Report of Fisheries Investigations

Inventory of Fish Species Present in Falcon Reservoir

by

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Dingell-Johnson Project F-6-R-4, Job B-4

February 1, 1954 - June 30, 1957

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JOB COMPLETION REPORT

State of TEXAS

Project No. F6R4 Name: Fisheries Investigations and Surveys of the Waters of Region 8-B.

Job No. B-4 Title: Inventory of Fish Species Present in Falcon Reservoir

Period Covered: February 1, 1954 through June 30, 1957

ABSTRACT:

Falcon Reservoir, an international lake on the Rio Grande between Texas and Mexico was studied from February 1, 1954 through June 30, 1957. A total of 370 floating experimental gill net sets was made at ten locations. Seining and rotenone collections were made sporadically to augment data obtained with nets. Thirty-seven species of fish representing 13 families and 18 genera were recorded from Falcon Reservoir. Fish activity peaks were apparent in October and in January and February, aquatic vertebrates, invertebrates and parasites are discussed. Regulations for the control of commercial fishing are recommended. Quarterly vegetation checks should be made to prevent the re-introduction of harmful aquatic plants. Periodic fisheries checks are recommended to determine the progress and status of bass that spawned last spring (1957).

OBJECTIVES:

To determine the fish species present and their relative numbers in Falcon Reservoir.

PROCEDURE:

The investigations of Falcon Reservoir was divided into two jobs: Job A-4, Basic Survey of Falcon Reservoir, objective; to gather fundamental data on the chemical and physical characteristics of the lake and Job B-4, Inventory of the Fish Present in Falcon Reservoir. Because of the many problems encountered, principally water level fluctuations and heavy commercial fishing, the project was carried on for a period of four years.

The present job consisted of making monthly netting collections at the ten designated stations on the lake (Map 1). Other types of nets were also used occasionally to augment the data gathered from the regular stations. The information gathered was kinds and numbers of fish, sizes and coeffecient of condition, sex and sexual condition, feeding characteristics, parasites, and seasonal and yearly changes in the whole population. Records were kept on fish collection cards and netting collection forms.

a. Netting Collections

1. Ten stations as shown in Map 1 were selected in Falcon Reservoir to represent different locations and ecological conditions. Station 1 had a normal depth of 65 feet with a brush covered bottom. Station 2, west of the submerged town of Old Falcon was

20 feet deep under normal water conditions. The bottom was sand and sandy silt. This station was exposed to south and southeast winds. Station 3 was located in the middle of the Arroyo Tigre Chico, and was generally exposed to south and southeast winds. This station had a normal water depth of 40 feet. The bottom was brush covered. This station was exposed to south and southeast winds. Station 5, was near the river channel and the water at normal water depth was 50 feet. The bottom was brush covered. Station 6 was located at the Arroyo Clareno over some old cultivated fields. The bottom was sandy silt and fine silt. The normal depth at this station was 30 feet. This station was exposed to southeast winds in the summer and spring and northwest winds in the fall and winter. Station 7 was located at the Arroyo Boleno four miles west of where U. S. Highway 83 crosses the Arroyo Boleno. It was situated on the old Arroyo bed and the bottom was of sandy silt. The depth of water was 32 feet at normal water level. The nets were set in the area where the Arroyo Boleno entered the lake, and had good wind protection from all sides. Station 8 at normal lake level was 18 feet deep and bottom was brush covered with occasional areas of fine sandy silt. Station 9 was 12 miles downstream from San Ygnacio. The lake was over bed rock cut channel and had a normal depth of 15 feet, with bluffs on the east side of the river. Station 10 below San Ygnacio where the Rio Grande entered the lake had a normal water depth of 8 feet. The bottom was fine sandy silt with an area of deposited top soil. Station 7, 8, 9 and 10 had good wind protection because of their position in relation to prevailing winds and banks of the Arroyos.

All stations with the exception of station 9 and 10 had some form of fish cover. The cover present was usually in the form of trees and brush submerged or partly emmergent that were inundated by the impounded waters of Falcon Lake. Due to all this vegetation present in the lake bottom nets sets were seldom made.

Experimental gill nets, 125 feet long and 5 feet deep varying mesh (1", 1½", 2", 2½", and 3" square mesh) each twenty-five feet long were set at each station every month except when low water stages made it impossible. From September 1956 through June 1957 stations 7, 8, 9, and 10 were abandoned because of low water and inaccessability. A total of 370 net sets were made. Normally two or four stations were set at one time starting about 2 P. M. and the nets were picked up the next morning between 6 and 9 A. M.

2. Gill nets of 2" and 3" square mesh and 100 feet long and 8 feet deep were set at various times and at different locations to try and locate spawning and feeding areas. During the second segment six nets 100 feet long 8 feet wide of 3" square mesh were set in an effort to locate spawning buffalo with negative results. Most of these were set close to station 4 over some old plowed fields. The information gathered from these nets was recorded in the same manner as those from experimental nets, but because of their selectivity for size the information was not used in the statistical analysis.

3. Four 1" square mesh hoop nets, seven feet long, four feet wide and with two throats were set during the project period at various places. The nets were baited with meat scraps and cottonseed cake pellets. The results obtained were inconclusive as only 6 soft shell turtles and 13 sunfish were caught.

4. The fish taken in all gill nets were worked in the field. All fish measuring was done by one of the field assistants, while the other weighed the fish and made the

internal examination. The assistant project leader recorded all the data. "K" factors and contents of stomachs were determined later in the laboratory.

b. Seining Collections

Seining collections were almost impossible to make because of the heavy brush growth on the lake. Only four areas were found where collections could be made. One was in the cleared area of the boat ramp at the International Boundary and Water Commission camp in Falcon Village (A) Seining station "B" was located close to netting station No. 3 where old Highway 83 went into the lake. Seining station "C" was located opposite seining station No. 2 on the Arroyo Tigre Grande over old Highway 83. Seining station "D" was located in front of Bill Neals Fishing Camp on the Arroyo Boleno. Five rotenone collections were also made. The results of the seining and rotenone collections are shown in Table 13.

Whenever possible the seining was done with a 30' by 6' seine with $\frac{1}{4}$" mesh. Whenever stumps or brush prevented the use of this seine a ten by four foot common sense minnow seine was used. Samples of the fish seined were preserved in one quart fruit jars containing 10% formalin solution. The fish seined were sorted, identified and counted later in the laboratory. Excessive numbers of a single species or fish too large for the fruit jar were counted, recorded on Fish Cards and discarded at the time of collection.

c. Data

Data concerning weather and water conditions and other observations were kept on Fish Cards and Fish Collection Sheets. A description of the lake and its chemical and physical characteristics was given in Job Completion Report for Job A-4.

FINDINGS:

The seasonal variations of fish activity as reflected by comparison of monthly netting catches expressed numerically and by weight may be seen in Tables 2 through 9. Tables 10 through 12 show the relative success of experimental gill netting in Falcon Lake. Table 14 shows the ranks, lengths, weights and "K" factors of the most common fish species caught in gill nets from Falcon Reservoir. Table 15 shows the number and percentages of the common fish species caught from Falcon Lake in experimental gill nets during the project period. Table 16 shows the rough and gamefish population trends during the study period. Tables 17, 18 and 19 show the sexual condition of eight common fish species taken from Falcon Reservoir. Table 20 shows the stomach analysis of fish which contained food in their stomachs.

Fish activity periods from the relative net catch are shown Tables 10 through 12. Peak periods are evident in the late winter (October and early spring (January, February) months in the second segment. Only the spring peak was evident in the first and third segments and this is correlated with inflow of waters raising the level of the lake, and bringing in a new food supply. It appears that peak periods are correlated to spring water temperature rises, spawning and feeding runs and the inflow of water into the lake. Sexual condition chart numbers are based on the numbers one to five. Condition 1 indicates the eggs and sperm were flowing, 2, gonads well developed, 3, sexes discernible, 4, sexes indiscernible, 5, indicates that the fish had just spawned.

DISCUSSION OF INDIVIDUAL SPECIES:

Lepisosteus spatula - Alligator Gar. Rather common and some of very large size, occurring

in all parts of the lake. One taken in experimental nets was 7½ feet long and weighed 184 pounds. Among other items in its stomach were sixteen fish hooks. Adults were usually found infected with visceral tape worms and fish lice and small leeches were around the gills on some specimens. Almost all of the very large specimens were caught near submerged high and heavy brush. This species ranked fifth by number and first by weight.

Lepisosteus productus, Spotted Gar. A common gar in Falcon Lake, found in all areas. Some showed well developed gonadal development during all months of the year. Many had visceral tape worms. Fish lice and leeches were found around the gills. This species ranked eighteenth by number and ninth by weight over the four-year period.

Lepisosteus osseus, Longnose Gar. This species was common in all of the stations in the lake. Most specimens, upon internal examination, had visceral tape worms. Fish lice around the gill area were common. This species was observed to be mainly a night feeder on several night jugfishing trips. Longnose gars ranked seventh by number and eighth by weight. Their small size, nocturnal feeding habits, small elongated mouth, makes this species a real pest to trotline fishermen and difficult to control.

