PERFORMANCE REPORT

As Required By

FEDERAL AID IN FISHERIES RESTORATION ACT

TEXAS

Federal Aid Project F-4-R-21

Region 2-A Fisheries Studies

Objective B-37: Fishery Management Recommendations

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PERFORMANCE REPORT

State: Texas Project Number: F-4-R-21

Project Title: Region 2-A Fisheries Studies

Project Section: Research and Surveys

Study Title: Fishery Management Recommendations

Contract Period: From January 1, 1974 To December 31, 1974

Program Narrative Objective Number: B-37

Objective: To determine the need for changes in fish harvest regulations, stocking, population control, vegetation control, and contract fishing in Region 2-A waters.

I. Segment Objective:

To determine the need for changes in fish harvest regulations, stocking, population control, vegetation control, and contract fishing in Region 2-A waters.

II. Summary of Progress:

Proposed changes in fishing regulations for the Possum Kingdom Regulatory District were presented at public hearings in each county under Regulatory Authority in Region 2-A. The results of these hearings were presented to the Commissioners of the Texas Parks and Wildlife Department for consideration. The changes made in the fishing laws which affected Region 2-A are as follows:

> Section 7.02 The daily bag limit on channel and blue catfish is twenty-five (25) in the aggregate and the possession limit is fifty (50) in the aggregate. The daily bag limit on flathead catfish is five (5) and the possession limit is ten (10).
>
> Section 7.04 It shall be unlawful to remove game fish eggs from the public waters of this state.

All work accomplished this segment was in conjunction with the statewide walleye evaluation. Lakes in Region 2-A involved in the study were Lakes Diversion, Eagle Mountain, Garza Little Elm and Possum Kingdom. Procedures used were standardized throughout the state. Sampling procedures and techniques were as follows:

A. Spawning observations:

1. Frame nets were set in February and March to determine gonadal condition of all fishes captured. At least 30 of each species were examined. Length and weight measurements were made on most fishes captured. The majority of the nets were set off the dam in each lake.

B. Seine samples:

1. Seine collections were made once a month in each lake from April through October.

2. Sample stations consisted of five sites on Lake Diversion and Eagle Mountain and ten sites on Garza-Little Elm and Possum Kingdom.

3. Two 25-foot drags were made at each site using a 26-foot bag seine of 1/4" ace weave.

4. Nighttime and daytime seining efforts were alternated each month.

5. Collections from each site were kept separately and analyzed at the laboratory.

C. Cove rotenone samples:

1. Samples were taken to estimate the standing crop and species composition of fishes in each reservoir except Lake Diversion.

2. Sites were selected to represent different habitat types in the lake. Each site was surveyed using an engineer's transit with area and volume being calculated for each cove.

3. Liquid rotenone (5%) was used at the rate of 1 ppm. All coves were blocked off the night before each application with a barrier net.

4. At least 100 fishes of several species were tagged and put in each cove to measure percent recovery.

5. A two day pick up of dead fishes was made on each cove.

6. Data were compiled and tabulated to show number and pounds per acre for each fish species collected.

D. Physicochemical:

1. Monthly sampling trips were made to each reservoir. Methods used and parameters measured monthly were water temperature and dissolved oxygen (YSI dissolved oxygen meter), pH (IBC Trophy pH meter), specific conductivity (YSI S-C-T meter), secchi disc transparency, turbidity (Hach colorimeter), total alkalinity and chlorides (standard methods - A.P.H.A., 1971), and total dissolved solids (Standard Methods). In April, July and October, measurements were made on sulfate ($SO_4$), nitrate ($NO_3$-N), and phosphate ($PO_4$-P) (Standard Methods).

2. Samples were taken at two stations, one near the dam and one at the upper end of each lake. Samples were taken between 1000 and 1600 hours each day.

3. Samples were taken at surface, middle, and bottom depths for all parameters except temperature, dissolved oxygen, and pH which were measured at each meter in depth.

4. Mid-week water level readings were recorded for each lake to establish water level fluctuations.

E. Vegetation:

1. One sampling trip was made in August or September on each reservoir to categorize the major vegetative types present.

2. A vegetative checklist and reference map was made for each lake.

F. Age and Growth:

1. Samples were made in conuunction with spawning observations in February and March.

2. Scales were removed from all walleye captured for aging purposes.

G. Young-of-the-year survival:

1. Gill nets were used in September and October to determine growth of walleye in each reservoir.

2. Standard experimental gill nets (150 feet long, 6 feet deep, with varying mesh sizes in 25-foot sections, from 1 to 3 1/2 inches) and monofilament gill nets (those used in striped bass evaluations) were set in each lake.

3. Six nets were set during each month primarily in the area of the dam.

Assistance was provided hatchery personnel during stocking of walleye fry and fingerlings in Lakes Bridgeport, Eagle Mountain, Garza-Little Elm, and Possum Kingdom. All fishes were tempered and released in open water.

Table 1 is a checklist of all fishes taken in sampling efforts on all four lakes. Common and scientific names are based on American Fisheries Society Special Publication No. 6, A List of Common and Scientific Names of Fishes from the United States and Canada, (Third Edition, 1970).

## Lake Diversion

Lake Diversion, impounded in 1924, is located on the Wichita River drainage in Archer County. Controlled by the Wichita County Water Improvement District No. 2 and the City of Wichita Falls, the lake serves as a source of irrigation water and as a water source for area municipalities with some recreational uses. Pertinent descriptive data on the reservoir are as follows:

| | |
|---|---|
| Surface elevation (ft. msl) | 1051 |
| Surface area in acres | 3419 |
| Volume in acre feet | 40,000 |
| Mean depth (ft) | 12 |
| Maximum depth (ft) | 35 |
| Shoreline length (miles) | 28 |
| Growning season (frost-free days) | 220 |

A map of Lake Diversion showing sample stations is included (Figure 2).

Water samples were taken at two stations each month unless otherwise noted (Tables 5 and 6). Readings reflect somewhat the varying lake water levels. Oxygen and temperature profiles indicated physicochemical stratification did not occur. Specific conductivity (7000 umoh/cm) and chlorides (1600 mg/l) readings were high compared to other lakes but equaled last year's findings. As was to be expected, total dissolved solids readings were high, 3423 mg/l, which reflects slightly saline conditions.

Frame nets were set in February and March to recover fishes for spawning observations and age and growth evaluations. A total of 15 nets were set with only three walleye being captured (Table 2). As in last year's surveys, game fishes far outnumbered rough fishes collected (Table 7). Bluegill and white crappie were predominant fish species collected.

Gill nets were set in September to check for walleye survival. A total of six net were set with four walleye being captured (Table 2). These fish were in much better condition than those collected in frame nets in the previous winter. Rough fishes outnumbered and outweighed game fishes collected (Table 8). Smallmouth buffalo and gizzard shad were most frequently collected in gill nets.

Making seine collections were difficult as it has been in previous years. The shoreline areas do not lend themselves well to seining. Five stations were sampled once each month from April through September. Figure 1 indicates the monthly catch per unit effort for seining. The high numbers collected in May and June reflect large numbers of very small threadfin shad. A total of 22 species was collected in seining efforts with threadfin shad, Mississippi silversides, Dorosoma sp., and red shiners being the most abundant species (Table 3).

A vegetative survey was conducted in August with a map of the major types of vegetation present being labled on a map (Figure 6). Table 4 indicates all genera found on Lake Diversion. Potamogeton pectinatus was the predominant submergent vegetation with Typha sp. and Scirpus sp. being the most abundant emergent vegetation.

Cove rotenone samples were not taken on Lake Diversion. The lake level was being dropped in October to finish work on the dam.

