

JOB COMPLETION REPORT

Investigations Project

State of TEXAS

Project No. F2R5 Name: Fisheries Investigations and Surveys of the Waters of Region 6-B.

Job No. B-19 Title: Inventory of Species Present in Lake Marble Falls, Texas.

Period Covered: February 1, 1957 through January 31, 1958

ABSTRACT:

Sixty-seven gill net and eleven seine collections provided a total of 2,511 specimens for study. Only a limited fish population was found to be present and very few desirable size game fish were taken in the collections. Infertile water and limited spawning areas are believed to be contributing factors to the poor quality of the game fish population. Stocking black bass fry, continued inventory and possible rough fish control by chemical means are recommended for the lake.

OBJECTIVES:

To determine the species present and their relative abundance.

TECHNIQUES:

Monthly fish collections and ecological observations were made throughout the segment period. Random net sets were made each month and seine collections were made at random stations as time and conditions permitted.

Experimental type gill nets 125 by 8 feet were used exclusively in netting on Lake Marble Falls. Thirty-six foot bag and twenty foot straight seines were both used with limited results in the seining collections.

All specimens taken in gill nets were identified, weighed, measured and checked for stage of gonadal development in the field. Since very few game fish stomachs contained food, no attempt was made to preserve stomachs for content analysis.

Fish taken in seine collections were preserved in ten per cent formalin solution and taken to the laboratory for identification.

PHYSICAL DESCRIPTION:

Lake Marble Falls is the fourth impoundment in the highland lakes chain and is situated between Lake Granite Shoals and Lake Travis. The lake, completed in 1952, was constructed by the Lower Colorado River Authority and functions primarily as a source of hydro-electric power.

The lake is approximately 6.5 miles long and is less than 400 yards wide at the widest point. Maximum depth is approximately 70 feet near the Marble Falls Dam. The lake covers 900 surface acres and contains 26,000 acre feet of water at normal elevation. Water level fluctuation is slight, varying a maximum of about three feet.

Only small, intermittent tributaries feed the lake and inflow of water, except from Lake Granite Shoals, is practically non-existent during a normal rainfall year.

Lake Marble Falls lies entirely within Burnet County in the Central Mineral Region of the North Central Plains. Granite and limestone form the lake basin with the upstream third of the lake situated in a solid granite depression and the remainder largely limestone. Bottom types include granite, rubble, gravel, sand and limestone. Bank areas range from low sandy flats to sheer stone bluffs rising more than 50 feet above lake level. The soils in the immediate lake area are derived from the underlying bedrock and are thin and relatively infertile.

Ranching is the chief occupation of the area with cattle, sheep, and goat production the major source of income. Additional income is derived from sportsmen and vacationers who utilize the lake area for varied recreational purposes.

Four camps offering cabins or camping facilities are situated on Lake Marble Falls with approximately 40 boats available for rent. Bait, tackle, and supplies can be purchased at many establishments in the town of Marble Falls, or from camp operators on the lake.

CHEMICAL CHARACTERISTICS:

Analysis of water samples taken from Lake Marble Falls show it to be similar to the water quality of the other lakes in the Colorado River chain of lakes. The water was found to be alkaline with an average pH of 8.6. Dissolved oxygen averaged 11.2 ppm in surface samples and dissolved CO₂ less than 1.3 ppm. Total hardness averaged 176 ppm, and water temperature varied from a maximum of 86° F. in September to a low of 47° F. in February. Water quality throughout the segment period was adequate to support aquatic life and no man-made pollution was noted. Since the area is thinly populated and few industrial plants are located in the vicinity, the chance for pollution is remote at this time.

AQUATIC VEGETATION:

Although scattered small patches of cattails, Typha latifolia, saw grass, Zizaniopsis sp. and rushes, Scirpus americanus, are present in shoreline areas and occasional small floating mats of Myriophyllum sp. are found in shallow water, overabundant vegetation at present is no problem in Lake Marble Falls. With the combination of unfavorable bottom type for plant growth and the relatively swift current found in the lake during hours of power generation, vegetation will probably be limited until these conditions are changed.

FISH COLLECTIONS:

A checklist of species found to occur in Lake Marble Falls is included as Table 1. Twenty-four species were taken during the segment period and all were found common to the area and to the other Colorado River lakes.

