and 52,900 acre feet of water in it.

Figures 11 and 12 show the results of eight nets set during July, 1960. These nets captured 543 fish. However, 325 were bluegill sunfish and white crappie. These two species are both highly overpopulated in the lake, and their average size is only 2 ounces. River carpsuckers and carp have likewise increased in relative abundance since previous nettings. Carpsuckers constituted nearly 14 per cent of the sample by number and 31 per cent by weight. Oak Creek Lake still produces much good fishing. Many channel catfish and largemouth bass are caught and at times large redear sunfish are a prime fishery. The lake patrolman also reports that a number of small (less than one pound) flathead catfish have been taken recently by sunfish anglers. This being the case, it seems evident that the few large flatheads occurring in Oak Creek Lake have finally spawned successfully.

It will be advisable to recheck the fish populations of this lake during the following segment, because of the indication of a rising carpsucker population, and because of the presently low water level. Indications are that when water levels are low and fish populations are crowded, the progress of carpsuckers dominance is accelerated. Also, the status of flathead catfish in the lake should be determined by netting rather than by word of mouth.

Lake Colorado City This lake is located five miles southwest of Colorado City. At service spillway, there are 2,030 acres covered by the lake, and 31,800 acre feet of water contained in it. The principal use of water is as a cooling agent for a power plant located on the shore. Because of this hydro-electric power plant, one-half of the lake's surface area is restricted to the public.

The results of 12 nets set in Lake Colorado City are given in Figures 13 and 14. All netting information from the restricted and unrestricted areas presented separately as it was in the original survey. Only 104 fish were obtained from these 12 nets, and this sample is probably not adequate for accurate representation of each species. From this data, however, it appears that river carpsuckers are gaining in dominance. Other fish populations appear to be in desirable ratios. Gizzard shad composed only 5.76 per cent of the netting sample and white crappie had an average weight of 6.6 ounces.

Five seining collections were obtained from this lake. The results of these collections are given in Figure 15. Gizzard shad were numerous in the seining collections, but most individuals were small enough to be utilized by other fish as forage. Spottail shiners (*Notropis venustus*) appear to be the dominant minnow in the lake at the present time.

Fishing at this lake reflects the desirable fish populations found by netting. A great many white crappie, largemouth bass and channel catfish are taken. There are also many flathead catfish caught on trotlines from the lake. None of these fish were captured by netting during the resurvey, but this is regarded as an inequitable indication of their relative abundance because the size mesh was too small.

The water level in the lake has remained relatively stable. Warm water discharge from the electro-power plant apparently continues to attract catfish to that area. The only recommendation that can be made at this time is that part of the restricted area be made unrestricted so that the public can have more access to these concentrations of catfish. However, this recommendation cannot be effected by the power company operating the lake until the public shows its willingness to cooperate by not crossing over the existing markers and entering the restricted area. Continued public violation of the restricted area would create a hazardous situation with less restricted area because of the huge water intake.

Champion Creek Reservoir This new lake, presently containing 10,000 acre feet of water, is located 12 miles north of Colorado City. Thirteen nets were set in it during the segment. Figures 16 and 17 show the results of these collections. This lake and watershed were treated in 1959 under Job 16a15 of Project F-14-D-3 for complete eradication of existing fish populations. This treatment was apparently successful. Largemouth bass appear to be growing very fast, and have a relatively high coefficient of condition (K factor). However, bluegill sunfish, golden shiners and black bullheads have either somehow become introduced into the lake or a small brood stock of these species survived the treatment.

Four seining collections were made, and the results of these are given in Figure 18. Green sunfish (Lepomis cyanellus) were very abundant in these collections. These fish were nearly all so small that they could not be captured in nets. Redhorse shiners (Notropis lutrensis) appear to be very abundant.

This lake has much rugged terrain associated with its shoreline. These large rocks and cut banks would probably be excellent catfish habitat if the lake would fill up and inundate them. None of the catfish reported stocked by the state hatcheries were recovered either by netting or seining.

Partially because of the rugged shoreline, but mostly because of a lack of agreement between the City of Colorado City and the Texas Electric Company, who constructed the lake, access is very limited. At the present time, most access is over private land, and a small stipend has to be paid by the fishermen for the use of this convenience. Colorado City and the Texas Electric Company are presently negotiating on a contract that would open the lake to the public.