## Eagle Mountain Reservoir

Impounded in 1934, Eagle Mountain Reservoir is the second lake of a chain of three formed in the basin of the West Fork of the Trinity River. Due to its close proximity to Fort Worth, the recreational usage of the lake is high. Controlled by the Tarrant County Water Control and Improvement District No. 1, the water is used for municipal, industrial and irrigation purposes. Pertinent descriptive data on the reservoir are as follows:

| | |
|---|---|
| Surface elevation (ft. msl) | 649.1 |
| Surface area in acres | 9,000 |
| Volume in acre feet | 189,523 |
| Mean depth (ft) | 22 |

| | |
|---|---|
| Maximum depth (ft) | 52 |
| Shoreline length (miles) | 200 |
| Growing season (frost-free days) | 230 |

Figure 3 is a map showing sample stations on Eagle Mountain Reservoir.

Oxygen profiles, together with pH readings, indicated the lake chemically stratified during the summer (Tables 9 and 10). Rains in August and September interrupted this stratification. Temperature profiles do not show the classic pattern of a lake that is thermally stratified. The drop in temperature is not great enough from surface to bottom to indicate true stratification. Mean annual water level fluctuation was about 2.5 feet.

Frame nets were set in February and March to capture walleye for spawning observations. No walleye were recovered in a total of 15 net sets. Game fishes were predominant by number, 98.91%, and by weight, 98.52%, of all fishes collected. White crappie and bluegill were caught in largest numbers (Table 11).

A total of 12 gill nets were set in September and October to check walleye survival. A total of four walleye were captured in September (Table 2). All four walleye captured were from the lower lake area and were in good condition. Rough fishes were predominant by number (59.70%) and by weight (84.28%) (Table 12). Smallmouth buffalo was the predominant species collected.

Seining efforts were made once a month at five stations which exhibited varying shoreline types. Numbers of fishes collected were high in April but leveled off for the remainder of the sampling period (Figure 1). A total of 21 species were collected with Mississippi silversides, bullhead minnow, blacktail shiner, and threadfin shad being prevalent (Table 3).

A vegetative survey in September indicated nine genera to be prevalent (Table 4). Areas of largest infestations are shown on a lake map (Figure 7). Chara sp. and Scirpus sp. were the predominant vegetative types present.

Cove rotenone samples were made in July on three coves (Figures 10, 11 and 12). The field data were tabulated and are presented in Table 13. Totals for coves 1, 2 and 3 represent calculations for total number and pounds per acre. In the average column the pounds are average pounds per acre but the numbers are the actual total number of each species collected from all three coves.

The three cove sites selected represent three different lake habitat types. Cove 1 was near the dam with steep rocky banks and relatively clear water (Figure 10). In this cove sunfishes (bluegill, longear and sunfish spp.) were predominant. Cove 2 had mud shorelines and was located near the power plant heated discharge about mid-lake (Figure 11). Gizzard shad, bluegill, and largemouth bass outnumbered other species collected. Cove 3 was turbid, shallow, and located in the upper lake area (Figure 12). Gizzard and threadfin shad were the most abundant fishes collected. Marked fish recoveries were relatively good; Cove 1 - 75.7%; Cove 2 - 81.4%; and Cove 3 - 76.0%. A total of 4,066 fishes was collected from all coves with the average pounds per acre being 236.14.

## Garza-Little Elm Reservoir

Garza-Little Elm, impounded in 1955, is the largest reservoir in Region 2-A. Located in Denton County, the lake draws sportsmen from a large area due to good access and fine facilities. Controlled by the Corps of Engineers, the lake is used for flood control, municipal and industrial water supply, and recreation. Additional reservoir descriptive data are as follows:

| | |
|---|---|
| Surface elevation (ft. msl) | 515 |
| Surface area in acres | 23,280 |
| Volume in acre feet | 434,000 |
| Mean depth (ft) | 25 |
| Maximum depth (ft) | 67 |
| Shoreline length (miles) | 183 |
| Growing season (frost-free days) | 226 |

Figure 4 is a lake map showing all sample stations.

Readings for dissolved oxygen and pH indicate the lake stratified chemically from June through September (Tables 14 and 15). Temperature readings show that thermal stratification is not completely accomplished. Readings for dissolved oxygen at the upper station were above average in January. Total alkalinity values were normal for all months except June when they were almost double the previous month's readings. Lake water level only fluctuated about two feet during the study period.

A total of 15 frame nets were set in Feburary and March with only one walleye being captured (Table 16). The one walleye that was caught was in good condition (Table 2). White crappie accounted for about 85% by number and by weight of all fishes captured. In one net set in February, 113 white crappie weighing 90 pounds were caught.

Gill nets, totaling 12, were set in September and October near the dam area. A total of nine walleye, all in good condition, were captured (Table 2). Rough fishes dominated the catch by number (64.03%) and by weight (79.98%). Gizzard shad, smallmouth buffalo, white bass and white crappie were the most abundant fishes in the nets (Table 17).

Catch per unit effort for seining collections in Garza-Little Elm were much lower than all other lakes. A total of 20 species were captured at the ten stations from April through October. Threadfin shad and Mississippi silversides were caught in largest numbers. Numbers of fishes collected were not much different from month to month (Figure 1).

A vegetative survey was made in September and a vegetative type map constructed (Figure 8). The predominant emergent vegetation was Salix nigra. It was found in most all cove areas and along the majority of the other shoreline areas. Chara sp. and Potamogeton americanus were the most abundant submergent vegetation (Table 4).

Cove rotenone samples were made in August on Garza-Little Elm Reservoir on three coves (Figures 13, 14, 15). The field data were tabulated and are presented in Table 18. Totals for coves 1, 2, and 3 represent calculations for total number and pounds per acre. In the average column, the pounds are average pounds per acre but the numbers are the actual numbers of each species collected from all three coves.

The three cove sites selected represent three different locales in the lake (Figure 4). The coves differ more as to location, depth, and substrate than other features. Cove 1, though larger in surface area, had much less volume than the other coves. Gizzard shad, sunfish spp., freshwater drum, and longear sunfish were collected in largest numbers. Cove 2 was similar to Cove 1 but did not have as much shallow areas. Both had soft mud bottoms and shorelines. On Cove 2, gizzard shad, freshwater drum, and channel catfish were predominant. Cove 3 had a sandy bottom and, although about the same as the other coves in surface area, had twice the volume. Gizzard shad, threadfin shad, longear sunfish and freshwater drum were the fishes in greatest abundance. Cove 3 had three times more fishes collected and twice the pounds per acre than the other two coves. Marked fish recoveries were as follows: Cove 1 - 61%; Cove 2 - 74%; and Cove 3 - 82%. A total of 19,798 fishes were collected from all coves with the average pounds per acre being 138.68. Fourteen white bass X striped bass hybrids were also collected in Cove 3.

## Possum Kingdom Reservoir

Possum Kingdom Reservoir, impounded in 1941, is one of the older lakes in Region 2-A. Controlled by the Brazos River Authority, the water is used for municipal, industrial, mining, irrigation, power, and recreational purposes. Additional lake data are as follows:

| | |
|---|---|
| Surface elevation (ft. msl) | 1,000 |
| Surface area in acres | 19,800 |
| Volume in acre feet | 724,700 |
| Mean depth (ft) | 37 |
| Maximum depth (ft) | 145 |
| Shoreline length (miles) | 310 |
| Growing season (frost-free days) | 221 |

Figure 5 indicates sample stations on Possum Kingdom Reservoir.

Water samples were taken monthly with data presented in Tables 19 and 20. Oxygen, temperature, pH and specific conductivity readings indicate the lake stratified both thermally and chemically from May through October. Due to the clearness of the water, the thermocline is rather deep. In May, it is about 16 to 18 meters in depth but moves up to 8 to 10 meters in depth by August. By September, it starts dropping again to the 15 to 20 meter depths. Total dissolved solids and chlorides readings are higher than other lakes indicating a more saline condition. Turbidity was quite low during most sampling at the lower station. The lake water level fluctuated about nine feet during sampling.