Dorosoma petenenses, Threadfin Shad. This is one of the least common forage fish found in the lake. Seining collections showed only nineteen specimens.

Dorosoma cepedianum, Gizzard Shad was common at all of the seining areas and netting stations. This species is one of the principal forage fish found in Falcon Reservoir and constitutes one of the major items of diet of the short and longnose gars as evidenced by stomach analysis of these species. Gizzard shad ranked fourth by number and sixth by weight of all fish caught in experimental gill nets.

Astyanax fasciatus mexicanus, Rio Grande Tetra. Very common around the shoreline areas of Falcon Reservoir. In fact, this species is so prolific that its trapping, sale and export as a bait minnow is a big and growing business in this area. Seining collections show that this species spawns on the average of three times a year in Falcon Reservoir, apparently in the months of February, May and July. Although some tetras were taken in open water they usually occur most commonly along shallow beaches.

Ictiobus bubalus, Smallmouth Buffalo. Very common throughout the lake and all during the year. Commercial fishermen on both sides of the lake took an estimated one million pounds per year of this species from the lake during the project period. This estimate is based on records from Mexico's Secretary of Marine Resources, U. S. Custom's import records and buyer records from the commercial fishermen on the United States side. This species ranked first by number caught and second by weight. Smallmouth Buffalo had a low percentage of 5.74 by number during the first segment, 35.02 percent during the second year, 50.08 per cent during the third year and 39.26 during the last year of the project study. All growth stages of Smallmouth Buffalo were taken all year long, indication that this fish has an average spawn about every four months, which may be related to slight water temperature variation during the year, inflow of water, and abundant food supply.

Carpiodes carpio, River Carpsucker has been present in Falcon Reservoir every segment of the project period. All growth stages were caught in gill nets, but the average was 174 mm in standard length. River carpsucker ranked eleventh by number and eleventh by weight.

Cyprinus Carpio, Carp. Very common at all stations in the lake. All growth stages were

ught during the period of study also indicating it spawns at least three times a year. Weight ranges from 45 to 47.67 grams. Carp ranked sexth by number and fifth by weight.

Hybopsis aestivalis, Speckeled Dace, was present in all seining and rotenone collections. A total of 92 specimens was captured during the project period.

Notropis amabilis, Texas Shiner, was recorded during the first, third and fourth segment on Falcon Reservoir. Present but not in large numbers as only 55 specimens were captured during the project period.

Notropis lutrensis, Redhorse Shiner, was common during all segments of the project period. The males of the redhorse shiner exhibit breeding coloration and tubercles almost all year around, except in mid winter.

Notropis jemezanus, Rio Grande Shiner, was recorded in small numbers during the first and fourth segments of the project period. Only seven specimens were obtained during this time.

Notropis proserpinus, Proserpine Shiner, was present during all segments of the project period, but the numbers caught in seines and rotenone collections was small. It was usually found on shallow sandy beaches.

Notropis braytoni, Tamaulipas Shiner, very common in Falcon Lake, and one of the hardier species present. The Tamaulipas shiner occurred in large numbers during all segments of the project period, at all stations, but numbers caught were small during the winter months.

talurus punctatus, Southern Channel Catfish, very rare in seining and rotenone collections made in Falcon Lake, and somewhat prevalent in gill net collections. Channel Catfish ranked tenth by number and twelfth by weight of all fish caught in gill net collections. Channel Catfish has been taken in large numbers by commercial fishermen and trotline fishermen.

Ictalurus furcatus affinis, Blue Catfish. A very common species found at all stations during the project period. Very large numbers have been caught in Falcon Reservoir by commercial fishermen on both sides of the lake. Spawning of Blue Catfish took place during April and May in the hollow sections of the flood control gates of Falcon Dam. Blue Catfish ranked third by number and fourth by weight. This, at the present time, is the most important game fish in the lake, but percentagewise there has been a decrease in the numbers caught in the nets during the third and fourth segments of the project, in all probability brought about by extensive commercial catches. A 72 pound specimen has been recorded from Falcon Reservoir.

Ictalurus melas, Black Bullhead, present in all but the first segment in seining and rotenone collections. Many were taken in gill nets but the numbers were small. Probably present in the lake from some of the flooded stock tanks that were in the impounded water area. Black Bullheads, ranked nineteenth by number and fifteenth by weight of all the species caught in experimental gill nets.

Pilodictus olivaris, Flathead Catfish, very common in all parts of the lake. Caught during all segments of the project period in gill nets. Some Flathead Catfish were caught near e river channel that weighed up to 60 pounds. This species ranked ninth by number and venth by weight of all species caught in experimental nets.

Anguilla rostrata, American Eel. One specimen was caught in the dry spillway at Falcon Lake. Some were caught by commercial fishermen in the same area by hand. To date none have been recorded from the lake.

Cyprinodon v. varigatus, Sea Pupfish. Many were caught in seining and rotenone collections made in isolated pools left by the receeding water level in Falcon Lake.

Mugil cephalus, Striped Mullet, this salt and brackish water inhabitant has been caught in small numbers in Falcon Lake. Some of the specimens caught weighed as much as six pounds.

Menidia beryllina, Silversides, very common in all of the seining collections. Silverside minnows furnish food for some of the game fish in the lake, although it is not one of the preferred items of diet, as the numbers found in stomachs of Blue Catfish were small.

Chaenobryttus gulosus, Warmouth Bass, no specimens were caught in seining or rotenone collections. None were caught in nets during the first segment of the project period, seven during the second part, eleven during the third part and none during the fourth segment of the project. Warmouth Bass ranked thirteenth by number and sixteenth by weight of all the fish caught in gill nets.

Roccus chrysops, White Bass, was first caught in gill nets in January 1955, during the second segment of the project period. Although only a few were caught, some weighed as much as three and one-half pounds. One four and one-half pound specimen was caught in the river below the dam by commercial fishermen. Apparently white bass have entered the river from flooded Lake Walk and Devil's River above Del Rio. White bass ranked seventeenth by number and thirteenth by weight.

Micropterus salmoides, Largemouth Black Bass was first caught in experimental gill nets in November 1954. At first, this species was being caught in the upper lake stations. During the first three years of the project earnest efforts were made to locate and capture bass fry and fingerlings to see if a spawn had taken place with negative results. During the last months of the fourth period repeated reports of bass fry were investigated and proved fruitless. In August 1957 reports of bass fry and young in the Arroyo Boleno area were investigated and several juveniles, apparently from a late spring spawn, were captured which indicated that a bass spawn had taken place. The lake had a period of constant low water level from April 12 to April 26, 1957 and the bass were able to get a spawn. Black bass caught in the gill nets ranged from 295 to 380 mm. in standard lenght and from 907 to 1928 grams in weight. Largemouth bass ranked fourteenth by number and tenth by weight of all fish caught in experimental gill nets. A rather high "K" factor was found on this species of bass. The average "K" factor for fish of this species from Falcon Reservoir ran 3.23. A comparative list of this same species in some of the major lakes in Texas is given below.

Lake	Average "K" Factor
Falcon Lake	3.23
Bentsen Lake, near Mission	2.00
Delta Orchards Lake, near Weslaco	1.61
Olmito Lake, near Brownsville	2.73
Woodlawn Lake, San Antonio	3.19
Belton Reservoir, Belton	2.60
Brownswood Lake	2.59
Lake Texoma	2.49
Lake Lavon	2.68
Average "K" factor in other Texas Lakes	2.43

Lepomis cyanellus, Green sunfish, was common in all parts of the lake. Sizes ranged from 96 to 116 mm in standard length. This species was the most common of the sunfishes caught in seines and gill nets. The green sunfish ranked sixteenth by number and nineteenth by weight.

Lepomis macrochirus, Bluegill, common in all parts of the lake. Taken al all stations during the project period. Bluegills ranked eighth by number and fourteenth by weight of all fish taken in experimental gill nets. Although present in lake, neither the numbers nor the size are large enough to attract the pan fishermen.

Lepomis auritus, Yellowbelly Sunfish, rare in Falcon Lake, only two specimens were recorded and these were caught in seines, around seining station "A".

Pomoxis annularis, White Crappie, common in all parts of the lake by the fourth segment. At first White Crappie was found only in the central part of the lake, but specimens began to show up in other parts of the lake by the end of the project period. White Crappie ranked fifteenth by number and eighteenth by weight. Fishing for Crappie has not been too heavy in the lake.

Aplodinotus grunniens, Freshwater Drum, next to most common species caught in nets in the lake. Infection with parasites (Visceral nematodes) of this species in this lake is not as common as in the other lakes of South Texas. Freshwater Drum ranked second by number and third by weight.

Cichlasoma cyanoguttatum, Rio Grande Perch, common in all parts of the lake but more so some of the samll isolated pools left when the lake receeded, brush piles and under road culverts. This fish ranked twelfth by number and seventeenth by weight.

Eleotris pisonis, Spiny Cheek Sleeper, no specimen of this species has been caught in nets in the lake, but many have been caught by fishermen below the dam in the tailrace section. This strange looking brackish water fish has caused a lot of controversy among fishermen. The Spiny Cheek Sleeper has been called everything from a Mexican trout to a bowfin, and walleye pike. Many young were seen and taken when the water was running over the spillway. This species is very highly regarded as a fighting fish by spin and bait-casting fishermen.