Table 2. presents the results of seine collections. Deep water and sheer banks limited seining operations, and only scattered areas in the upper half of the lake were worked. Seining sites are shown on accompanying map.

Although 11 seine collections were made, only 616 specimens were taken. In one instance five seine hauls with a 36 foot bag seine produced only four specimens.

Game fish, excluding sunfish, made up less than six per cent of the total seine collections. Largemouth bass, Micropterus salmoides, and Texas spotted bass, Micropterus treculi, accounted for less than one per cent of all specimens taken. Gizzard shad, Dorosoma cepedianum, the most abundant species, made up almost 30 per cent of total numbers taken and spottail shiner, Notropis venustus was second most abundant with slightly less than 28 per cent.

Of the 30 white bass, Roccus chrysops, captured in the seines, 27 were taken in one seine haul as a large school of fingerlings was moving downstream from the tailrace waters below Granite Shoals dam to the main body of Lake Marble Falls.

Sixty-seven random net collections were made during the segment period and the results of the netting in terms of number and pounds of each fish species, by month, are included as tables 3 and 4. Table 5. shows success of gill netting in number and pounds of fish per net and per foot of net and is broken down into monthly totals.

FINDINGS:

Many fisheries problems became apparent during the inventory period. Results of both net and seine collections indicate the presence of a relatively small total fish population. Although turbid flood waters provided excellent netting and seining conditions for five months of the project period, total numbers and pounds of fish taken were far lower than recorded from a similar inventory of Lake Granite Shoals in 1956.

Rough and forage species comprised only 60.04 per cent of total numbers and 63.65 per cent of total weight recorded from net collections. However, except for the channel and yellow catfishes, very few desirable game fish were taken. Although white crappie made up over 16 per cent of total fish taken, the average weight of these individuals was slightly over two ounces. In 67 net collections only seven largemouth bass were taken and of these, only one weighed over 16 ounces.

Eighty-four white bass, making up less than five per cent of total numbers, were captured in the netting collections and over half of these were taken during the last four months of the segment period when the young of the year became large enough for net capture. The average weight of the individual white bass was slightly over eight ounces.

Channel catfish were the most abundant game fish taken and accounted for 15.73 per cent of total numbers and 21.52 per cent of the total weight taken. Although high in relative abundance, the channel catfish were small in size, averaging less than one pound each.

Low lake fertility is considered one of the primary causes for the rather meager fish population. During the drought years prior to 1957 the only source of water into Lake Marble Falls was from the relatively infertile, oxygen deficient sub-

surface waters of Lake Granite Shoals. The narrow, river-like, configuration of Lake Marble Falls permits a sizeable current over the entire lake during periods when water is being released from Lake Granite Shoals. With this constant flow, water in Lake Marble Falls has little opportunity to build up its own fertility.

Steep-cut banks and adjacent deep water over much of the lake leaves few suitable spawning areas for the Centrarchids and this undoubtedly contributes in part to the small largemouth bass and sunfish population. Heavy stocking of largemouth black bass fry shortly after impoundment of Lake Marble Falls provided good bass fishing for approximately two years, but the population was evidently unable to maintain itself and Marble Falls is not now considered a good bass lake by fishermen.

Trotline fishing for channel and yellow catfish in Lake Marble Falls is popular, with the majority of fishermen utilizing the lake either residents of the city of Marble Falls or Burnet County.

Because of the high banks, and small surface area the lake is popular with water skiers, particularly during windy periods when the larger lakes are too rough for safety.

RECOMMENDATIONS:

The channel catfish and white bass population appear to be increasing after a decline during the drought years. The black bass population is still limited and shows no sign of a successful 1957 spawn. It is recommended that at least 500,000 black bass fry be stocked in Lake Marble Falls during 1958. No bass fry have been placed in the lake since 1954 and introduction of hatchery reared fish appears to be the only solution to this problem.

It is further recommended that population studies be continued on Lake Marble Falls to determine the success of stocking and the status of the white bass and channel catfish populations.

If future studies indicate a decline in relative abundance of game species, chemical methods, to drastically reduce the rough fish population, followed by restocking of game species should be considered.

It would appear that only by shifting more of the lakes limited productivity to the game species can the lake maintain a satisfactory population of game fish.