A total of 15 frame nets were set in February and March with no walleye being captured. Catch per unit effort was quite low compared to other lakes (Table 21). Game fishes dominated the catch by number (99.06%) and by weight (91.78%) of all fishes captured. Bluegill and redbreast sunfish were predominant.

Gill nets were set in September and October with only one walleye being caught. Gizzard shad, channel catfish and white bass were caught in largest numbers (Table 22). Game fishes were predominant by number (58.15%) but rough fishes by weight (50.60%). Again, catch per unit effort was low compared to other lakes.

Catch per unit effort for seining collections were higher on Possum Kingdom than all other lakes sampled (Table 3). The ten stations selected covered the entire lake and were at significantly different habitat types. Mississippi silversides far outnumbered other species collected. A total of 25 species were collected from April through October. Catch per unit effort was high in April and May but tapered off through October (Figure 1).

A vegetative survey was conducted in September. Figure 9 shows the areas where vegetation was found. Much of the shoreline area was steep and rocky and with very little vegetation. Eight vegetative types were found throughout the lake. Chara sp. and Nitella sp. were the dominant submergent vegetation. Eleocharis sp. was the only emergent vegetation found in any large amounts.

Cove rotenone samples were made in September on three coves, Figures 16, 17 and 18. The field data were tabulated and are presented on Table 23. Totals for coves 1, 2 and 3 represent calculations for total number and pounds per acre.

The three coves represent two basic habitat variations. Cove 3, the uppermost cove, was more turbid than coves 1 and 2, and soft mud constituted the bottom and shorelines. The shads, gizzard and threadfin, were the most prevalent species represented from the sampling of this cove. Coves 1 and 2 were basically similar to one another, both representing the lower portion of the lake. These two coves generally have low turbidity readings. Both coves are rock lined, steep banked, and firm bottomed. Redbreast sunfish, gizzard shad and threadfin shad were the most collected species from Cove 1. Gizzard shad and redear sunfish were the most often collected from Cove 2. Cove 3 had four to five times more fishes per acre than either Cove 1 or Cove 2. Marked fish recoveries were as follows: Cove 1, 45%; Cove 2, 25%; and Cove 3, 43%. A total of 10,617 fishes were collected from all coves with the average pounds per acre being 285.89.

III. Significant Deviation:

The only deviation from the planned schedule this segment was the cancellation of cove rotenone sampling at Lake Diversion. The lake level was lowered in October for further work on the dam. October was the month cove rotenone sampling had been scheduled.

IV. Conclusions, Evaluations and Recommendations:

Data collected this year on Lake Diversion may not be comparable to the data from the other lakes in the statewide survey. From January through mid-April, the lake level was down 13 feet for repair work on the dam. The level was raised but then dropped again in October for completion of the repair work. The drastic water level fluctuations this year and limited fluctuation in previous years possibly has the fish populations in an unstable condition.

Sampling efforts this year, as in past years, yielded very few walleye from Lake Diversion. The walleye that were captured were small and much below growth rates of walleye stocked in other lakes. In the past two years, walleye have not been recovered in seining efforts. Based on seining and other netting efforts, many questions about the walleye population in the lake remain unanswered. It is recommended that walleye should not be stocked in the lake in 1975. Walleye surveys should be conducted if lake water levels remain more constant in 1975. Restoration of a more stable condition in the lake after a drastic drawdown as experienced in 1974 may produce a more catchable sport and walleye fishery.

In the past two years, Eagle Mountain Reservoir has been stocked with 4.5 million walleye fry. Based on reports from fishermen and netting results, Eagle Mountain shows promise of being one of the better walleye lakes in Region 2-A. Though only four walleye were recovered in netting efforts, all fish were in excellent condition. Graduate students at Texas Christian University have had good success collecting walleye near the heated discharge of the power plant in the winter months.

Comparing netting results with data from 1971, the numbers of game fishes collected have increased. Though numbers of game fishes have increased, pounds have remained low. Based on seining data, the forage base in Eagle Mountain is diverse and plentiful enough to support a good sport fish population.

Cove rotenone data on Eagle Mountain Reservoir indicates the lake is divided into at least three varying habitat types. The cove of the lower lake area varied considerably in species composition from the cove of the upper lake area. Although the three coves varied with respect to topography, the calculated population figures do not reflect this variation. Population estimates should not be based solely on number and pounds per surface acre. Thought should be given to depth, general topography and variable water chemistry. Estimates for the entire lake should be based on returns from the three coves and what percentage of the lake area each of the coves represent.

It is recommended that walleye be stocked one more year in Eagle Mountain Reservoir and then halted for two to three years. Due to the excellent growth of the walleye previously stocked in the lake and the location of a hatchery below the dam, the lake should be investigated for a possible source of brood fish.

Walleye stocking in Garza-Little Elm Reservoir has been pursued for three years. A total of 539,000 fingerlings have been stocked in the past two years. Recoveries have increased each year with ten walleye being captured in netting efforts this year. Although this is a small recovery when compared to other lakes, all fish were in excellent shape with the largest being 3.5 pounds. Numerous reports of fishermen catching walleye have also been received. White bass X striped bass hybrids were also stocked in the lake this year. Several of the hybrids were captured in seining and cove rotenone efforts.

Netting data from 1974 were comparable to data from previous years in Garza-Little Elm Reservoir. Game fishes netted remained about the same with white crappie and white bass populations appearing to be in good condition.

Cove rotenone data from Garza-Little Elm shows a difference in species abundance in each cove. This reflects their location in the lake rather than other biological or physical features. Coves 1 and 2 open into larger cove areas while Cove 3 opens directly into the open area by the dam. Species composition figures give an adequate picture of the populations of most of the species but is misleading on two of the most utilized fishes. White bass and white crappie are two of the most frequently caught fishes in the lake by fishermen. Figures on their abundance from cove collections are relatively small. The possible fallacy of rotenone sampling is that to represent the true pictures of species populations, samples must be taken in all habitats in each lake. For white bass and white crappie, open water samples should be taken. Walleye stocking should be terminated for two to three years to investigate the lake for a possible source of brood fish.

Possum Kingdom Reservoir has been stocked with a total of 12.5 million walleye fry in the past two years. Netting, seining and cove rotenone efforts have only yielded two walleye. This was the only lake surveyed that yielded a walleye in cove rotenone samples.

Large fluctuations in lake water level has kept the sport fish populations in good condition over the past few years. Numbers of game fishes collected have increased over 1971 and 1972 netting results. Good numbers of white bass and sunfishes reflect the usual catch by fishermen. This has also been a peak year for catches by bass fishermen.

Vegetation was not considered a problem in any of the lakes surveyed. Control of aquatic vegetation is not recommended but a close check should be made each year to check any increases in the abundance of present populations.

In 1975, surveys on these lakes will be taken over by other D-J projects. The baseline data included in this report should help the D-J personnel familiarize themselves with the new lakes not included in their area of responsibility. Surveys should also be initiated on Lake Bridgeport which was stocked with walleye for the first time this year.

V. Cost:

$68,000.00

VI. Prepared by: Robert B. Gamble
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Date: November 7, 1974

Robert L. Bounds
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Approved by: David L. Pritchard
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## Literature Cited

American Public Health Association 1971. Standard methods for the examination of water and wastewater (13th ed.): New York, 874 pp.