Lake J. B. Thomas This lake is located ten miles west of Ira, and at maximum storage capacity, 220,000 acre feet of water are contained. This water is used for municipal and industrial needs in the cities of Snyder, Big Spring and Odessa.

A total of 41 nets were set in Lake Thomas during the reporting period. Figures 19 and 20 report the netting data. Channel catfish were the most abundant species in the netting collections. The large rocks and caves in this lake no doubt promote the reproduction of this species. White bass and gizzard shad were also numerous in the netting collections. White bass support much fishing pressure in Lake Thomas, and the large number of shad no doubt supports many white bass. Even so, shad are probably more numerous than would be necessary to sustain a large population of desirable size white bass. Although river carpsucker were not excessive in the netting sample obtained, this species is potentially a problem. Largemouth bass were represented in the netting sample after being absent in the resurvey data collected during F-5-R-7. This lake is presently full, and this increased water level may have been beneficial to the reproduction of this species.

The average size of white crappie captured was only 1.9 ounces. However, strings of larger sized crappie are occasionally produced by fishermen. For these reasons, the status of crappie is not definitely known. Possibly some year groups are stunted while others have reached a desirable size.

The Upper Colorado River Municipal Water District, who owns and operates the lake, has indicated a willingness to initiate practically any type of experimental management program at the lake that the Game and Fish Commission will endorse. Much investigation into the type of program that is needed at Lake Thomas should be forthcoming during the following segments, if the lake's fishery population becomes dominated by rough fish.

#### Pecos River Watershed

Lake Imperial This reservoir is located ten miles northwest of the City of Imperial. At maximum storage, this irrigation reservoir covers 895 acres and contains 2,800 acre feet of water.

Twelve netting collections were obtained from Lake Imperial during the segment. Longnose gar (Lepisosteus osseus) were the most numerous fish in the netting sample. These fish are abundant in the Pecos River, and there is a canal from the river that feeds Lake Imperial. Gizzard shad were the next most abundant species captured. River carpsucker were also plentiful. Rough fish composed 86.80 per cent of the netting sample. The game fish that was most abundant in netting collections and also that is taken most frequently by anglers is white bass. The average size of white bass taken in nets was one pound and 4.8 ounces. The results of netting is given in Figures 21 and 22.

Marine species introduced into Lake Imperial appear to be growing very rapidly. Insufficient time has lapsed since they were stocked for their reproduction to occur. The details of this stocking are reported in Job E-1 of F-5-R-8.

Apparently largemouth bass and channel catfish do not successfully reproduce in Lake Imperial. The chloride content of the water (2,400 to 4,000 p.p.m.) is possibly high enough to be prohibitive to the successful reproduction of largemouth bass. A lack of adequate spawning habitat may be accountable for the scarcity of channel catfish. Both of these species are occasionally stocked in the lake from the state hatcheries.

Since the ecology, physical characteristics and water quality of Lake Imperial are seemingly more subject to the establishment of a marine fishery than are similar factors at most other lakes, it is deemed advisable to continue the attempt to obtain desirable marine species for the lake rather than to heavily stock largemouth bass and channel catfish.

Spring Areas in Reeves County Three springs near Balmorhea on the upper watershed of the Pecos River were seined. The results of this seining are given in Figure 23. The mosquitofish captured have not as yet been positively identified as they are not included in any of the keys available. However, a sample of these fish will be taken to Dr. Clark Hubbs at the University of Texas for positive identification.

#### Rio Grande Watershed

Lake Ascarate In August, 1960, a complete fish eradication and vegetation control was conducted at this lake located near El Paso. The results of these treatments and restocking are given in the reports for Job 16a29 of Project F-14-D-4, Job 18a15 of Project F-14-D-5 and Job 15a11 of Project F-15-D-2.

No fish were taken from four nets set in the lake in January, 1961. It is not known if the fish that were stocked by the hatcheries after the eradication program survived. For this reason, it is recommended that additional largemouth bass, channel catfish and redhorse shiners be stocked in the lake.