Table 1. Checklist of Species Found to Occur in Lake Marble Falls, Texas,
February 1, 1957 through January 31, 1958.

SCIENTIFIC NAME	COMMON NAME
<u>Lepisosteus osseus</u>	longnose gar
<u>Dorosoma cepedianum</u>	gizzard shad
<u>Astyanax fasciatus</u>	banded tetra or
	(Mexican jumper)
<u>Ictiobus bubalus</u>	smallmouth buffalo
<u>Carpionodes carpio</u>	river carpsucker
<u>Moxostoma congestum</u>	gray redhorse sucker
<u>Cyprinus carpio</u>	carp
<u>Notropis venustus</u>	spottail shiner
<u>Notropis lutrensis</u>	redhorse shiner
<u>Pimephales vigilax</u>	parrot minnow
<u>Ictalurus punctatus</u>	channel catfish
<u>Pylodictus olivaris</u>	yellow catfish
<u>Gambusia affinis</u>	common mosquitofish
<u>Roccus chrysops</u>	white bass
<u>Micropterus treculi</u>	Texas spotted bass
<u>Micropterus salmoides</u>	largemouth black bass
<u>Chaenobryttus gulosus</u>	warmouth
<u>Lepomis cyanellus</u>	green sunfish
<u>Lepomis macrochirus</u>	bluegill
<u>Lepomis auritus</u>	yellowbelly sunfish
<u>Lepomis megalotis</u>	longear sunfish
<u>Pomoxis annularis</u>	white crappie
<u>Percina caprodes</u>	logperch
<u>Aplodinotus grunniens</u>	freshwater drum

Table 2. Number of Specimens Taken in Seines from Lake Marble Falls, February 1, 1957 through January 31, 1958.

SPECIES	NUMBER	PER CENT OF NUMBER
<u>Dorosoma cepedianum</u>	184	29.87
<u>Astyanax fasciatus</u>	2	0.32
<u>Carpionodes carpio</u>	65	10.55
<u>Notropis venustus</u>	172	27.92
<u>Notropis lutrensis</u>	70	11.37
<u>Pimephales vigilax</u>	33	5.35
<u>Gambusia affinis</u>	7	1.14
<u>Roccus chrysops</u>	30	4.87
<u>Micropterus treculi</u>	1	0.16
<u>Micropterus salmoides</u>	2	0.33
<u>Lepomis cyanellus</u>	1	0.16
<u>Lepomis macrochirus</u>	31	5.03
<u>Lepomis auritus</u>	2	0.33
<u>Lepomis megalotis</u>	14	2.27
<u>Percina caprodes</u>	2	0.33
TOTALS	616	100.00

Table 3. Number of Specimens Taken in Gill Nets From Lake Marble Falls, Texas, February 1, 1957 through January 31, 1958.

SPECIES	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	TOTAL	PER CENT OF TOTAL
Longnose gar	---	---	24	5	3	3	1	2	6	---	1	---	45	2.37
Gizzard shad	63	15	86	177	5	31	69	38	39	33	13	23	592	31.24
Smallmouth buffalo	3	2	7	29	4	16	8	10	5	4	2	---	90	4.75
River carpsucker	25	32	16	146	6	46	1	44	24	9	8	11	368	19.42
Redhorse sucker	---	1	---	---	---	4	---	---	---	---	4	---	9	0.47
Carp	---	2	1	3	5	3	---	---	2	---	---	1	17	0.90
Channel catfish	11	6	20	13	30	50	33	45	29	22	13	26	298	15.73
Yellow catfish	---	---	---	5	1	3	---	---	1	---	---	---	10	0.52
White bass	3	3	---	9	5	1	1	3	34	5	14	6	84	4.44
Largemouth black bass	---	---	1	1	---	1	---	---	---	3	1	---	7	0.37
Warmouth	---	---	---	---	---	---	---	---	1	---	1	---	2	0.10
Bluegill sunfish	1	3	11	18	---	6	1	---	3	1	---	1	45	2.38
White crappie	4	3	25	77	25	36	14	29	60	18	12	4	307	16.20
Freshwater drum	---	---	---	5	---	5	---	2	4	1	---	---	17	0.89
Longear sunfish	---	2	---	1	---	---	1	---	---	---	---	---	4	0.22
TOTALS	110	69	191	489	84	205	129	173	208	96	69	72	1895	100.00

Table 4. Number of Pounds of Each Fish Species Taken in Gill Nets from Lake Marble Falls, Texas, February 1, 1957 through January 31, 1958. (Figured in tenths of pounds.)