AQUATIC INVERTEBRATES:

Only two invertebrates were found in Falcon Lake that could possible be construed as a source of food supply for some of the game fish in the lake. This is the River Prawn, Macrobrachium sp. which occurs in all parts of the lake in small numbers. Insects that undergo an aquatic larval stage are not common, probably due to fluctuating water levels and relative absence of aquatic vegetation. Crayfish are common in the lake, but their relative numbers are very small.

AQUATIC VERTEBRATES OTHER THAN FISH:

Large flocks of ducks and geese winter on the lake, staying mostly in the central part and around the Arroyo Boleno area. Small populations of anhingas, Mexican Cormonants,

coots, great blue herons, snowy egrets, green herons, sea gulls, and terns are found almost the year around on the lake. Bird populations, especially coots and anhingas, increase slightly during the fall and winter months. Two species of turtles (Amyda sp.) and the slider (Pseudemys scripta.)are found in the lake and the lake shore areas. A few frogs inhabit the lake, mostly leopard frog (Rana pipiens). Their relatively small numbers are probably due to the high rate of predation by coons, as evidenced by their tracks around the isolated pools that the frogs inhabit. Toads found in the lake shore are Bufo compactilus, Bufo woodhousei, Bufo marinus. Some alligators have been reported in the lake, but none have been caught.

PARASITES:

Two external parasites have been noticed on the fish from Falcon Lake, fish lice Argulus lepidostei, and a small brown leech Glossiphenia sp. The fish lice were found almost exclusively on gars usually around the head and gill covers. Leeches were found mostly on catfish. Internal visceral round worms and tape worms were also found in the stomach, intestine, and liver area of gars and on a few white bass. No infections were noticed on largemouth bass.

RECOMMENDATIONS:

The principal fisheries management problem on Falcon Reservoir is the lack of adequate laws or regulations to govern the commercial fishing on this lake. A joint international meeting will be necessary between the Secretary of Marine Resources of Mexico, the U. S. Fish and Wildlife Service and the Texas Game and Fish Commission in order to formulate regulatory measures or controls on Falcon Reservoir. Texas laws would help and are necessary in lieu of an international agreement.

Fluctuating water levels in Falcon Reservoir due to extensive demands for irrigation water in the Rio Grande Valley have prevented the yearly spawn of game fish. However, during the spring of 1957, during a low water stage, a bass spawn was possible. Since bass have spawned in this lake, future stockings form the state fish hatcheries should be reduced or discontinued, because the quantities available from the hatchery are negligible compared to natural spawns in a lake of this size.

Detrimental vegetation such as water hyacinths should be prohibited from introduction either by state or county laws. Occasional checks should also be made of the lake to prevent propagation of water hyacinths that might be accidently introduced by well meaning but uninformed individuals.

Spring and Fall netting and seining samples should be taken to determine the status and spawning success of game fish in the lake.

The proposed state park areas with their accompanying boat ramps docks, cabins, playground and swimming area should be developed to provide much needed recreational facilities for this area. Public access to this lake is very limited.

When the Diable International Dam at Del Rio is built, Falcon Lake may become a rather constant level lake and management programs should be developed and carried out until a fish population balance is attained.

MMARY (TO BE USED IF DESIRED):

The fish populations of Falcon Reservoir were investigated by monthly netting from ten stations and periodical seining for the period of February 1, 1954 through June 30, 1957. A description of the stations, and the methods used is given and the kinds and number of fish taken are discussed. The monthly, seasonal, and yearly changes in the numbers and percentages on the various species are given and the common invertebrates, vertebrates and parasites are considered. Stomach analysis, sizes, and coeffecient of condition are shown in table form. This report incorporates one map, one chart, eighteen tables, and nine photographs.

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Approved by: Marion Toole
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Table I.

A List of Fish Species Recorded from Falcon Reservoir

Scientific Name	Common Name	Symbols Used in Following Tables
Lepisosteus spatula	Alligator Gar	L. spat.
Lepisosteus platostomus	Shortnose Gar	L. plat.
Lepisosteus productus	Spotted Gar	L. prod.
Lepisosteus osseus	Longnose Gar	L. osseus
Dorosoma cepedianum	Gizzard Shad	D. ceped.
Dorosoma petenensis	Threadfin Shad	D. peten.
Astyanax fasciatus m.	Rio Grande Tetra	A. fasci.
Ictiobus niger	Black Buffalo	I. niger
Ictiobus bubalus	Smallmouth Buffalo	I. buba.
Carpiodes carpio	River Carpsucker	carp. carpio
Cyprinus carpio	Carp	C. carpio
Hybopsis aestivalis	Speckled Dace	H. aest.
Notropis amabilis	Texas Shiner	N. ama.
Notropis lutrensis	Redhorse Shiner	N. lutren.
Notropis jemezanus	Rio Grande Shiner	N. jem.
Notropis proserpinus	Proserpine Shiner	N. pros.
Notropis braytoni	Tamaulipas Shiner	N. bray.
Ictalurus punctatus	Southern Channel Catfish	I. punct.
Ictalurus furcatus a.	Blue Catfish	I. furcatus
Ictalurus melas	Black Bullhead	I.melas
Pylodictus olivaris	Flathead Catfish	P. oliva.
Anguilla rostrata	American Eel	A. rost.
Cyprinodon varigatus v.	Sea Pupfish	C. vari.
Gambusia affinis a.	Texas Mosquitofish	G. affinis
Mugil cephalus	Striped Mullet	M. ceph.
Menidia beryllina	Tidewaters Silversides	M. bery.
Chaenobryttus gulosus	Warmouth Bass	C. gulosus
Roccus chrysops	White Bass	R. chry.
Micropterus salmoides	Largemouth Black Bass	M. sal.
Lepomis cyanellus	Green Sunfish	L. cyan.
Lepomis macrochirus	Bluegill	L. macro.
Lepomis auritus	Yellowbelly Sunfish	L. auritus
Lepomis megalotis	Longear Sunfish	L. mega.
Pomoxis annularis	White Crappie	P. annul
Aplodinotus grunniens	Freshwater Drum	A. grun.
Cichlasoma cyanoguttatum	Rio Grande Perch	C. cyano.
Eleotris pisonis	Spinycheek Sleeper	E. pisonis

Table 2. Numbers of Fish Taken in Experimental Gill Nets from Falcon Reservoir, February 1954 through June 30, 1954

Species	Feb.	March	April	May	June	Total	% of Total
L. spat.	1		15	34	61	111	8.72
L. prod.			3			3	.23
L. osseus	1	9	1	8		19	1.49
D. ceped.	49	74	56	158	36	373	29.32
I. buba	12	20	12	24	5	73	5.74
Carp. carpio	1	2	1			4	0.31
C. carpio	7	24	5	1		37	2.90
I. punctatus					10	10	0.79
I. furcatus	82	63	91	38	63	337	26.49
I. melas				2		2	0.16
P. oliva	2	2		25	3	32	2.51
L. cyan.		1				1	.08
L. macro.	3				2	5	0.39
P. annul.	1	2	1			4	0.31
A. grun.	31	54	35	62	77	259	20.36
C. cyano.				2		2	0.16
Total	190	251	220	354	257	1272	99.99
% of Total	14.93	19.73	17.29	27.83	20.20	99.98	

Table 3. Number of Fish Taken in Experimental Gill Nets from Falcon Reservoir July 1, 1954 through June 30, 1955

Species	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	Apr.	May	June		Total	%of Total
L. spat.	138	44	32	27	38	23	26	13	48	51	24	34		498	12.51
L. plat.					1									1	.02
L. prod.	1	1	1	2						1				6	.15
L. osseus	2		2		5	7	11	2	1	2				32	.80
D. ceped.	4	18	26	34	7	13	6	8	23	41	23	23		226	5.67
A. fasci.										1				1	.02
I. niger						1								1	.02
I. bubalus	20	68	71	43	67	194	343	188	190	84	83	44		1395	35.02
Carp. carpio								1		1				2	.05
C. carpio	16	2	20	5	1	1	4	1	5	1	1	1		58	1.46
I. punct.				2						1				3	.07
I. furcatus	87	52	58	44	42	48	22	29	21	22	15	12		452	11.35
I. melas					2							1		3	.07
P. oliva	5	7		8		1	1			3	3	2		30	.75
M. ceph								2						2	.05
C. gulosus										2	5			7	.17
R. chry.							3							3	.07
M. sal.					1			3	1					5	.12
L. cyan.							1			1				2	.05
L. macro	3		1	1	3		1	3	13	14	12	10		61	1.53
L. mega						1				1				2	.05
L. auritus	2													2	.05
P. annul	1													1	.02
A. grun.	91	48	92	76	31	81	100	272	126	151	58	56		1182	29.69
C. cyano						1	3			2				6	.15
Total	370	240	303	242	198	371	521	522	428	379	224	183		3981	99.99
% of Tot	9.29	6.03	7.61	6.07	4.97	9.32	13.08	13.11	10.75	9.52	5.62	4.60		99.97	

Table 4. Numbers of Fish Taken in Experimental Gill Nets from Falcon Reservoir July 1, 1955 through June 30, 1956