Table 1. Checklist for Fish Species Collected in Region 2-A in 1974

| Common Name | Scientific Name |
|---|---|
| Spotted gar | Lepisosteus oculatus |
| Longnose gar | L. osseus |
| Shortnose gar | L. platostomus |
| Gizzard shad | Dorosoma cepedianum |
| Threadfin shad | D. petenense |
| Carp | Cyprinus carpio |
| Silvery minnow | Hybognathus nuchalis |
| Plains minnow | H. placitus |
| Silver chub | Hybopsis storeriana |
| Golden shiner | Notemigonus crysoleucas |
| Ghost shiner | Notropis buchanani |
| Pugnose minnow | N. emiliae |
| Red shiner | N. lutrensis |
| Sharpnose shiner | N. oxyrhynchus |
| Silverband shiner | N. shumardi |
| Sand shiner | N. stramineus |
| Blacktail shiner | N. venustus |
| Bullhead minnow | Pimephales vigilax |
| River carpsucker | Carpiodes carpio |
| Smallmouth buffalo | Ictiobus bubalus |
| Spotted sucker | Minytrema melanops |
| Channel catfish | Ictalurus punctatus |
| Tadpole madtom | Noturus gyrinus |
| Flathead catfish | Pylodictis olivaris |
| Blackstripe topminnow | Fundulus notatus |
| Mosquitofish | Gambusia affinis |
| Mississippi silverside | Menidia audens |
| White bass | Morone chrysops |
| WHB x STB hybrid | Morone chrysops x M. saxatilis |
| Green sunfish | Lepomis cyanellus |
| Redbreast sunfish | L. auritus |
| Warmouth | L. gulosus |
| Orangespotted sunfish | L. humilis |
| Bluegill | L. macrochirus |
| Longear sunfish | L. megalotis |
| Redear sunfish | L. microlophus |
| Spotted bass | Micripterus punctulatus |
| Largemouth bass | M. salmoides |
| White crappie | Pomoxis annularis |
| Black crappie | P. nigromaculatus |
| Bluntnose darter | Etheostoma chlorosomum |
| Big scale logperch | Percina macrolepida |
| Walleye | Stizostedion vitreum vitreum |
| Freshwater drum | Apolodinotus grunniens |

Table 2. Walleye Capture Data for 1974 in Region 2-A Waters

| Lake | Date | Method | SL (mm) | TL (mm) | WT (gr) | Sex and Developement | Stomach Contents |
|---|---|---|---|---|---|---|---|
| Lake Diversion | 2-20 | Frame net | 177 | 216 | 93 | M-2 | FR |
| | | | 211 | 252 | 140 | M-2 | FR |
| | 3-19 | Frame net | 200 | 237 | 89 | F-2 | FR |
| | 9-17 | Gill net | 248 | 299 | 235 | M-3 | E |
| | | | 243 | 298 | 200 | F-3 | E |
| | | | 239 | 290 | 188 | M-3 | E |
| | | | 247 | 299 | 175 | F-3 | E |
| Eagle Mountain Reservoir | 9-10 | Gill net | 328 | 411 | 595 | M-3 | FR |
| | | | 310 | 390 | 510 | F-2 | E |
| | | | 328 | 431 | 680 | F-3 | E |
| | | | 299 | 372 | 510 | M-3 | E |
| Garza Little Elm Reservoir | 2-15 | Frame net | 357 | 430 | 936 | - | - |
| | 9-6 | Gill net | 404 | 487 | 1134 | M-3 | E |
| | | | 411 | 499 | 1219 | F-3 | FR |
| | | | 334 | 404 | 652 | F-3 | E |
| | | | 350 | 420 | 765 | F-2 | FR |
| | 10-17 | Gill net | 375 | 455 | 1191 | M-3 | E |
| | | | 390 | 467 | 1247 | M-3 | - |
| | | | 452 | 545 | 1701 | F-3 | E |
| | | | 375 | 461 | 1049 | M-3 | E |
| | | | 335 | 404 | 794 | M-3 | FR |
| Possum Kingdom Reservoir | 9-24 | Rotenone | 310 | 394 | 375 | - | - |
| | 9-24 | Gill net | 296 | 360 | 330 | F-3 | E |

Stomach contents - FR - fish remains
E - empty

Table 3. Catch Per Unit Effort for Seine Samples Collected in 1974 for Region 2-A Waters

| Species | Lake Diversion | Eagle Mountain Reservoir | Garza Little Elm Reservoir | Possum Kingdom Reservoir |
|---|---|---|---|---|
| Number of 25 foot drags | 56 | 70 | 140 | 140 |
| Gizzard shad | .61 | .39 | .98 | .09 |
| Threadfin shad | 15.41 | 3.11 | 4.69 | 1.68 |
| Dorosoma sp. | 4.14 | - | - | - |
| Carp | .11 | - | - | - |
| Silvery minnow | - | - | - | .03 |
| Plains minnow | .21 | - | - | .07 |
| Silver chub | - | - | - | .01 |
| Golden shiner | .07 | .04 | .05 | .06 |
| Ghost shiner | - | .01 | - | - |
| Pugnose minnow | .02 | - | .01 | - |
| Red shiner | 3.16 | 1.57 | 1.58 | 1.02 |
| Sharpnose shiner | .02 | - | - | .06 |
| Silverband shiner | .04 | - | - | .05 |
| Sand shiner | .04 | - | - | - |
| Blacktail shiner | - | 3.26 | .03 | 2.98 |
| Bullhead minnow | 1.09 | 3.46 | 1.71 | 1.74 |
| River carpsucker | .09 | - | - | - |
| Smallmouth buffalo | - | .01 | - | - |
| Channel catfish | - | .01 | .31 | - |
| Blackstriped topminnow | - | .01 | - | - |
| Mosquitofish | - | .01 | - | .07 |
| Mississippi silversides | 4.80 | 7.43 | 3.80 | 19.55 |
| White bass | .63 | .23 | .64 | .01 |
| WHB x STB hybrid | - | - | .03 | - |
| Redbreast sunfish | - | .04 | - | 2.67 |
| Green sunfish | - | - | - | .01 |
| Warmouth | - | - | - | .02 |
| Orangespotted sunfish | .02 | - | - | .01 |
| Bluegill | .16 | .11 | .26 | 1.04 |
| Longear sunfish | .04 | .41 | .29 | .66 |
| Redear sunfish | - | .07 | .01 | .18 |
| Spotted bass | .05 | .03 | .07 | .32 |
| Largemouth bass | .27 | .07 | .02 | .14 |
| White crappie | - | - | .01 | - |
| Black crappie | - | - | - | .01 |
| Bluntnose darter | - | - | .01 | - |
| Big scale logperch | .23 | .17 | .11 | .16 |
| Freshwater drum | .02 | .14 | .12 | - |
| Total | 31.23 | 20.58 | 14.73 | 32.64 |

Table 4. Vegetative Checklist for Surveys Made in August and September 1974 for Lakes Diversion, Eagle Mountain, Garza-Little Elm and Possum Kingdom

| | Diversion | Eagle Mountain | Garza Little Elm | Possum Kingdom |
|---|---|---|---|---|
| Chara sp. | 1 | 1 | 1 | 1 |
| Typha sp. | 2 | 2 | 2 | 2 |
| Eleocharis sp. | 3 | 3 | 3 | 3 |
| Scirpus sp. | 4 | 4 | | |
| Cyperus sp. | | 5 | | |
| Potamogeton americanus | 6 | | 6 | 6 |
| Potamogeton pectinatus | 7 | | | 7 |
| Salix nigra | | 8 | 8 | |
| Polygonum sp. | | 9 | | |
| Cephalanthus occidentalis | | 10 | 10 | 10 |
| Nelumbo lutea | | 11 | | |
| Populus deltoides | | | 12 | |
| Sagittaria sp. | | | | 13 |
| Sagittaria latifolia | | | 14 | |
| Sagittaria graminea | | | 15 | |
| Nitella sp. | | | | 16 |

Lake Diversion

No. 1, 6, & 7 - along shorelines where marked

No. 2, 3, & 4 - areas marked on map

No. 7 - over 40% of the area where marked

Table 4

(continued)