SPECIES	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	TOTAL	PER CENT OF WEIGHT
Longnose gar	---	---	122.31	6.44	28.75	11.38	0.94	13.00	26.88	---	2.88	---	212.58	17.22
Gizzard shad	6.50	2.19	10.50	22.31	0.81	5.31	10.25	6.81	10.06	6.19	1.69	7.88	90.50	7.34
Smallmouth buffalo	3.81	4.25	14.38	29.06	5.00	24.38	7.94	15.13	5.31	4.69	5.00	---	118.95	9.64
River carpsucker	22.44	31.56	14.19	118.75	6.63	37.50	0.81	38.44	23.94	7.00	7.00	10.38	318.64	25.82
Redhorse sucker	---	1.13	---	---	---	1.69	---	---	---	---	6.50	---	9.32	0.76
Carp	---	2.38	1.31	5.75	6.69	4.38	---	---	3.81	---	---	0.50	24.82	2.01
Channel catfish	11.94	18.56	40.25	19.25	13.06	52.63	21.44	26.38	25.38	21.38	6.44	8.75	265.46	21.52
Yellow catfish	---	---	---	32.88	4.06	27.00	---	---	8.56	---	---	---	72.50	5.87
White bass	2.75	2.56	---	9.81	8.13	0.63	0.25	3.19	10.81	1.25	3.25	1.44	44.07	3.57
Largemouth bass	---	---	0.75	3.31	---	0.75	---	---	---	2.25	0.63	---	7.69	0.63
Warmouth	---	---	---	---	---	---	---	---	0.31	---	0.25	---	0.56	0.04
Bluegill sunfish	0.13	0.69	1.25	1.44	2.88	0.56	0.13	---	0.50	0.19	---	0.25	8.02	0.65
White crappie	0.75	0.44	2.13	8.63	---	5.25	2.81	3.88	16.50	4.00	4.19	1.00	49.58	4.02
Freshwater drum	---	---	---	7.88	---	1.13	---	0.25	1.13	0.19	---	---	10.58	0.86
Longear sunfish	---	0.31	---	0.13	---	---	0.13	---	---	---	---	---	0.57	0.05
TOTALS	48.32	64.07	207.07	265.64	76.01	172.59	44.70	107.08	133.19	47.14	37.83	30.20	1233.84	100.00

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Table 5. Success of Gill Netting in Terms of Number and Pounds of Fish, Lake Marble Falls, February 1, 1957 through January 31, 1958.

MONTH	Number of Nets Set	Number of Foot Net Set	Number of Fish Caught	Number Lbs. Fish Caught	Average No. Fish/Net	Average No. Fish Ft. of Net	Average No. Lbs. Fish per Net	Average No. Lbs. Fish Per Ft. of Net.
February	6	750	110	48.31	18.33	0.146	8.05	0.06
March	6	750	69	64.06	11.50	0.092	10.67	0.09
April	7	875	191	207.06	27.29	0.218	29.58	0.24
May	5	625	489	265.63	97.80	0.782	53.13	0.43
June	3	375	84	76.00	28.00	0.224	25.33	0.20
July	6	750	205	172.56	34.17	0.273	28.76	0.23
August	6	750	129	44.69	21.50	0.172	7.45	0.06
September	5	625	173	107.06	34.60	0.276	21.41	0.17
October	6	750	208	133.19	34.67	0.277	22.20	0.18
November	6	750	96	47.13	16.00	0.128	7.86	0.06
December	5	625	69	37.81	13.80	0.110	7.56	0.06
January	6	750	72	30.19	12.00	0.096	5.03	0.04
TOTAL	67	8,375	1,895	1,233.69	28.28	0.226	18.41	0.14

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Date: March 19, 1958



Figure 1. View of upper lake, one-fourth mile below Granite Shoals Dam. Foreground shoreline is composed of solid granite.