Species	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	June	Total	% of Total
L. spat.	16	20	12	7	10	5	2		7	19	2	18	118	3.91
L. plat.														
L. prod														
L. osseus	1	3		2			2			2		1	11	.36
D. ceped	17	21	2	5	1	4	6	5	24	13	8	4	110	3.65
A. fasci														
I. niger														
I. bubalus	68	47	37	104	315	278	118	231	69	98	56	90	1511	50.08
Carp carpio										2	5	6	13	.43
C. carpio	5	2	1	1	3	3	1	3	1		1		21	.69
I. punct.									1		1		2	.07
I. furcatus	20	28	16	14	29	19	4	16	13	18	7	27	211	6.99
A. melas														
P. olivaris	1	3	3										7	.23
M. cephalus				1									1	.03
C. gulosus		1					3	2	2		2	1	11	.36
M. chry					1							1	2	.07
M. sal				1				3					4	.13
L. cyano		1	1						2		1		5	.16
L. macro.	3	4	2	2	2	1		7		5	1	1	28	.92
L. mega														
L. auritus														
P. annularis				1	1								2	.07
A. grun	133	56	52	53	51	43	3	139	207	117	50	44	948	31.43
C. cyano	3	1	1	2	1	3	1						12	.38
Total	267	187	127	193	414	356	[illegible]	406	326	274	134	193	3017	
% of Total	8.85	6.19	4.20	6.39	13.72	11.84	[illegible].64	13.45	10.80	9.08	4.44	6.39		99.[illegible]

Table 5. Numbers of Fish Taken in Experimental Gill Nets from Falcon Reservoir July 1, 1956 through June 30, 1957

Species	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	June	Total	% of Total
L. Spat.	1	8	2	6	8	2	4	8	4	11	15	11	80	6.53
L. plat.														
L. prod														
L. osseus	1	2		1	7	6	1	4	14	24	2	3	65	5.31
D. ceped		4		7	3	24	3	13	15	32		4	105	8.57
I. niger														
I. bubalus	54	68	21	16	46	80	41	18	25	14	47	51	481	39.26
Carp. Carpio	3	1	1										5	.41
C. carpio					2	2	5	1	1			2	13	1.06
I. punct.						4	11	11	2				28	2.28
I. furcatus	12	8	16	8	22	8	4	9	14	5	9		115	9.38
I. melas											3		3	.24
P. olivaris		2											2	.16
M. cephalus														
C. gulosus														
R. chrysops					1	1					1	1	4	.32
M. salmoides										2	2		4	.32
L. cyanellus	1										1		2	.16
L. macrochirus	6	1						1					8	.65
A. grunniens	16	78	35	15	21	15	36	37	44	7	2	2	308	25.14
C. cyanoguttatum	1				1								2	.16
Total	95	172	75	53	111	142	105	102	119	95	82	74	1225	99.95
% of Total	7.75	14.04	6.12	4.32	9.06	11.60	8.57	8.33	8.33	7.75	6.69	6.04		

Table 6. Pounds of Fish Taken in Experimental Gill Nets from Falcon Reservoir - February 1, 1954 through June 30, 1954

Species	Feb.	March	April	May	June	Total	% of Total
L. spatula	0.50		21.18	27.00	90.29	138.97	13.71
L. Productus			8.31			8.31	0.82
L. osseus	0.24	21.10	2.31	8.24		31.89	3.15
D. ceped	7.77	11.76	22.94	31.32	8.43	82.22	8.11
I. bubalus	7.40		6.60	16.28	2.06	32.34	3.19
Carp. carpio	0.43	0.89	1.87			3.19	0.31
C. carpio	3.95	13.53	3.75	1.12		22.35	2.20
I. punctatus					4.06	4.06	0.40
I. furcatus	59.42	73.54	76.67	21.82	107.96	339.41	33.48
I. melas				0.91		.91	0.09
P. olivaris	2.50	3.43		51.21	3.12	60.26	5.95
M. salmoides							
L. cyanellus		0.24				.24	0.02
L. Macrochirus	0.41					.41	0.04
P. annularis		0.26	0.19			.45	0.04
A. grunniens	41.93	40.58	18.73	112.25	74.79	288.28	28.44
C. cyanoguttatum				0.31		.31	0.03
Total	124.55	165.33	162.55	270.46	290.71	1013.60	99.99
% of Total	12.29	16.31	16.03	26.68	28.68	99.99	

Table 7..Pounds of Fish Taken in Experimental Gill Nets from Falcon Reservoir, July 1, 1954 through June 30, 1955

Species	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	June	Total	%orTotal
L. spatula	346.82	180.77	128.38	163.49	235.08	200.64	143.08	88.39	235.54	278.02	136.86	219.40	2356.47	41.70
L. plat					7.74								7.74	0.13
L. prod	4.06	2.74	2.81	7.11						2.74			19.46	0.34
L. osseus	3.49				4.76	5.56	8.64	2.98	0.94	2.94			29.31	0.51
D. ceped	0.94	2.99	6.17	6.26	1.33	2.29	1.18	0.92	4.99	11.92	6.59	8.96	54.54	0.96
A. fasciatus m.										0.17			0.17	0.01
I. bubalus	14.74	18.11	58.39	17.84	45.49	80.52	284.36	109.98	285.00	130.58	101.63	48.39	1195.03	21.15
Carp carpio								0.20		0.52			0.72	0.01
C. carpio	22.27	2.84	59.07	8.44	4.74	0.85	6.69	0.44	10.39	1.74	2.12	3.50	123.09	2.17
I. punct.				1.93						0.33			2.26	0.03
I. furcatus	91.79	33.44	43.73	37.13	45.99	55.40	15.81	18.17	20.23	35.29	20.66	15.71	433.35	7.66
I. melas					1.30							0.35	1.65	0.02
P. olivares	5.84	21.06		35.39		4.25	3.74			11.98	12.55	6.93	101.74	1.80
M. cephalus								9.40					9.40	0.16
C. gulosus										0.25	1.17		1.42	0.02
R. chrysops							3.73						3.73	0.06
M. salmoides					0.92			5.87	2.00				8.79	0.15
L. cyan.							0.09			0.10			0.19	0.01
L. macro.	0.24		0.10	0.18	0.35		0.11	0.40	1.71	1.73	1.08	1.03	6.93	0.12
L. auritus	0.19												0.19	0.01
L. mega						0.15				0.15			0.30	0.01
P. annul.	0.19												0.19	0.01
A. grun.	31.28	19.04	183.31	52.26	32.51	51.11	81.98	273.40	240.76	233.42	50.06	44.78	1293.91	22.90
C. cyano.						0.09	0.21			0.38			0.68	0.01
Total	521.85	280.99	481.96	330.03	380.21	400.86	549.62	510.15	801.56	712.26	332.72	349.05	5651.26	99.95
% of Total	9.23	4.97	8.52	5.84	6.72	7.09	9.72	9.02	14.18	12.60	5.88	6.17	99.94	

Table 8. Pounds of Fish Taken in Experimental Gill Nets from Falcon Reservoir July 1, 1955 through June 30, 1956

Species	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	June	Total	% of Total
L. spat.	136.27	178.87	100.65	69.72	74.86	58.50	21.14		53.76	166.74	11.80	145.36	1017.67	35.31
L. osseus	1.50	5.74		1.94			3.48			5.49		3.31	21.46	0.74
D. ceped.	4.81	5.17	0.71	0.84	0.17	0.72	0.91	0.55	7.56	2.03	2.39	0.49	26.35	0.91
I. buba	14.75	27.79	19.13	37.84	131.13	237.98	99.70	88.72	45.18	64.11	29.97	68.25	864.55	30.00
Carp carpio				2.80						0.90	2.56	3.63	9.89	0.34
C. carpio	9.79	8.49	5.18		12.67	6.20	0.45	0.82	0.56		3.25		47.41	1.64
I. punct.									0.13		0.43		0.56	0.02
I. furcatus	21.20	51.97	14.07	16.11	43.30	17.95	2.31	7.34	20.90	26.69	10.90	28.70	261.44	9.07
P. olivaris	1.07	5.37	6.50										12.94	0.45
M. cephalus				6.99									6.99	0.24
C. gulosus		0.10					0.49	0.62	0.51		0.91	0.40	3.03	0.10
R. chrysops					2.81							1.37	4.18	0.14
M. salmoides				2.56				9.86					12.42	0.43
L. cyano.		0.13	0.34						0.14		0.06		0.67	0.02
L. macro.	0.03	0.34	0.20	0.19	0.17	0.08		0.78		0.36	0.05	0.09	2.29	0.08
P. annul.				0.78	0.14								.92	0.03
A. grun.	169.47	14.29	23.72	30.92	36.65	10.97	1.07	76.87	71.86	95.35	19.73	37.16	588.06	20.40
C. cyano	0.29	0.09	0.09	0.35	0.09	0.25	0.06						1.22	0.04
Total	359.18	298.35	170.59	171.04	301.99	332.65	129.61	185.56	200.60	361.67	82.05	288.76	2882.05	99.96
% of Total	12.46	10.35	5.92	5.93	10.48	11.54	4.50	6.44	6.96	12.54	2.85	10.02	99.96	