Garza Little Elm Reservoir

No. 1 - along all shoreline areas

No. 2, 3, 10, 14, & 15 - sparce, found in few areas in small amounts

No. 6 - in most cove areas

No. 8 - as shown on map

No. 12 - associated with No. 8 50% of the observations

Eagle Mountain Reservoir

No. 1 - 50% of the shoreline areas

No. 2, 4, & 11 - as shown on map

No. 3, 5, 8, 9, & 10 - sparce, found in few areas in small amounts

Possum Kingdom Reservoir

No. 1, 3, & 16 - as shown on map

No. 2, 6, 7, 10, & 13 - sparce, found in few areas in small amounts

Table 5. Water Quality Data for Lake Diversion in 1974

Station I - Dam

| Date | Depth M | Temperature °C Air | Temperature °C Water | Oxygen mg/l | pH | Total Alkalinity mg/l | Specific Conductivity umoh/cm | Turbidity JTU | TDS mg/l | Cl mg/l | $SO_4$ mg/l | $NO_3$ mg/l | $PO_4$ mg/l |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1/22 | S | 10.5 | 6.6 | 11.9 | 7.8 | 114 | 2700 | 20 | 2453 | | | | |
| | 2 | | 6.8 | 11.8 | 7.9 | 120 | 2700 | 26 | 2658 | | | | |
| | 4 | | 6.8 | 11.8 | 7.9 | 118 | 2700 | 63 | 2445 | | | | |
| 2/19 | S | 17.2 | 11.0 | 10.1 | 8.2 | 114 | 3050 | 30 | 3059 | 1850 | | | |
| | 2 | | 10.1 | 9.9 | 8.2 | 118 | 3000 | 70 | 3029 | 1850 | | | |
| | 3 | | 10.0 | 9.8 | 8.2 | 116 | 2980 | 70 | 2925 | 1700 | | | |
| 3/18 | S | 24.4 | 17.0 | 9.8 | 8.0 | 114 | 3580 | 22 | 2876 | 1150 | | | |
| | 2 | | 16.7 | 9.6 | 8.0 | 114 | 3550 | 22 | 2966 | 1200 | | | |
| | 3 | | 16.7 | 9.6 | 8.0 | 114 | 3550 | 50 | 3071 | 1200 | | | |
| 4/18 | S | 17.8 | 16.5 | 9.5 | 7.9 | 104 | 4100 | 1 | 3423 | 1380 | 875 | 3.540 | .010 |
| | 4 | | 16.5 | 9.5 | 8.2 | 102 | 4140 | 5 | 3272 | 1500 | 575 | .288 | .050 |
| | 7 | | 16.5 | 7.8 | 8.2 | 100 | 4140 | 5 | 3286 | 1490 | 550 | .354 | .020 |
| 5/21 | S | 28.9 | 25.3 | 6.3 | 8.3 | 103 | 4600 | 18 | 2736 | 1600 | | | |
| | 3 | | 24.6 | 6.2 | 8.4 | 102 | 4530 | 24 | 2758 | 1600 | | | |
| | 6 | | 24.6 | 6.1 | 8.4 | 105 | 4510 | 41 | 2848 | 1600 | | | |
| 6/12 | S | 24.1 | 24.9 | 9.0 | 8.3 | 100 | 4550 | 15 | 2764 | 1000 | | | |
| | 3 | | 25.0 | 8.8 | 8.3 | 100 | 4550 | 15 | 2660 | 1050 | | | |
| | 6 | | 25.0 | 7.2 | 8.3 | 108 | 4500 | 23 | 3198 | 1050 | | | |
| 7/11 | S | 32.1 | 26.6 | 7.8 | 8.3 | 94 | 7000 | 19 | 2473 | 1183 | 675 | .199 | .028 |
| | 3 | | 26.6 | 7.8 | 8.3 | 93 | 7000 | 27 | 2401 | 1183 | 675 | .089 | .041 |
| | 6 | | 26.4 | 7.5 | 8.3 | 86 | 7500 | 25 | 3180 | 1274 | 650 | .221 | .041 |
| 8/29 | S | 21.1 | 27.7 | 6.3 | 8.2 | 72 | 4900 | 10 | 3441 | 1350 | | | |
| | 3 | | 25.8 | 5.8 | 8.2 | 72 | 4900 | 10 | 3156 | 1450 | | | |
| | 5 | | 25.8 | 5.8 | 8.2 | 74 | 4900 | 11 | 3367 | 1549 | | | |
| 9/16 | S | 23.3 | 21.5 | 8.3 | 8.2 | 58 | 4100 | 15 | 2941 | 1300 | | | |
| | 2 | | 21.5 | 8.0 | 8.3 | 56 | 4150 | 18 | 2887 | 1300 | | | |
| | 4 | | 21.2 | 7.5 | 8.3 | 54 | 4170 | 20 | 2992 | 1300 | | | |

Table 6. Water Quality Data for Lake Diversion in 1974

Station II - Upper End

| Date | Depth M | Temperature °C Air | Temperature °C Water | Oxygen mg/l | pH | Total Alkalinity mg/l | Specific Conductivity umoh/cm | Turbidity JTU | TDS mg/l | Cl mg/l | $SO_4$ mg/l | $NO_3$ mg/l | $PO_4$ mg/l |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1/23 | S | 6.1 | 7.5 | 11.2 | 7.9 | 126 | | 25 | 2879 | | | | |
| | 1 | | 7.5 | 10.6 | 7.9 | 122 | | 35 | 2561 | | | | |
| | 2 | | 7.5 | 10.4 | 7.9 | 120 | | 92 | 2689 | | | | |
| 2/19 | S | 17.2 | 11.6 | 9.7 | 8.2 | 114 | 3180 | 10 | 2793 | 1150 | | | |
| | 1 | | 11.6 | 9.7 | 8.2 | 114 | 3180 | 10 | 3060 | 1100 | | | |
| | 2 | | 11.6 | 9.7 | 8.2 | 118 | 3190 | 8 | 3071 | 1050 | | | |
| 3/18 | S | 24.4 | 17.7 | 9.8 | 8.0 | 114 | 3350 | 39 | 2636 | 1100 | | | |
| | 1 | | 17.7 | 9.8 | 8.0 | 114 | 3350 | 70 | 2735 | 1100 | | | |
| | 2 | | 16.5 | 9.6 | 8.0 | 114 | 3500 | 56 | 2561 | 1150 | | | |
| 4/18 | S | 18.3 | 16.5 | 9.4 | 8.1 | 98 | 4200 | 0 | 3122 | 1510 | 22 | .200 | .050 |
| | 3 | | 16.5 | 9.3 | 8.1 | 100 | 4200 | 0 | 3438 | 1460 | 19 | .180 | .050 |
| | 5 | | 16.5 | 9.3 | 8.1 | 96 | 4200 | 0 | 3319 | 1450 | 22 | .200 | .010 |
| 5/-- | No data due to motor failure | | | | | | | | | | | | |
| 6/12 | S | 25.0 | 24.8 | 9.4 | 8.4 | 108 | 4700 | 30 | 3079 | 1100 | | | |
| | 3 | | 24.8 | 9.6 | 8.4 | 104 | 4750 | 33 | 2909 | 1150 | | | |
| | 5 | | 24.8 | 9.6 | 8.4 | 104 | 4750 | 39 | 3130 | 1200 | | | |
| 7/11 | S | 32.1 | 26.0 | 7.9 | 8.3 | 90 | 4900 | 25 | | 1319 | 625 | | |
| | 2 | | 26.0 | 7.8 | 8.2 | 90 | 4875 | 14 | 2764 | 1410 | 650 | .288 | .041 |
| | 3 | | 25.9 | 7.0 | 8.3 | 88 | 4720 | 14 | 2443 | 1365 | 650 | .288 | .062 |
| 8/29 | S | 21.1 | 26.2 | 7.0 | 8.4 | 75 | +5000 | 9 | 3387 | 1550 | | | |
| | 2 | | 26.2 | 7.1 | 8.4 | 73 | +5000 | 12 | 3339 | 1399 | | | |
| | 4 | | 26.2 | 7.1 | 8.4 | 75 | +5000 | 10 | 3233 | 1549 | | | |
| 9/16 | S | 20.6 | 21.2 | 8.0 | 8.2 | 60 | 4325 | 21 | 2790 | 1350 | | | |
| | 2 | | 21.2 | 8.1 | 8.3 | 60 | 4340 | 54 | 2599 | 1350 | | | |
| | 3 | | 21.2 | 8.0 | 8.3 | 60 | 4340 | 30 | 2582 | 1350 | | | |