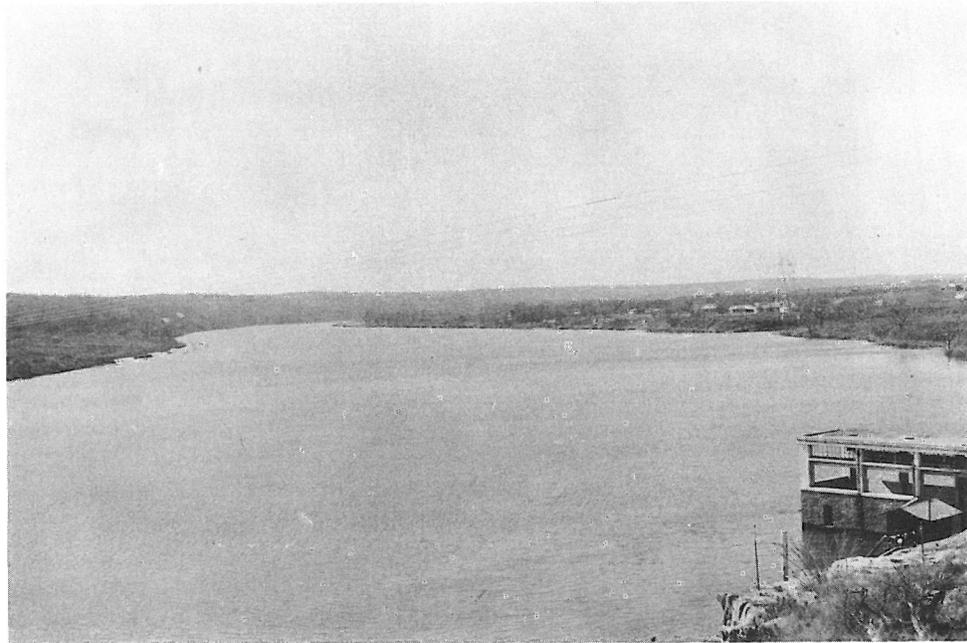


Figure 2. View of lake, looking upstream from Highway 281 bridge, showing river-like configuration.



Figure 3. Limestone bluffs forming shoreline of Lake Marble Falls, three-fourths of a mile above Marble Falls Dam.