Table 9. Pounds of Fish Taken in Experimental Gill Nets from Falcon Reservoir July 1, 1956 through June 30, 1957

Species	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	June	Total	% of Total
L. spat.	8.99	65.56	18.52	68.49	95.20	18.73	39.06	76.30	39.25	113.06	142.90	66.03	752.09	36.46
L. osseus	4.56	4.99		4.74	26.90	14.86	4.25	12.31	49.01	84.34	6.62	11.86	224.44	10.88
D. ceped.		1.19		1.64	0.29	6.06	0.27	4.38	9.40	3.67		0.44	27.34	1.33
I. buba.	68.98	117.12	11.56	16.42	47.01	189.07	52.16	11.70	13.27	7.64	69.46	71.36	675.75	32.77
Carp. carpio	1.04	0.24	1.25										2.53	0.12
C. carpio					5.83	0.98	8.02	7.11	6.49			1.25	29.68	1.44
I. punct.						0.83	2.19	4.92	0.43				8.37	0.40
I. furcatus	9.77	5.30	8.49	5.02	6.92	14.33	1.27	8.93	5.15	2.80	11.63		79.61	3.86
I. melas											2.11		2.11	0.10
P. olivaris		14.93											14.93	0.72
M chrysops					1.25	0.23					1.25	2.00	4.73	0.23
M. salmoides										2.05	2.58		4.63	0.22
L. cyano	0.10										0.14		0.24	0.01
L. macro	0.57	0.08						0.10					0.75	0.04
A. grun	6.09	95.02	11.95	9.64	7.90	7.46	32.19	20.60	39.47	2.26	1.67	0.79	235.04	11.40
C. cyano	0.05												.05	.02
Total	100.15	304.43	51.77	105.95	191.30	252.55	139.41	146.35	162.47	215.82	238.36	153.73	2062.29	100.00
Percent of Total	4.86	14.76	2.51	5.14	9.28	12.25	6.76	7.10	7.88	10.46	11.55	7.45	100.00	

Table 10. Success of Experimental Gill Netting in Falcon Reservoir in Terms of Pounds and Numbers of Fish Caught February 1, 1954 through June 30, 1955

Month	Number of Nets Set	No. of Ft. of Net Set	No. of Fish Caught	Ave. No. of Fish/Net	Ave. No. of Fish/Ft./Net	Pounds of Fish Caught	Ave. Pounds Fish/Net	Ave. Pounds of Fish Ft./Net
February	10	1250	190	19.00	.153	124.55	12.45	.099
March	10	1250	251	25.10	.200	165.33	16.53	.132
April	10	1250	220	22.00	.176	162.55	16.25	.129
May	10	1250	354	35.40	.283	270.46	27.04	.216
June	10	1250	257	25.70	.206	290.71	29.07	.232
July	10	1250	370	37.00	.296	521.85	52.18	.417
August	10	1250	240	24.00	.192	280.99	28.09	.244
September	10	1250	303	30.30	.242	481.96	48.19	.385
October	10	1250	242	24.20	.193	330.03	33.00	.264
November	10	1250	198	19.80	.158	380.21	38.02	.304
December	10	1250	371	37.10	.297	400.86	40.08	.320
January	10	1250	521	52.10	.417	549.62	54.96	.439
February	10	1250	522	52.20	.418	510.15	51.01	.408
March	10	1250	428	42.80	.342	801.56	80.15	.641
April	10	1250	379	37.90	.303	712.26	71.22	.567
May	10	1250	224	22.40	.179	332.72	33.27	.266
June	10	1250	183	18.30	.147	349.05	34.90	.279
Totals	170	21250	5253	525.30	4.202	6683.86	666.41	5.342
Averages	10	1250	309	30.90	.247	393.16	39.20	.314

Table 11. Success of Experimental Gill Netting in Falcon Reservoir in Terms of Pounds and Numbers of Fish Caught July 1, 1955 through June 30, 1956

Month	Number of Nets Set	No.of Ft. of Net Set	No.of Fish Caught	Ave. No. of Fish/ Net	Ave.No. of Fish/Ft.ofNet	Pounds of Fish Caught	Ave.Pounds Fish/Net	Ave.Pounds Fish/Net
July	10	1250	267	26.70	.213	359.18	35.91	.287
August	10	1250	187	18.70	.149	298.35	29.83	.238
September	10	1250	127	12.70	.101	170.59	17.05	.136
October	10	1250	193	19.30	.155	171.04	17.10	.136
November	10	1250	414	41.40	.331	301.99	30.19	.241
December	10	1250	356	35.60	.285	332.65	33.26	.266
January	10	1250	140	14.00	.112	129.61	12.96	.103
February	10	1250	406	40.60	.325	185.56	18.55	.148
March	10	1250	326	32.60	.261	200.60	20.06	.165
April	10	1250	274	27.40	.219	361.67	36.16	.288
May	10	1250	134	13.40	.107	82.05	8.20	.065
June	10	1250	193	19.30	.155	288.76	28.87	.231
Totals	120	15000	3017	301.70	2.413	2882.05	288.14	2.304
Averages	10	1250	251	25.14	.201	240.17	24.01	.192

Table 12. Success of Experimental Gill Netting on Falcon Reservoir in Terms of Pounds and Numbers of Fish Caught July 1, 1956 through June 30, 1957

Month	Number of Nets Set	No. of Ft. Of Net Set	No. of Fish Caught	Ave. No. of Fish/Net	Ave. No. of Fish Ft./Net	Pounds of Fish Caught	Ave. Pounds of Fish/Net	Ave. Pounds Fish/Net
July	10	1250	95	9.50	.076	100.15	10.01	.080
August	10	1250	172	17.20	.138	304.43	30.44	.243
September	6	750	75	12.50	.100	51.77	8.63	.069
October	6	750	53	8.83	.070	105.95	17.66	.141
November	6	750	111	18.50	.148	191.30	31.88	.255
December	6	750	142	23.66	.189	252.55	42.08	.336
January	6	750	105	17.50	.140	139.41	23.23	.186
February	6	750	102	17.00	.136	146.35	24.39	.195
March	6	750	119	19.83	.158	162.47	27.08	.216
April	6	750	95	15.83	.126	215.82	35.97	.288
May	6	750	82	13.66	.109	238.36	39.72	.318
June	6	750	74	12.33	.098	153.73	25.62	.205
Total	80	10000	1225	186.34	1.488	2062.29	316.71	2.532
Averages	66	833	102	15.53	.124	171.85	26.39	.211

Table 13. Fish Species Caught in Seines and Rotenone Collections From Falcon Reservoir February 1, 1954 through June 30, 1957

Species	1st Segment No.	1st Segment % of Total	2nd Segment No.	2nd Segment % of Total	3rd Segment No.	3rd Segment % of Total	4th Segment No.	4th Segment % of Total	Total	% of Total
L. spatula			4	0.04	2	0.03			6	.02
L. osseus			1	0.01					1	.00
D. petenensis	1	0.01			12	0.21	6	0.15	19	.05
D. cepedianum	3517	45.20	3993	48.36	2950	52.21	3690	34.96	14.150	43.89
A. fasciatus	863	11.09	216	2.61	204	3.61	3618	34.28	4901	15.20
I. niger					1	0.01			1	.00
I. bubalus	551	7.08	49	0.59	613	10.84	629	5.96	1842	5.71
Carp carpio							3	0.02	3	.00
C. carpio			2	0.02			12	0.11	14	.04
H. aestivalis	33	0.42	24	0.29	3	0.05	32	0.30	92	.28
N. amabilis	33	0.42			3	0.05	19	0.18	55	.17
N. jemezanus	1	0.01					6	0.05	7	.02
N. lutrensis	12	0.15	149	1.80	8	0.14	61	0.57	230	.71
N. proserpinus	3	0.04	57	0.69	10	0.17	131	1.24	201	.62
N. braytoni	161	2.07	113	1.37	15	0.26	120	1.13	409	1.27
I. punctatus			1	0.01			1	0.01	2	.00
I. furcatus			11	0.13	2	0.03	3	0.02	16	.04
I. melas			2	0.02	4	0.07	1	0.01	7	.02
P. olivaris							2	0.01	2	.00
A. rostrata	1	0.01							1	.00
C. varigatus	1	0.01	19	0.23	5	0.08	6	0.05	31	.09
G. affinis	240	3.08	1319	15.98	327	5.78	620	5.87	2506	7.77
M. cephalus	2	0.02							2	.00
M. beryllina	1854	23.83	2089	25.30	1395	24.69	1131	10.71	6469	20.06
L. cyanellus	119	1.52	12	0.14	37	0.65	16	0.15	184	.57
L. macrochirus	18	0.23	52	0.63	6	0.10	28	0.26	104	.32
L. auritus	1	0.01	1	0.01					2	.00
P. annularis	1	0.01							1	.00
A. grunniens	345	4.43	111	1.34	47	0.83	360	3.41	863	2.67
C. cyanoguttatum	23	0.29	31	0.37	5	0.08	59	0.55	118	.36
Total	7780	99.99	8256	99.99	5650	99.99	10554	99.99	32239	99.88