Table 7. Lake Diversion Frame Netting Results for February and March 1974
15 Nets

| Species | Total No. | Percent of Total | Total Weight (Pounds) | Percent of Weight | **Catch/Unit Effort No. | Weight |
|---|---|---|---|---|---|---|
| Longnose gar | 1 | .21 | 5.62 | 4.73 | .07 | .37 |
| Shortnose gar | 1 | .21 | 1.50 | 1.26 | .07 | .10 |
| River carpsucker | 6 | 1.26 | 8.96 | 7.54 | .40 | .60 |
| Smallmouth buffalo | 5 | 1.05 | 6.67 | 5.61 | .33 | .45 |
| Channel catfish* | 6 | 1.26 | .30 | .25 | .40 | .02 |
| White bass* | 36 | 7.57 | 9.23 | 7.77 | 2.40 | .62 |
| Green sunfish* | 2 | .42 | .25 | .21 | .13 | .02 |
| Bluegill* | 188 | 39.50 | 5.69 | 4.79 | 12.53 | .38 |
| Longear sunfish* | 4 | .84 | .15 | .13 | .27 | .01 |
| Redear sunfish* | 4 | .84 | .51 | .43 | .27 | .03 |
| Largemouth bass* | 1 | .21 | .85 | .72 | .07 | .06 |
| White crappie* | 177 | 37.18 | 73.62 | 61.98 | 11.80 | 4.91 |
| Walleye* | 3 | .63 | .67 | .56 | .20 | .04 |
| Freshwater drum | 42 | 8.82 | 4.78 | 4.02 | 2.80 | .32 |
| Total | 476 | 100.00 | 118.80 | 100.00 | 31.74 | 7.93 |
| Game fish* | 421 | 88.45 | 91.27 | 76.83 | | |
| Rough fish | 55 | 11.55 | 27.53 | 23.17 | | |

**Catch/Unit Effort - catch/one frame net

Table 8. Lake Diversion Gill Netting Results for September and October 1974
6 Nets

| Species | Total No. | Percent of Total | Total Weight (Pounds) | Percent of Weight | **Catch/Unit Effort No. | Weight |
|---|---|---|---|---|---|---|
| Longnose gar | 5 | 7.04 | 6.93 | 7.75 | .83 | 1.16 |
| Shortnose gar | 2 | 2.82 | .90 | 1.01 | .33 | .15 |
| Gizzard shad | 14 | 19.72 | 6.19 | 6.92 | 2.33 | 1.03 |
| Carp | 1 | 1.41 | 2.81 | 3.14 | .17 | .47 |
| River carpsucker | 7 | 9.86 | 11.30 | 12.63 | 1.17 | 1.88 |
| Smallmouth buffalo | 18 | 25.35 | 36.22 | 40.50 | 3.00 | 6.04 |
| Channel catfish* | 4 | 5.63 | 7.88 | 8.81 | .67 | 1.31 |
| Flathead catfish* | 2 | 2.82 | 5.50 | 6.15 | .33 | .92 |
| White bass* | 4 | 5.63 | 3.12 | 3.49 | .67 | .52 |
| Largemouth bass* | 1 | 1.41 | 1.19 | 1.33 | .17 | .20 |
| White crappie* | 9 | 12.68 | 5.64 | 6.31 | 1.50 | .94 |
| Walleye* | 4 | 5.63 | 1.76 | 1.97 | .67 | .29 |
| Total | 71 | 100.00 | 89.44 | 100.00 | 11.84 | 14.91 |
| Game fish* | 24 | 33.80 | 25.09 | 28.05 | | |
| Rough fish | 47 | 66.20 | 64.35 | 71.95 | | |

**Catch/Unit Effort - catch/one standard gill net

Table 9. Water Quality Data for Eagle Mountain Reservoir in 1974

Station I - Dam

| Date | Depth M | Temperature °C Air | Temperature °C Water | Oxygen mg/l | pH | Total Alkalinity mg/l | Specific Conductivity umoh/cm | Turbidity JTU | TDS mg/l | Cl mg/l | $SO_4$ mg/l | $NO_3$ mg/l | $PO_4$ mg/l |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1/15 | S | 9.5 | 5.5 | 12.2 | 7.9 | 130 | 235 | 30 | 192 | | | | |
| | 7 | | 5.0 | 12.1 | 7.9 | 128 | 245 | 30 | 228 | | | | |
| | 14 | | 5.0 | 11.8 | 8.0 | 124 | 255 | 32 | 226 | | | | |
| 2/14 | S | 18.3 | 9.0 | 11.3 | 8.1 | 134 | 269 | 6 | 177 | 34 | | | |
| | 6 | | 8.4 | 11.4 | 8.2 | 132 | 270 | 7 | 242 | 34 | | | |
| | 12 | | 8.1 | 11.3 | 8.1 | 134 | 275 | 7 | 231 | 34 | | | |
| 3/11 | S | 24.7 | 17.5 | 10.0 | 8.2 | 142 | 334 | 12 | 192 | 35 | | | |
| | 5 | | 16.0 | 9.2 | 8.2 | 144 | 329 | 12 | 228 | 35 | | | |
| | 11 | | 14.5 | 8.1 | 8.2 | 146 | 329 | 15 | 226 | 35 | | | |
| 4/15 | S | 20.0 | 19.0 | 9.6 | 8.1 | 140 | 364 | 10 | 212 | 41 | 20 | .400 | .001 |
| | 6 | | 17.0 | 9.1 | 8.3 | 136 | 353 | 5 | 143 | 40 | 18 | .710 | .001 |
| | 11 | | 16.7 | 7.3 | 8.3 | 144 | 364 | 45 | 219 | 40 | 18 | 1.510 | .004 |
| 5/15 | S | 29.5 | 24.0 | 9.5 | 8.1 | 146 | 412 | 18 | 213 | 110 | | | |
| | 6 | | 23.2 | 8.8 | 8.3 | 142 | 420 | 15 | 185 | 110 | | | |
| | 12 | | 19.4 | 6.3 | 7.5 | 142 | 395 | 48 | 213 | 95 | | | |
| 6/17 | S | 28.9 | 27.3 | 7.5 | 8.1 | 132 | 430 | 10 | 229 | 43 | | | |
| | 6 | | 27.2 | 7.3 | 8.1 | 134 | 440 | 10 | 252 | 43 | | | |
| | 11 | | 24.9 | 1.6 | 7.7 | 146 | 440 | 25 | 233 | 42 | | | |
| 7/15 | S | 30.6 | 28.4 | 7.8 | 8.3 | 128 | 425 | 5 | 251 | 38 | 21 | .199 | .028 |
| | 6 | | 27.2 | 7.1 | 8.2 | 132 | 430 | 10 | 241 | 39 | 23 | .221 | .041 |
| | 11 | | 25.7 | 1.0 | 7.8 | 135 | 435 | 30 | 265 | 39 | 25 | .071 | .041 |
| 8/13 | S | 31.2 | 28.0 | 7.8 | 8.0 | 126 | 300 | 3 | 226 | 43 | | | |
| | 6 | | 26.5 | 7.2 | 8.0 | 122 | 320 | 2 | 212 | 40 | | | |
| | 11 | | 26.0 | 7.2 | 8.0 | 124 | 350 | 6 | 124 | 41 | | | |