Devil's River Watershed

Devil's Lake This lake, located eight miles northwest of Del Rio covers 440 surface acres and contains 10,750 acre feet of water at spillway capacity. The chief function of this dam is for hydro-electric power and flood control. Recreation is an important secondary usage.

In January, 1961, eight nets were set in Devil's Lake. The fish that were obtained from these nets were counted, but were not weighed or measured as every precaution was being taken to keep them alive for use in Job E-3. However, the numerical results of this netting collection are given in Figures 24 and 25. Gizzard shad and river carpsuckers were the most numerous game species. The wide variety and quantity of species captured was surprising because the water was very clear and very cold at the time of netting. More information should be obtained on this lake during the next segment since a new dam on the Rio Grande River will inundate it. Devil's Lake might be used to advantage in the management of the proposed new lake. A complete kill of all fish in Devil's Lake could be effected. Restocked largemouth bass and channel catfish would have time to become brooders before the new dam is closed and Devil's Lake inundated.

Lake Walk This 250 surface acre lake contains 3,500 acre feet of water when at spillway elevation. It is located six miles northwest of Del Rio, immediately below Devil's Lake. Hydro-electric power and recreation are its main uses.

At the same time Devil's Lake was netted, the fish population of Lake Walk was also sampled. Eight nets were set, and the fish obtained were saved for Job E-3. The results of the netting are given in Figures 26 and 27. Gizzard shad and river carpsuckers were the most abundant rough fish, but gray redhorses (Moxostoma congestum) were also abundant. Channel catfish were the only numerous game fish. Game fish accounted for only 36.42 per cent of the total netting collections. More information should be obtained concerning this lake during the coming segment. A management procedure such as the one mentioned under the discussion of Devil's Lake might be employed before the new lake on the Rio Grande River is filled.

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Figure 1. Results of 16 netting collections obtained from Lake Kirby from April 1, 1960, to February 28, 1961

Species	Number	Per Cent by Number	Total Weight Lbs.	Oz.	Avg. Weight Lbs.	Oz.	Per Cent by Weight	Avg. K
Gizzard shad	905	59.50	14	13	2.6	2.6	4.51	1.72
Smallmouth buffalo	7	.46	22	1	3	2.4	6.73	2.59
River carpsucker	35	2.30	12	2	5.5	5.5	3.69	2.35
Carp	48	3.15	75	6	1	9.1	22.98	2.32
Channel catfish	51	3.36	70	2	1	6.0	21.37	1.44
White crappie	475	31.23	133	9	4.5	4.5	40.72	2.51
Totals	1521	100.00	328	1			100.00	

Figure 2. A comparison of rough and/or forage species to game species obtained from Lake Kirby from April 1, 1960, to February 28, 1961

Species	Number	Per Cent by Number	Total Weight Lbs.	Per Cent by Weight
Rough species (Gizzard shad, Smallmouth buffalo, River carpsucker, Carp)	995	65.42	124 6	37.91
Game species (Channel catfish, White crappie)	526	34.58	203 11	62.09
Totals	1,521	100.00	328 1	100.00

Figure 3. Results of two seining collections obtained at Pecan Crossing, Mitchell County, on the Upper Colorado River (above the site of a new dam) on January 5, 1960

Species	Number	Per Cent by No.
Gizzard shad	3	4.16
River carpsucker	2	2.78
Golden shiner	1	1.39
Speckled chub	1	1.39
Redhorse shiner	47	65.28
Parrot minnow	1	1.39
Flathead minnow	12	16.67
Channel catfish	3	4.16
Plains killifish	1	1.39
Mosquitofish	1	1.39
Total	72	100.00

Figure 4. Results of 12 netting collections obtained from Lake Santana from April 1, 1960, to February 28, 1961

Species	Number	Per Cent by Number	Total Weight Lbs.	Total Weight Oz.	Avg. Weight lb.	Avg. Weight Oz.	Per Cent by Weight	Avg. K
Largemouth bass	20	100.00	22	11	1	2.15	100.00	2.85
Totals	20	100.00	22	11			100.00	

Figure 5. Results of 7 netting collections obtained from Lake Sealey from April 1, 1960, to February 28, 1961