Table 14. Ranks Lengths Weights and "K" Factors of Most Common Fish Caught in Gill Nets February 1, 1954 through June 30, 1957

Species	Rank by No.	Rank by Wt.	Standard Length Min.	Standard Length Max.	Standard Length Average	Weight in Grams Min.	Weight in Grams Max.	Weight in Grams Average	"K" Factor Min.	"K" Factor Max.	"K" Factor Average
L. spatula	5	1	318	2038	648.36	567	74910	1318.12	0.53	0.95	0.69
L. productus	18	9	425	740	630.43	602	2401	936.18	0.63	1.03	0.83
L. osseus	7	8	608	720	656.18	680	1653	922.49	0.50	0.62	0.56
D. cepedianum	4	6	133	260	180.22	85	340	171.02	1.27	2.76	1.96
I. bubalus	1	2	115	340	221.25	45	4767	603.36	1.63	4.00	3.04
Carp carpio	11	11	120	225	174.25	48	704	143.75	2.30	2.80	2.53
C. carpio	6	5	180	460	249.28	54	2608	614.33	2.41	2.90	2.67
I. punctatus	10	12	206	409	362.36	69	907	207.32	1.39	1.80	1.43
I. furcatus	3	4	143	638	416.13	24	9080	452.18	1.20	1.84	1.62
I. melas	19	15	267	302	283.18	254	310	269.34	1.09	1.15	1.12
P. olivaris	9	7	210	425	325.86	153	1134	346.25	0.05	1.05	0.82
C. gulosus	13	16	120	205	154.66	57	312	132.26	2.23	3.60	3.16
R. chrysops	17	13	260	282	273.22	496	624	586.12	2.70	2.98	2.84
M. salmoides	14	10	295	380	332.00	907	1928	1276.00	2.90	3.45	3.23
L. cyanellus	16	19	96	116	105.36	28	42	37.53	2.76	3.10	2.88
L. macrochirus	8	14	100	117	106.39	45	52	49.69	3.53	4.90	3.81
P. annularis	15	18	114	168	139.29	35	86	65.13	1.77	4.32	2.80
A. grunniens	2	3	148	549	316 86	68	2406	652.69	1.03	3 50	2.18
C. cyanoguttatum	12	17	94	106	96.87	32	46	38.12	3.24	4.61	3.72

Table 15. Numbers and Percentages of Common Fish Species Caught in Falcon Reservoir in Experimental Gill Nets, July 1, 1954 through June 30, 1957

Species	First Segment February 1, 1954 to June 30, 1954		Second Segment July 1, 1954 to June 30, 1955		Third Segment July 1, 1955 to June 30, 1956		Fourth Segment July 1, 1956 to June 30, 1957	
	Numbers	% of Total	Numbers	% of Total	Numbers	% of Total	Numbers	% of Total
L. spatula	111	9.00	498	12.69	118	3.95	80	6.57
L. osseus	19	1.54	32	0.81	11	0.37	65	5.34
D. cepedianum	373	30.27	226	5.76	110	3.69	105	8.63
I. bubalus	73	5.92	1395	35.57	1511	50.69	481	39.55
Carp carpio	4	0.32	2	0.05	13	0.44	5	0.41
C. carpio	37	3.00	58	1.47	21	0.70	13	1.07
I.punctatus	10	0.81	3	0.07	2	0.07	28	2.30
I. furcatus	337	27.35	452	11.52	211	7.08	115	9.45
R. chrysops	0	0	3	0.07	2	0.06	4	0.33
M. salmoides	0	0	5	0.12	4	0.13	4	0.33
L. macrochirus	5	0.40	61	1.55	28	0.94	8	0.66
P. annularis	4	0.32	1	0.02	2	0.06	0	0
A. grunniens	259	21.02	1186	30.23	948	31.80	308	25.33
Total	1232	99.99	3922	99.99	2981	99.99	1216	99.99

TABLE 16

ROUGH (X) AND GAME (O) FISH POPULATION TRENDS

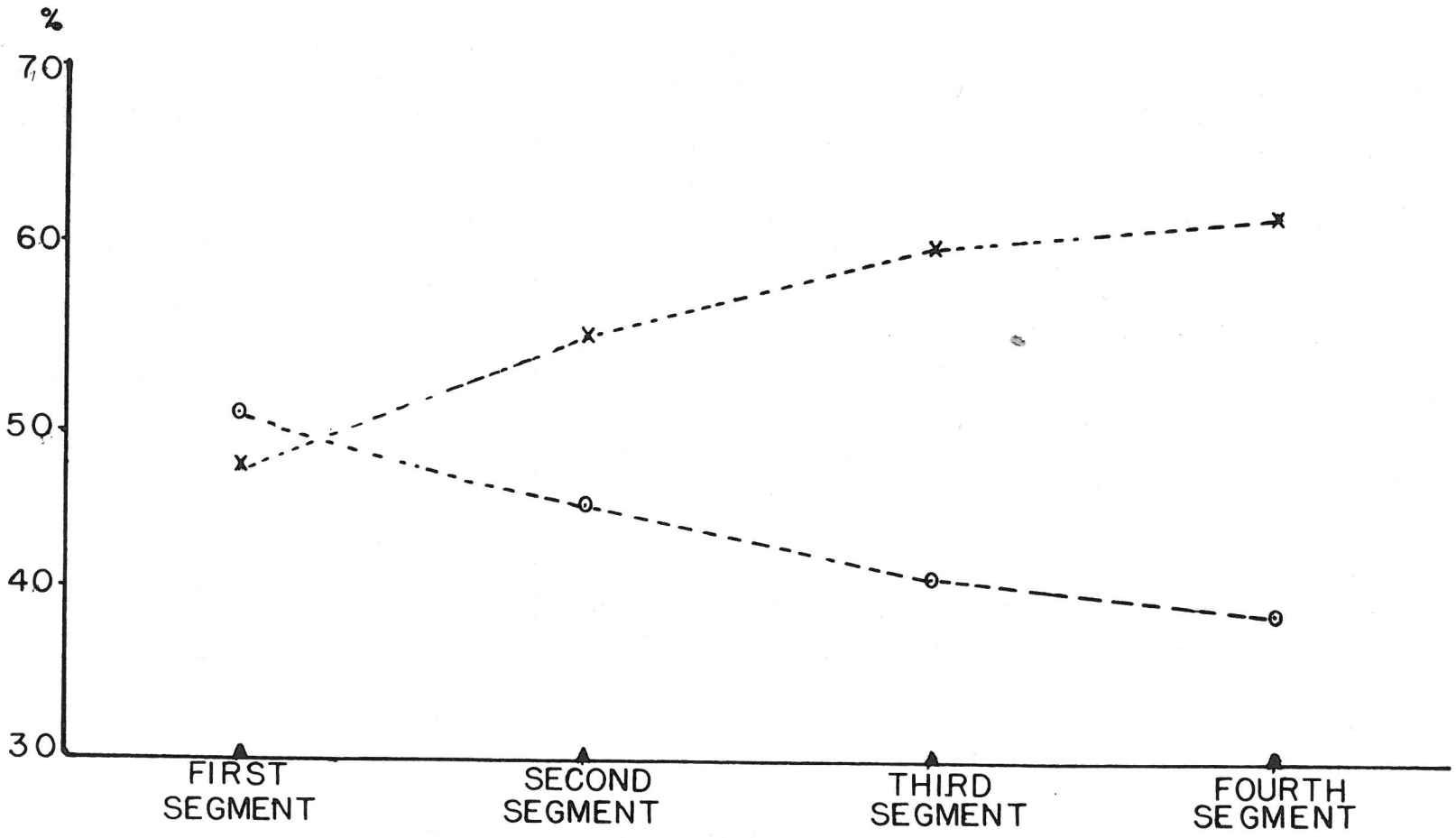


Table 17. Sexual Condition of Eight Common Species of Fish Taken in Nets from Falcon Reservoir February 1, 1954 through June 30, 1954

		February					March					April					May					June				
		1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
L. spatula	M	-	-	-	-	-	-	-	-	-	-	-	1	4	8	-	-	1	8	18	3	-	7	15	20	-
	F	-	-	-	1	-	-	-	-	-	-	-	-	2	-	-	-	1	2	-	1	-	5	11	-	2
L. osseus	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	F	-	-	-	1	-	-	-	-	-	-	-	1	-	2	-	-	-	1	7	-	-	-	-	-	-
D. cepedianum	M	-	-	12	13	-	-	2	14	50	-	-	4	15	29	-	-	7	49	53	1	-	3	13	5	-
	F	-	-	13	-	-	-	-	8	-	-	-	3	5	-	-	-	4	44	-	-	-	3	10	-	-
I. bubalus	M	-	-	2	18	-	-	-	4	8	-	-	-	3	8	-	-	-	6	7	-	-	-	1	3	-
	F	-	-	2	-	-	-	2	6	-	-	-	-	1	-	-	-	-	11	-	-	1	-	-	-	-
Carp carpio	M	-	-	-	1	-	-	-	1	1	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
	F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C. carpio	M	-	-	1	5	-	-	1	7	10	-	-	-	-	3	1	-	-	-	-	1	-	-	-	-	-
	F	-	-	1	-	-	-	2	4	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
I. furcatus	M	-	6	10	48	4	-	5	8	46	4	-	3	15	10	4	-	2	14	12	4	-	8	12	29	5
	F	-	4	19	-	-	-	2	2	-	2	-	1	5	-	-	-	1	5	-	-	-	2	7	-	-
A. grunniens	M	-	6	8	10	-	-	3	10	21	4	-	2	10	17	-	-	-	-	-	-	-	5	17	31	2
	F	-	1	6	-	-	-	3	11	-	2	-	1	5	-	-	-	-	-	-	-	-	8	14	-	-