Table 10. Water Quality Data for Eagle Mountain Reservoir in 1974

Station II - Upper End

| Date | Depth M | Temperature °C Air | Temperature °C Water | Oxygen mg/l | pH | Total Alkalinity mg/l | Specific Conductivity umoh/cm | Turbidity JTU | TDS mg/l | Cl mg/l | $SO_4$ mg/l | $NO_3$ mg/l | $PO_4$ mg/l |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1/15 | S | 7.8 | 5.0 | 12.5 | 7.8 | 162 | 300 | 35 | 288 | | | | |
| | 1 | | 4.5 | 12.6 | 7.8 | 160 | 305 | 38 | 295 | | | | |
| | 2 | | 4.5 | 12.7 | 7.8 | 160 | 325 | 55 | 260 | | | | |
| 2/14 | S | 16.8 | 10.5 | 11.9 | 8.1 | 160 | 352 | 21 | 304 | 49 | | | |
| | 1 | | 10.5 | 11.8 | 8.1 | 170 | 351 | 25 | 296 | 49 | | | |
| | 2 | | 10.3 | 11.8 | 8.1 | 162 | 351 | 40 | 276 | 49 | | | |
| 3/11 | S | 15.5 | 19.5 | 8.7 | 8.1 | 164 | 456 | 40 | 288 | 54 | | | |
| | 1 | | 19.5 | 8.5 | 8.2 | 160 | 456 | 55 | 295 | 54 | | | |
| | 2 | | 19.5 | 8.1 | 8.3 | 160 | 459 | 65 | 260 | 55 | | | |
| 4/15 | S | 18.9 | 19.1 | 9.4 | 8.3 | 156 | 480 | 65 | 182 | 55 | 27 | .750 | .003 |
| | 1 | | 17.4 | 9.4 | 8.3 | 154 | 492 | 55 | 260 | 55 | 25 | 2.260 | .003 |
| | 2 | | 16.5 | 8.0 | 8.3 | 166 | 520 | 100 | 251 | 57 | 22 | 1.660 | .003 |
| 5/15 | S | 28.3 | 25.5 | 8.2 | 8.2 | 147 | 400 | 108 | 242 | 105 | | | |
| | 1 | | 25.5 | 8.0 | 8.2 | 150 | 400 | 120 | 246 | 105 | | | |
| | 2 | | 25.0 | 8.0 | 8.2 | 150 | 400 | 130 | 236 | 105 | | | |
| 6/17 | S | 27.2 | 28.3 | 6.4 | 8.3 | 124 | 405 | 87 | 230 | 39 | | | |
| | 1 | | 28.3 | 6.2 | 8.3 | 132 | 410 | 95 | 244 | 38 | | | |
| | 2 | | 28.0 | 5.7 | 8.3 | | 412 | | | | | | |
| 7/15 | S | 29.4 | 29.7 | 6.9 | 8.3 | 126 | 388 | 65 | 234 | 30 | 44 | .071 | .075 |
| | 1 | | 29.5 | 6.6 | 8.4 | 126 | 390 | 95 | 253 | 29 | 46 | .093 | .088 |
| 8/13 | S | 28.3 | 26.0 | 8.0 | 8.3 | 116 | 280 | 24 | 210 | 34 | | | |
| | 1 | | 26.0 | 8.2 | 8.3 | 108 | 280 | 27 | 224 | 34 | | | |
| | 2 | | 26.0 | 7.2 | 8.3 | 128 | 280 | 59 | 192 | 36 | | | |

Table 9
(continued)

Station I - Dam

| Date | Depth M | Temperature °C Air | Temperature °C Water | Oxygen mg/l | pH | Total Alkalinity mg/l | Specific Conductivity umoh/cm | Turbidity JTU | TDS mg/l | Cl mg/l | $SO_4$ mg/l | $NO_3$ mg/l | $PO_4$ mg/l |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9/10 | S | 26.7 | 24.7 | 8.0 | 8.2 | 114 | 361 | 12 | 208 | 39 | | | |
| | 5 | | 24.7 | 7.5 | 8.2 | 124 | 378 | 19 | 129 | 39 | | | |
| | 9 | | 24.5 | 6.7 | 8.2 | 126 | 386 | 25 | 180 | 39 | | | |
| 10/10 | S | 23.9 | 21.6 | 8.1 | 8.1 | 115 | 343 | 10 | 190 | 38 | | | |
| | 5 | | 20.9 | 6.8 | 8.2 | 113 | 348 | 15 | 191 | 39 | | | |
| | 11 | | 20.8 | 2.3 | 8.0 | 119 | 350 | 28 | 216 | 39 | | | |

Table 10
(continued)

Station II - Upper End

| Date | Depth M | Temperature °C Air | Temperature °C Water | Oxygen mg/l | pH | Total Alkalinity mg/l | Specific Conductivity umoh/cm | Turbidity JTU | TDS mg/l | Cl mg/l | $SO_4$ mg/l | $NO_3$ mg/l | $SO_4$ mg/l |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9/10 | S | 27.8 | 24.2 | 8.7 | 8.6 | 114 | 337 | 84 | 180 | 29 | | | |
| | 1 | | 23.5 | 7.0 | 8.4 | 120 | 347 | 97 | 189 | 31 | | | |
| 10/10 | S | 23.9 | 22.7 | 8.5 | 8.5 | 110 | 320 | 45 | 197 | 31 | | | |
| | 1 | | 22.4 | 7.4 | 8.5 | 108 | 315 | 48 | 205 | 31 | | | |
| | 2 | | 21.7 | 5.4 | 8.5 | 109 | 315 | 56 | 209 | 31 | | | |

Table 11. Eagle Mountain Reservoir Frame Netting Results for February and March 1974
15 Nets

| Species | Total No. | Percent of Total | Total Weight (Pounds) | Percent of Weight | **Catch/Unit Effort No. | Weight |
|---|---|---|---|---|---|---|
| Gizzard shad | 1 | .36 | 1.44 | 1.20 | .07 | .10 |
| Channel catfish* | 2 | .73 | .30 | .25 | .13 | .02 |
| Warmouth* | 2 | .73 | .21 | .18 | .13 | .01 |
| Bluegill* | 79 | 28.61 | 8.49 | 7.10 | 5.27 | .57 |
| Longear sunfish* | 25 | 9.06 | 3.18 | 2.66 | 1.67 | .21 |
| Redear sunfish* | 5 | 1.81 | 1.01 | .85 | .33 | .07 |
| White crappie* | 160 | 57.97 | 104.64 | 87.50 | 10.67 | 6.98 |
| Freshwater drum | 2 | .73 | .31 | .26 | .13 | .02 |
| Total | 276 | 100.00 | 119.57 | 100.00 | 18.40 | 7.98 |
| Game fish* | 273 | 98.91 | 117.82 | 98.52 | | |
| Rough fish | 3 | 1.09 | 1.75 | 1.48 | | |