Species	Number	Per Cent by Number	Total Weight Lb.	Oz.	Avg. Weight Lb.	Oz.	Per Cent by Weight	Avg. K
Gizzard shad	1	3.03	1	4	1	4.0	12.90	1.90
Channel catfish	7	21.21	1	12		4.0	18.06	1.37
Black bullhead	2	6.06	1	11		13.6	17.42	1.88
Bluegill sunfish	5	15.15		8		1.7	5.16	3.50
White crappie	18	54.55	4	8		4.5	46.46	2.00
Totals	33	100.00	9	11			100.00	

Figure 6. A comparison of rough and/or forage species to game species obtained from Lake Sealey from April 1, 1960, to February 28, 1961

Species	Number	Per Cent by Number	Total Weight Lb.	Oz.	Per Cent by Weight
Rough species (Gizzard shad, Black Bullhead)	3	9.09	2	15	30.32
Game species (Channel catfish, Bluegill sunfish, White crappie)	30	90.91	6	12	69.68
<b>Totals</b>	<b>33</b>	<b>100.00</b>	<b>9</b>	<b>11</b>	<b>100.00</b>

Figure 7. Results of 39 netting collections obtained from Lake Nasworthy from April 1, 1960, to February 28, 1961

Species	Number	Per Cent by Number	Total Weight Lbs.	Total Weight Oz.	Avg. Lbs.	Avg. Weight Oz.	Per Cent by Weight	Avg. K
Longnose gar	4	.38	4	4	1	1.0	.25	.47
Gizzard shad	257	24.45	32	2		2.0	1.90	1.68
River carpsucker	499	47.48	1278	11	2	9.0	75.58	2.48
Carp	86	8.18	107	8	1	4.0	6.35	2.34
Channel catfish	48	4.57	99		2	1.0	5.85	No lengths*
Flathead catfish	11	1.04	50	14	4	10.0	3.01	1.62
White bass	49	4.67	42	14		14.0	2.53	2.24
Largemouth bass	16	1.52	34		2	2.0	2.01	2.25
Bluegill sunfish	2	.19		4		2.0	.02	3.54
White crappie	76	7.23	38			8.0	2.25	2.46
Freshwater drum	3	.29	4	4	1	6.7	.25	1.85
Totals	1051	100.00	1691	13			100.00	

\*These fish were kept alive for use in Job E-3

Figure 8. A comparison of rough and/or forage species to game species obtained from Lake Nasworthy from April 1, 1960, to February 28, 1961

Species	Number	Per Cent by Number	Total Weight Lbs.	Oz.	Per Cent by Weight
<b>Rough species</b>					
(Longnose gar, Gizzard shad, River carpsucker, Carp, Freshwater drum)	849	80.78	1426	13	84.34
<b>Game species</b>					
(Channel catfish, Flathead catfish, White bass, Large- mouth bass, Bluegill sunfish, White crappie)	202	19.22	265		15.66
<b>Totals</b>	<b>1051</b>	<b>100.00</b>	<b>1691</b>	<b>13</b>	<b>100.00</b>

Figure 9. Results of 10 netting collections obtained from San Angelo Reservoir from April 1, 1960, to February 28, 1961

Species	Number	Per Cent by Number	Total Weight Lb. Oz.	Avg. Weight Lb. Oz.	Per Cent by Weight	Avg. K
Gizzard shad	10	11.11	2 5	3.7	1.82	1.30
River carpsucker	41	45.55	76 4	13.8	60.04	2.66
Carp	8	8.89	24 10	1.3	19.39	1.94
Channel catfish	13	14.45	17 5	5.3	13.63	1.37
Largemouth bass	1	1.11	1 1	0.0	.78	2.07
Bluegill sunfish	6	6.66	7	1.2	.35	2.62
White crappie	11	12.23	5 1	7.4	3.99	2.18
Totals	90	100.00	127		100.00	

Figure 12. A comparison of rough and/or forage species to game species obtained from Oak Creek Lake from April 1, 1960, to February 28, 1961

Species	Number	Per Cent by Number	Total Weight Lb.	Per Cent by Weight
Rough species (River carpsucker, Carp Black bullhead)	125	23.02	292	66.68
Game species (Channel catfish, White bass, Largemouth bass, Yellowbelly sunfish, Redear sunfish, Bluegill sunfish, White crappie)	418	76.98	146	33.32
Totals	543	100.00	438	100.00