Table 18. Sexual Condition of Eight Common Species of Fish Taken in Nets from Falcon Reservoir July 1, 1954 through June 30, 1955

		July					August					September					October					November					December				
		1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
L. spatula	M	2	4	46	48	-	-	1	11	24	-	-	1	10	13	-	-	-	4	17	-	-	4	11	11	-	-	1	4	8	-
	F	1	6	32	-	-	-	2	6	-	-	-	-	8	-	-	-	-	6	-	-	-	2	10	-	-	-	4	6	-	-
L. osseus	M	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	2	1	-	-	1	1	3	-
	F	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	1	1	-	-	-	-	2	-	-
D. cepedianum	M	-	-	-	-	1	-	-	49	-	-	-	-	8	11	-	-	-	7	18	-	-	1	1	1	-	-	2	1	6	-
	F	-	-	1	-	-	-	1	4	-	-	-	-	7	-	-	-	-	9	-	-	-	1	3	-	-	-	-	4	-	-
I. bubalus	M	-	5	4	5	-	-	5	11	42	-	-	-	12	44	-	-	-	8	24	-	-	3	11	40	-	-	4	36	101	-
	F	-	1	5	-	-	-	2	8	-	-	-	1	14	-	-	-	-	11	-	-	-	4	9	-	-	-	8	45	-	-
Carp carpio	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C. carpio	M	-	3	4	5	-	-	-	-	-	-	-	-	6	10	-	-	2	1	-	-	-	-	-	-	-	-	-	-	-	-
	F	-	1	3	-	-	-	1	1	-	-	-	1	3	-	-	-	2	-	-	-	-	1	-	-	-	-	-	1	-	-
I. furcatus	M	-	11	21	38	-	-	2	15	23	-	-	2	14	24	-	-	2	10	21	-	-	3	8	18	-	-	2	15	19	-
	F	-	6	11	-	-	-	2	10	-	-	-	2	16	-	-	-	2	9	-	-	-	4	9	-	-	-	3	9	-	-
A. grunniens	M	-	5	19	57	-	-	2	14	23	-	-	2	21	53	-	-	2	18	30	-	-	2	14	40	-	-	4	11	43	-
	F	-	9	11	-	-	-	2	6	-	-	-	2	14	-	-	-	3	23	-	-	-	4	21	-	-	-	4	19	-	-

		January					February					March					April					May					June				
		1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
L. spatula	M	-	2	10	5	-	-	4	3	3	-	-	8	16	4	-	-	4	18	1	-	-	2	6	4	-	-	3	6	10	-
	F	-	1	8	-	-	-	1	2	-	-	-	10	10	-	-	-	6	12	-	-	-	3	9	-	-	-	1	14	-	-
L. osseus	M	-	1	3	2	-	-	-	1	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-
	F	-	1	4	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D. cepedianum	M	-	-	-	3	-	-	1	3	3	-	-	3	9	6	-	-	6	14	7	-	-	-	44	12	-	-	2	8	6	-
	F	-	1	2	-	-	-	-	1	-	-	-	-	5	-	-	-	2	12	-	-	-	1	26	-	-	-	-	7	-	-
I. bubalus	M	-	12	68	203	-	-	16	68	38	-	-	6	38	60	-	-	8	14	40	-	-	2	27	29	-	-	1	8	15	-
	F	-	8	52	-	-	-	5	61	-	-	-	14	72	-	-	-	4	18	-	-	-	2	28	-	-	-	3	17	-	-
Carp carpio	M	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
	F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C. carpio	M	-	-	1	2	-	-	-	-	1	-	-	-	2	2	-	-	-	1	-	-	-	-	1	-	-	-	-	1	-	-
	F	-	-	1	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
I. furcatus	M	-	-	7	5	-	-	6	13	3	-	-	-	6	13	-	-	1	6	4	-	-	-	6	2	-	-	1	6	3	-
	F	-	2	8	-	-	-	-	7	-	-	-	-	2	-	-	-	1	10	-	-	-	1	6	-	-	-	-	2	-	-
A. grunniens	M	-	6	18	47	-	-	16	53	88	-	-	8	[illegible]	22	-	-	18	49	31	-	-	4	18	19	-	-	3	18	20	-
	F	-	4	25	-	-	-	9	106	-	-	-	4	34	-	-	-	12	41	-	-	-	6	13	-	-	-	3	12	-	-

Table 19. Sexual Condition of Eight Common Species of Fish Taken in Nets from Falcon Reservoir July 1, 1956 through June 30, 1957

		July					August					September					October					November					December				
		1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
L. spatula	M	-	-	-	-	-	-	1	4	1	-	-	-	1	-	-	-	-	1	4	-	-	-	2	3	-	-	-	1	1	-
	F	-	-	1	-	-	-	-	3	-	-	-	-	1	-	-	-	-	1	-	-	-	-	3	-	-	-	-	-	-	-
L. osseus	M	-	-	-	1	-	-	-	1	1	-	-	-	-	-	-	-	-	-	1	-	-	-	4	1	-	-	-	3	1	-
	F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	2	-	-
D. cepedianum	M	-	-	-	-	-	-	-	2	1	-	-	-	-	-	-	-	-	3	2	-	-	-	1	2	-	-	-	6	14	-
	F	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	4	-	-
I. bubalus	M	-	6	16	14	-	-	2	31	11	-	-	1	4	14	-	-	-	4	8	-	-	1	12	16	-	-	1	32	28	-
	F	-	4	14	-	-	-	2	14	-	-	-	-	2	-	-	-	-	4	-	-	-	-	17	-	-	-	1	18	-	-
Carp. carpio	M	-	1	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	F	-	-	1	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C. carpio	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-
	F	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-
I. furcatus	M	-	1	6	1	-	-	1	3	3	-	-	1	7	4	-	-	-	1	3	-	-	-	-	-	-	-	-	3	-	-
	F	-	-	4	-	-	-	-	1	-	-	-	-	4	-	-	-	-	4	-	-	-	-	-	-	-	-	-	5	-	-
A. grunniens	M	-	-	8	2	-	-	-	4	8	-	-	2	14	7	-	-	-	6	5	-	-	2	6	8	-	-	1	6	3	-
	F	-	-	6	-	-	-	1	3	-	-	-	1	4	-	-	-	-	4	-	-	-	-	5	-	-	-	-	6	-	-

		January					February					March					April					May					June				
		1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
L. spatula	M	-	-	2	1	-	-	-	3	3	-	-	-	2	1	-	-	-	4	5	-	-	-	8	4	-	-	-	-	-	-
	F	-	-	1	-	-	-	-	2	-	-	-	-	1	-	-	-	-	2	-	-	-	-	3	-	-	-	-	-	-	-
L. osseus	M	-	-	-	-	-	-	-	3	-	-	-	-	6	6	-	-	-	12	10	-	-	-	-	-	-	-	-	-	-	-
	F	-	-	1	-	-	-	-	1	-	-	-	-	2	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-
D. cepedianum	M	-	-	-	-	-	-	-	6	5	-	-	-	6	2	-	-	1	14	13	-	-	1	1	-	-	-	-	-	-	-
	F	-	-	1	2	-	-	-	2	-	-	-	1	6	-	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-
I. bubalus	M	-	1	18	8	-	-	-	6	3	-	-	-	12	8	-	-	1	6	4	-	-	1	18	12	-	-	-	-	-	-
	F	-	2	12	-	-	-	-	9	-	-	-	-	5	-	-	-	-	3	-	-	-	1	15			-	-	-	-	-
Carp carpio	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	F	-	-	-	-	-	-	-	-	-	-	-	-	--		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C. carpio	M	-	-	3	1	-	-	-	-	1	-	-	-	1	-	-	-	-	-	-	-	-	-	-	--	-	-	-	-	-	-
	F	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
I. furcatus	M	-	-	1	1	-	-	-	3	4	-	-	-	4	4	-	-	-	2	2	-	-	-	1	-	-	-	-	-	-	-
	F	-	-	2	-	-	-	-	2	-	-	-	-	8	-	-	-	-	1	-	-	-	-	2	6	-	-	-	-	-	-
A. grunniens	M	-	-	16	-	-	-	-	12	13	-	-	1	20	14	-	-	-	4	2	-	-	-	1	-	-					
	F	-	1	18	-	-	-	-	12	-	-	-	-	9	-	-	-	-	1	-	-	-	-	1	-	-					

Table 20. Stomach Analysis Showing Number of Stomachs Containing Various Food Items