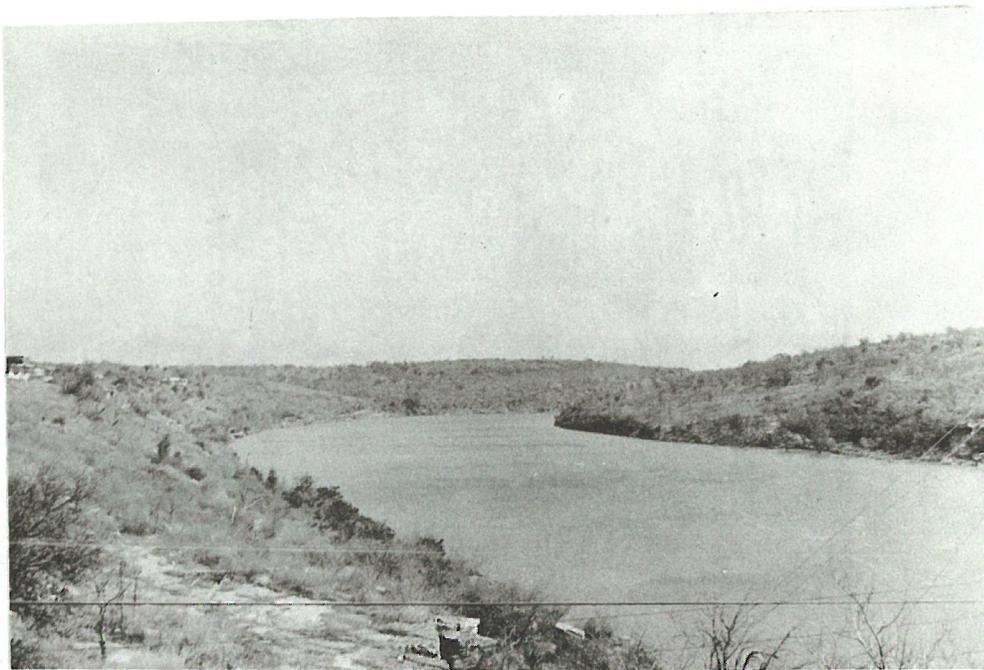
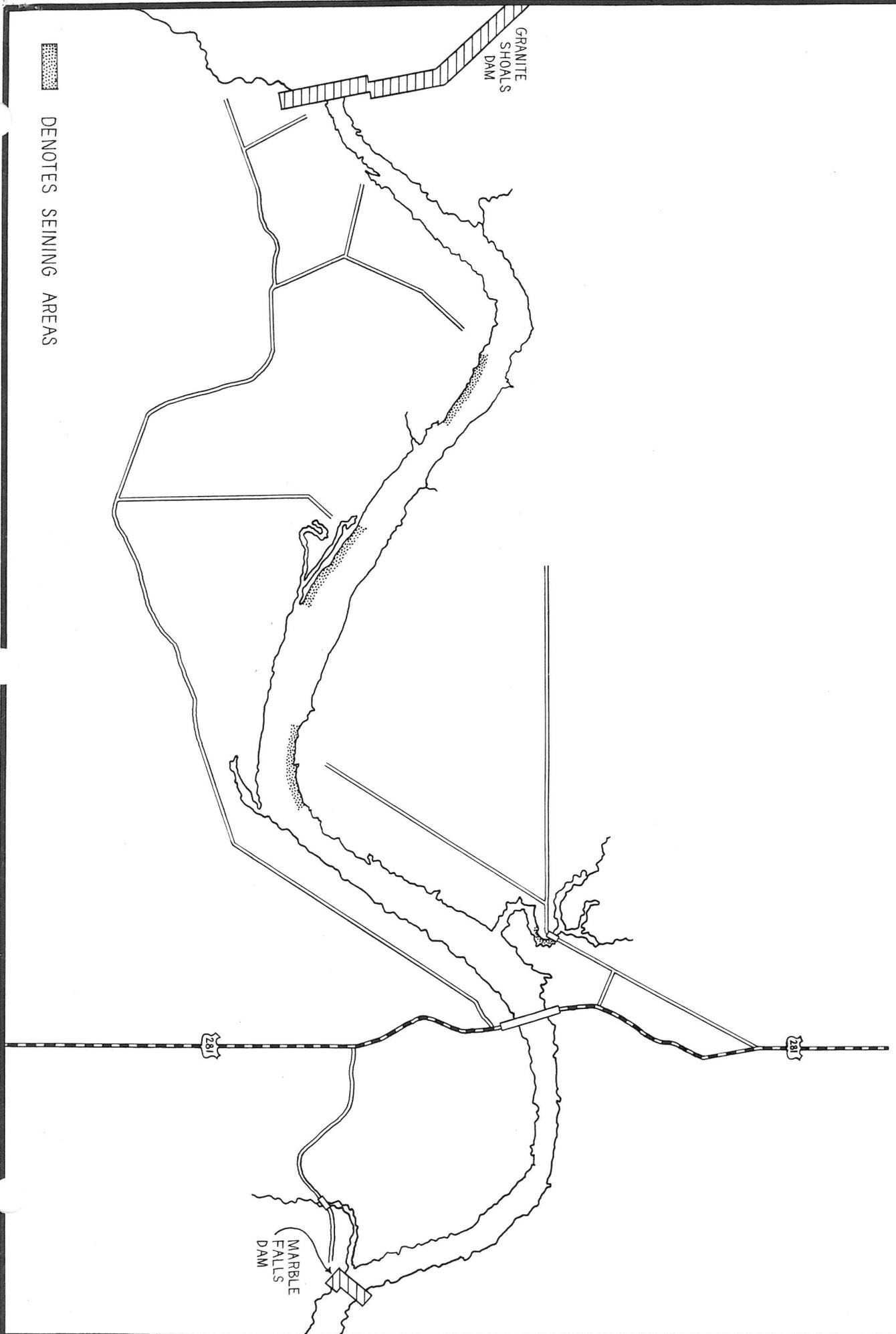


Figure 4. View of lake, looking downstream from Highway 281 bridge, showing typical ranch country of Burnet County.

LAKES MARBLE FALLS



DENOTES SEINING AREAS

GRANITE SHOALS DAM

MARBLE FALLS DAM

281

281