Figure 13. Results of 12 netting collections obtained from Lake Colorado City from April 1, 1960, to February 28, 1961

Species	Number	Per Cent by Number	Total Weight		Avg. Weight		Per Cent by Weight	Avg. K
			Lb.	Oz.	Lb.	Oz.		
Gizzard shad	6	5.76	1	2	3.0		.91	1.63
River carpsucker	42	40.39	53	8	1	4.4	43.56	2.24
Channel catfish	19	18.27	36	3	1	14.5	29.47	1.75
Flathead catfish	1	.96	1	9	1	9.0	1.27	1.58
Largemouth bass	4	3.85	17	1	4	4.3	13.89	2.74
White crappie	32	30.77	13	6		6.7	10.90	2.83
<b>Totals</b>	<b>104</b>	<b>100.00</b>	<b>122</b>	<b>13</b>			<b>100.00</b>	

Figure 14. A comparison of rough and/or forage species to game species obtained from Lake Colorado City from April 1, 1960, to February 28, 1961

Species	Number	Per Cent by Number	Total Weight Lb.	Oz.	Per Cent by Weight
Rough species (Gizzard shad, River carpsucker)	48	46.15	54	10	44.48
Game species (Channel catfish, Flathead catfish, Largemouth bass, White crappie)	56	53.85	68	3	55.52
Totals	104	100.00	122	13	100.00

Figure 15. Results of 5 seining collections obtained from Lake Colorado City on July 21, 1960

Species	Number	Per Cent by No.
Gizzard shad	49	42.24
Spottail shiner	44	37.93
Redhorse shiner	2	1.72
Mimic shiner	1	.86
Largemouth bass	3	2.59
Bluegill sunfish	17	14.66
Totals	116	100.00

Figure 16. Results of 13 netting collections obtained from Champion Creek Lake from April 1, 1960, to February 28, 1961

Species	Number	Per Cent by Number	Total Weight Lb.	Oz.	Avg. Weight Lb.	Oz.	Per Cent by Weight	Avg. K
Golden shiner	2	2.89	5	2.5	1.81	.37	1.81	
Channel catfish	3	4.35	11	4	3	12.0	13.66	1.82
Black bullhead	29	42.03	17	8	1	9.7	21.25	2.48
Largemouth bass	28	40.58	52	3	1	13.8	63.35	2.94
Bluegill sunfish	7	10.15	1	2	2	2.6	1.37	3.18
Totals	69	100.00	82	6			100.00	

Figure 17. A comparison of rough and/or forage species to game species obtained from Champion Creek Lake from April 1, 1960, to February 28, 1961

Species	Number	Per Cent		Total Weight		Per Cent by Weight
		by Number		Lb.	Oz.	
Rough species (Golden shiner, Black bullhead)	31	44.93	17	13		21.62
Game Species (Channel catfish, Largemouth bass, Bluegill sunfish)	38	55.07	64	9		78.38
<b>Totals</b>	<b>69</b>	<b>100.00</b>	<b>82</b>	<b>6</b>		<b>100.00</b>

Figure 18. Results of 4 seining collections obtained from  
Champion Creek Lake on July 21, 1960

Species	Number	Per Cent by Number
Redhorse shiner	44	36.97
Largemouth bass	60	50.42
Green sunfish	15	12.61
<b>Totals</b>	<b>119</b>	<b>100.00</b>

Figure 19. Results of 41 netting collections obtained from Lake J. B. Thomas from April 1, 1960, to February 28, 1961

Species	Number	Per Cent by Number	Total Weight Lb.	Oz.	Avg. Weight Lb.	Oz.	Per Cent by Weight	Avg. K
Gizzard shad	131	18.87	20	7	2.5	2.5	5.36	1.31
River carpsucker	47	6.77	47	15	1	.3	12.58	2.24
Carp	12	1.73	23	7	1	15.3	6.14	2.53
Channel catfish	264	38.04	122	15	7.5	7.5	32.26	1.44
Flathead catfish	5	.72	No weights or measurements taken					
White bass	118	17.01	143	12	1	3.5	37.72	2.24
Largemouth bass	4	.57	8	7	2	1.8	2.21	2.38
Bluegill sunfish	16	2.31	2	4		2.3	.59	3.14
White crappie	97	13.98	11	15		2.0	3.14	2.41
Totals	694	100.00	381	2			100.00	