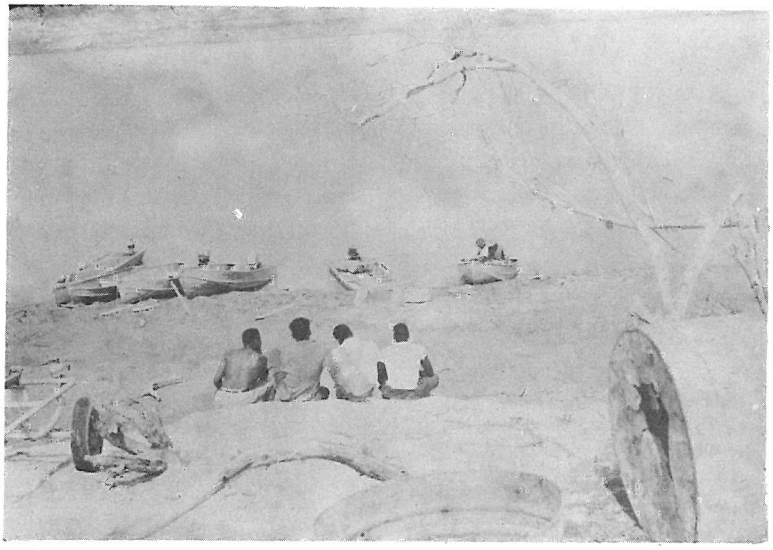
Species	No. of Stomachs	Volume in cc	Coleoptera	Crayfish	Shad	Buffalo	Tetra	Gambusia	Sunfish	Other Game Fish	Forage & Unidentified fish	Misc.
L. spatula	26	392	0	0	6	18	2	0	6	0	0	0
L. osseus	14	226	0	0	4	6	0	2	2	0	2	0
I. punctatus	10	189	0	0	2	0	4	3	0	0	6	0
I. furcatus	186	2790	6	0	58	6	18	12	14	0	65	Corn 7
P. olivaris	16	237	2	0	7	1	4	1	0	0	0	0
R. chrysops	5	60	1	1	1	0	2	1	0	0	0	0
M. salmoides	8	92	1	0	0	2	4	0	1	0	1	0
P. annularis	4	53	0	0	1	0	2	0	1	0	0	0
A. grunniens	169	2197	0	0	48	16	90	1	5	0	5	Gravel 4

Largemouth Bass catches from Falcon Reservoir

SEINING BEACH DURING COLD NORTHER

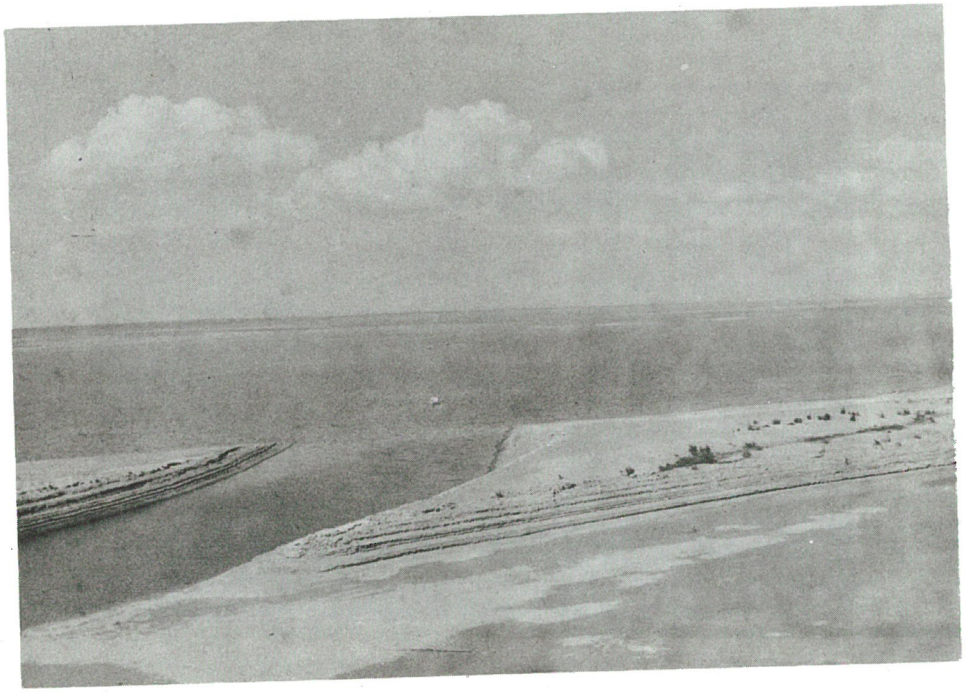
FRONT OF DAM DURING LOW WATER STAGE.

LAKE BED WHEN WATER RECEEDS

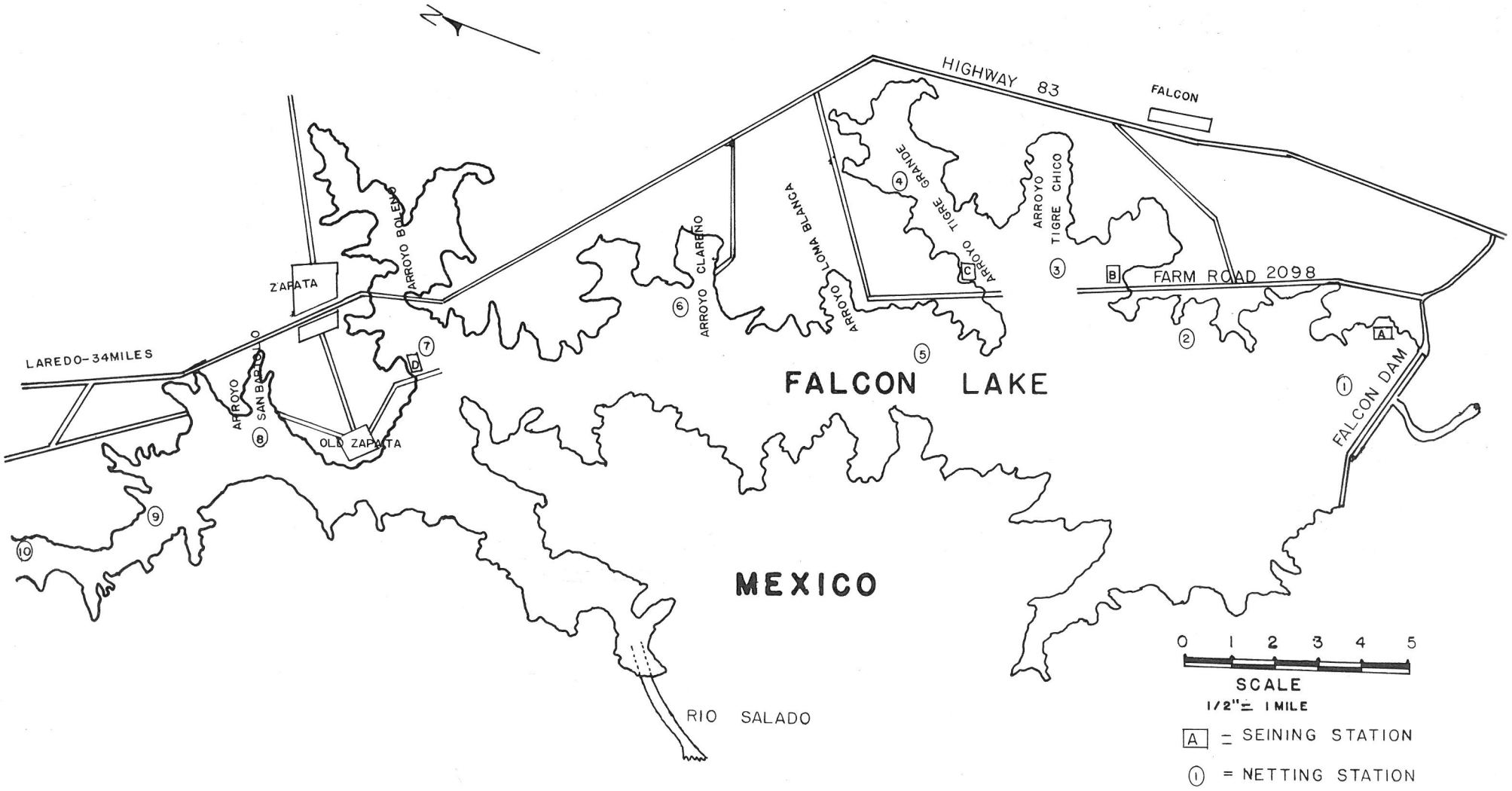


SAN YGNACIO, STATION 10 CENTER OF COMMERCIAL FISHING ACTIVITY.

FRONT OF DAM, NORMAL WATER LEVEL



FRONT OF DAM, LOW WATER LEVEL


HIGHWAY 83
FALCON
FARM ROAD 2098
ZAPATA
LAREDO-34MILES
ARROYO BLANCO
ARROYO CLARENO
ARROYO LOMA BLANCA
ARROYO TIGRE GRANDE
ARROYO TIGRE CHICO
ARROYO SAN BARTOLO
OLD ZAPATA
FALCON DAM
FALCON LAKE
MEXICO
RIO SALADO
0 1 2 3 4 5
SCALE
1/2" = 1 MILE
A = SEINING STATION
(1) = NETTING STATION