Figure 20. A comparison of rough and/or forage species to game species obtained from Lake J. B. Thomas from April 1, 1960, to February 28, 1961

Species	Number	Per Cent by Number	Total Weight Lb.	Per Cent by Weight
<b>Rough species</b>				
(Gizzard shad, River carpsucker, Carp)	190	27.38	91	24.09
<b>Game species</b>				
(Channel catfish, Flathead catfish, White bass, Large- mouth bass, Bluegill sunfish, White crappie)	504	72.62	289	75.91
<b>Totals</b>	694	100.00	381	100.00

Figure 21. Results of 12 netting collections obtained from Lake Imperial from April 1, 1960, to February 28, 1961

Species	Number	Per Cent by Number	Total Weight Lb.	Oz.	Avg. Weight Lb.	Oz.	Per Cent by Weight	Avg. K
Longnose gar	80	34.04	121	6	1	8.3	57.11	.39
Gizzard shad	78	33.19	19	8		4.0	9.18	1.47
Smallmouth buffalo	1	.43	7	5	7	5.0	3.44	2.73
River carpsucker	34	14.46	19	15		9.4	9.38	1.70
Carp	11	4.68	6	14		10.0	3.24	1.85
White bass	27	11.49	35	3	1	4.9	16.56	2.34
Bluegill sunfish	1	.43		4		4.0	.11	3.31
Red drum	2	.85	1	14		15.0	.89	1.58
Atlantic croaker	1	.43		3		3.0	.09	2.64
Totals	235	100.00	212	8			100.00	

Figure 22. A comparison of rough and/or forage species to game species obtained from Lake Imperial from April 1, 1960, to February 28, 1961

Species	Number	Per Cent by Number	Total Weight Lb.	Oz.	Per Cent by Weight
<b>Rough species</b>					
(Longnose gar, Gizzard shad, Smallmouth buffalo, River carpsucker, Carp)	204	86.81	175		82.35
<b>Game species</b>					
(White bass, Bluegill sunfish, Red drum, Atlantic croaker)	31	13.19	37	8	17.65
<b>Totals</b>	<b>235</b>	<b>100.00</b>	<b>212</b>	<b>8</b>	<b>100.00</b>

Figure 23. Results of 3 seining collections obtained from the Pecos River Watershed at Phantom, San Soloman and Giffins Springs in Reeves County on June 16, 1960

Species	Number	Per Cent by Number
<u>Gambusia sp.</u> ( <u>nobilis</u> or <u>geiseri</u> )	52	86.67
Banded tetra	8	13.33
Totals	60	100.00

Figure 24. Results of 8 netting collections obtained from Devil's Lake from April 1, 1960, to February 28, 1961

Species	No.	Per Cent by No.
Spotted gar	1	.61
Longnose gar	2	1.21
Gizzard shad	51	30.91
Texas gray redbhorse	4	2.42
River carpsucker	30	18.17
Carp	2	1.21
Channel catfish	29	17.58
Flathead catfish	2	1.21
White bass	4	2.43
Largemouth bass	4	2.43
Warmouth bass	3	1.82
Green sunfish	1	.61
Bluegill sunfish	7	4.24
White crappie	22	13.33
Freshwater drum	3	1.82
Totals	165	100.00

No weights or measurements were taken because fish were kept alive to be used in job E-3.

Figure 25. A comparison of rough and/or forage species to game species obtained from Devil's Lake from April 1, 1960 to February 28, 1961

Species	Number	Per Cent by No.	Total Weight Lb. Oz.	Per Cent by Weight
Rough species (Longnose gar, Spotted gar, Gizzard shad, Texas Gray redhorse, Carp, Freshwater drum)	93	56.36		
Game species (Channel catfish, Flathead catfish, White bass, Large- mouth bass, Green sunfish, Bluegill sunfish, White crappie, Warmouth bass)	72	43.64		
Totals	165	100.00		

No weights or measurements taken.  
Fish were kept alive for job E-3

Figure 26. Results of 8 netting collections obtained from Lake Walk from April 1, 1960 to February 28, 1961.

Species	No.	Per Cent by No.
Spotted gar	1	.58
Longnose gar	4	2.31
Gizzard shad	40	23.12
Gray redhorse	19	10.98
River carpsucker	43	24.86
Golden shiner	2	1.17
Channel catfish	37	21.38
White bass	15	8.67
Largemouth bass	4	2.31
Warmouth bass	1	.58
White crappie	6	3.46
Freshwater drum	1	.58
Totals	173	100.00

No weights or measurements were taken because fish were kept alive to be used in job E-3.

Figure 27. A comparison of rough and/or forage species to game species obtained from Lake Walk from April 1, 1960 to February 28, 1961

Species	Number	Per Cent by Number	Total Weight Lb. Oz.	Per Cent by Weight
Rough species (Longnose gar, Spotted gar, Gizzard shad, Texas Gray Redhorse, River carpsucker, Freshwater drum, Golden shiner)	110	63.58		
Game species (Channel catfish, White bass, Largemouth bass, Warmouth bass, White crappie)	63	36.42		No weights or measurements taken. Fish were kept alive for job E-3.
Totals	173	100.00		



## Job Completion Report

State of TEXAS

Project No. F-5-R-8

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

Job No. B-28

Title: Fish Harvest Regulations

Period covered:

May 1, 1960 - February 28, 1961

### OBJECTIVES

To recommend fish harvest regulations to the Texas Game and Fish Commission.

### PROCEDURE

Proposed fishing regulations for the Edwards Plateau, for Possum Kingdom Area and for Brown, Nolan and Taylor Counties were presented at public hearings and to the Commissioners of the Texas Game and Fish Commission. Those regulations were based on results and findings of surveys, and on other biological work done in this region.

(Note: The approved plans for this job included making recommendations for the Trans-Pecos area of Texas. This could not be done because it is not permitted under the present law. Legislation enacted for the Trans-Pecos Area provided for and authorized the control of the game harvest by the Texas Game and Fish Commission, but did not permit or authorize control over fishing for that same area.)

Preliminary meetings resulted in agreement between the project leaders as to what the recommended regulations for the Edwards Plateau and for the Possum Kingdom Areas should be. For that reason it was agreed Elgin Dietz, project leader of F-9-R, would attend all public meetings for the Edwards Plateau, including the two counties within Region 3-B, and that Leonard Lamb, project leader of F-4-R, would attend the public meeting for Stephens County within the Possum Kingdom Area. The recommendations for those areas are included in completion reports for Job B-17, Project F-7-R-8; Job 27, Project F-4-R-7; and Job B-21, Project F-9-R-8.

Public hearings were held at Brownwood County Courthouse at 8 p.m. on June 28, 1960, with approximately 17 persons attending; at Nolan County Courthouse in Sweetwater on June 29 at 8 p.m. with approximately 22 attending; and at Taylor County Courthouse in Abilene at the same evening hour on June 30 with approximately 15 attending. After these meetings the following regulations were recommended for adoption to the Texas Game and Fish Commission for the 1960-61 season in the Possum Kingdom and Panhandle Areas:

#### Fishing Regulations

Open season: Except on state wildlife sanctuaries, and United States wildlife sanctuaries, there shall be no closed season.

Size limits: No size limits on fishes except as specifically designated herein.

Largemouth, Smallmouth and Spotted Black Bass

Bag limit: Fifteen (15) black bass per day; possession limit, thirty (30) black bass.

White Bass

Bag limit: Fifty (50) white bass per day; possession limit, one hundred (100) white bass.

Channel, Blue and Flathead Catfish

Bag limit: Twenty-five (25) catfish per day; possession limit, fifty (50) catfish in the aggregate.

Crappie

Bag limit: Fifty (50) crappie per day; possession limit, one hundred (100) crappie.

Minnows

Bag limit: No bag or possession limit. (Transportation of minnows beyond county where taken is regulated by Acts of legislature applying to certain counties.)

Prepared by Lawrence S. Campbell  
Project Leader

Approved by Marion Toole  
Director Inland Fisheries Division

Date August 22, 1961