**Catch/Unit Effort - catch/one frame net

Table 12. Eagle Mountain Reservoir Gill Netting Results for September and October 1974
12 Nets

| Species | Total No. | Percent of Total | Total Weight (Pounds) | Percent of Weight | **Catch/Unit Effort No. | Weight |
|---|---|---|---|---|---|---|
| Spotted gar | 1 | .50 | 2.90 | .82 | .08 | .24 |
| Longnose gar | 4 | 1.99 | 24.00 | 6.83 | .33 | 2.00 |
| Gizzard shad | 19 | 9.44 | 11.05 | 3.14 | 1.58 | .92 |
| River carpsucker | 15 | 7.46 | 31.94 | 9.08 | 1.25 | 2.66 |
| Smallmouth buffalo | 81 | 40.30 | 226.50 | 64.41 | 6.75 | 18.87 |
| Channel catfish* | 18 | 8.95 | 19.92 | 5.66 | 1.50 | 1.66 |
| White bass* | 21 | 10.45 | 16.88 | 4.80 | 1.75 | 1.41 |
| Green sunfish* | 1 | .50 | .22 | .06 | .08 | .02 |
| Warmouth* | 1 | .50 | .11 | .03 | .08 | .01 |
| Bluegill* | 9 | 4.48 | 1.06 | .30 | .75 | .09 |
| Longear sunfish* | 5 | 2.49 | .46 | .13 | .42 | .04 |
| Spotted bass* | 1 | .50 | .23 | .06 | .08 | .02 |
| Largemouth bass* | 5 | 2.49 | 4.89 | 1.39 | .42 | .41 |
| White crappie* | 16 | 7.96 | 6.46 | 1.85 | 1.33 | .54 |
| Walleye* | 4 | 1.99 | 5.06 | 1.44 | .33 | .42 |
| Total | 201 | 100.00 | 351.68 | 100.00 | 16.73 | 29.31 |
| Game fish* | 81 | 40.30 | 55.29 | 15.72 | | |
| Rough fish | 120 | 59.70 | 296.39 | 84.28 | | |

**Catch/Unit Effort - catch/one standard gill net

Table 13. Eagle Mountain Reservoir Cove Rotenone Data for 1974

| Species | Cove 1 .92 acres No. | Cove 1 .92 acres lbs. | Cove 2 1.00 acres No. | Cove 2 1.00 acres lbs. | Cove 3 1.01 acres No. | Cove 3 1.01 acres lbs. | Average 2.93 acres *No. | Average 2.93 acres lbs. |
|---|---|---|---|---|---|---|---|---|
| Longnose gar | - | - | 1 | .08 | - | - | 1 | .03 |
| Spotted gar | - | - | 13 | 15.83 | - | - | 13 | 6.27 |
| Gizzard shad | 104 | 51.25 | 648 | 41.04 | 277 | 11.05 | 911 | 28.49 |
| Threadfin shad | 18 | .08 | 10 | .06 | 390 | .80 | 411 | .31 |
| Carp | 4 | 36.00 | 9 | 53.34 | - | - | 13 | 29.78 |
| River carpsucker | 4 | 7.20 | 4 | 6.30 | - | - | 7 | 4.50 |
| Smallmouth buffalo | 24 | 85.21 | 15 | 109.76 | 2 | .27 | 49 | 65.08 |
| Channel catfish | 34 | 14.68 | 64 | 17.54 | 10 | 1.38 | 104 | 11.20 |
| Flathead catfish | 1 | 1.89 | 1 | 30.00 | - | - | 2 | 10.63 |
| Yellow bullhead | - | - | 1 | .01 | 1 | .15 | 2 | 2.35 |
| Madtom sp. | 7 | .02 | 1 | .01 | 28 | .09 | 35 | .04 |
| White bass | - | - | 9 | 2.05 | 2 | .08 | 11 | .82 |
| Warmouth | 10 | .16 | 38 | .96 | 6 | .06 | 53 | .39 |
| Green sunfish | 139 | 3.80 | 8 | .64 | 2 | .05 | 138 | 1.11 |
| Orangespotted sunfish | - | - | 9 | .05 | 14 | .10 | 23 | .05 |
| Bluegill | 152 | 4.19 | 191 | 6.36 | 44 | 1.71 | 375 | 4.18 |
| Longear sunfish | 192 | 6.57 | 101 | 3.81 | 93 | 2.58 | 372 | 4.31 |
| Redear sunfish | 16 | 1.41 | 35 | 5.02 | 3 | .29 | 53 | 2.25 |
| Sunfish spp. | 315 | 3.11 | - | - | - | - | 290 | 1.04 |
| Largemouth bass | 88 | 9.21 | 173 | 34.95 | 26 | 7.87 | 280 | 17.45 |
| Spotted bass | 12 | 2.55 | - | - | - | - | 11 | .85 |
| White crappie | 5 | .09 | 42 | 1.74 | 1 | .09 | 48 | .64 |
| Freshwater drum | 167 | 29.42 | 425 | 60.93 | 283 | 42.50 | 864 | 44.37 |
| Totals | 1292 | 256.84 | 1798 | 390.47 | 1182 | 69.07 | 4066 | 236.14 |

*No. - the actual total number of each species that were recovered from all coves

No. & lbs. - per acre calculated totals for each cove

Table 14. Water Quality Data for Garza-Little Elm Reservoir in 1974

Station I - Dam

| Date | Depth M | Temperature °C Air | Temperature °C Water | Oxygen mg/l | pH | Total Alkalinity mg/l | Specific Conductivity umoh/cm | Turbidity JTU | TDS mg/l | Cl mg/l | $SO_4$ mg/l | $NO_3$ mg/l | $PO_4$ mg/l |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1/15 | S | 13.3 | 6.0 | 12.1 | 7.8 | 104 | 200 | 40 | | | | | |
| | 7 | | 5.0 | 12.3 | 7.9 | 108 | 205 | 35 | | | | | |
| | 13 | | 4.5 | 11.5 | 7.9 | 104 | 205 | 60 | | | | | |
| 2/14 | S | 16.7 | 8.7 | 11.6 | 8.0 | 195 | 225 | 10 | 195 | 21 | | | |
| | 6 | | 8.2 | 11.9 | 8.0 | 180 | 229 | 12 | 180 | 20 | | | |
| | 12 | | 8.0 | 11.8 | 8.0 | 202 | 235 | 15 | 202 | 23 | | | |
| 3/-- | No data due to bad weather | | | | | | | | | | | | |
| 4/16 | S | 21.1 | 16.7 | 11.0 | 7.9 | 114 | 288 | 22 | 203 | 26 | 19 | 5.230 | .040 |
| | 6 | | 16.4 | 11.0 | 8.1 | 118 | 295 | 22 | 188 | 26 | 19 | .350 | .030 |
| | 11 | | 16.2 | 10.9 | 8.1 | 118 | 302 | 24 | 204 | 27 | 72 | 3.100 | .050 |
| 5/13 | S | 28.3 | 21.0 | 9.6 | 8.0 | 116 | 330 | 15 | 213 | 40 | | | |
| | 6 | | 19.5 | 8.8 | 8.0 | 116 | 325 | 12 | 205 | 38 | | | |
| | 11 | | 18.6 | 8.4 | 7.8 | 118 | 321 | 22 | 199 | 39 | | | |
| 6/20 | S | 27.8 | 26.4 | 7.9 | 8.1 | 198 | 365 | 2 | 198 | 30 | | | |
| | 6 | | 25.7 | 7.3 | 8.1 | 225 | 371 | 2 | 225 | 30 | | | |
| | 13 | | 24.5 | 5.2 | 7.6 | 272 | 380 | 25 | 272 | 28 | | | |
| 7/16 | S | 33.3 | 30.5 | 8.3 | 8.2 | 105 | 360 | 14 | 310 | 23 | 33 | .177 | .028 |
| | 6 | | 27.0 | 5.8 | 8.0 | 110 | 365 | 11 | 267 | 24 | 42 | 1.061 | .056 |
| | 12 | | 24.9 | 0.8 | 7.6 | 116 | 372 | 32 | 244 | 24 | 48 | 2.390 | .062 |
| 8/20 | S | 31.1 | 27.4 | 8.1 | 8.2 | 104 | 365 | 94 | 310 | 27 | | | |
| | 7 | | 26.0 | 4.3 | 7.7 | 108 | 364 | 95 | 337 | 26 | | | |
| | 12 | | 25.4 | 3.2 | 7.6 | 108 | 369 | 83 | 300 | 26 | | | |

Table 15. Water Quality Data for Garza-Little Elm Reservoir in 1974

Station II - Upper End

| Date | Depth M | Temperature °C Air | Temperature °C Water | Oxygen mg/l | pH | Total Alkalinity mg/l | Specific Conductivity umoh/cm | Turbidity JTU | TDS mg/l | Cl mg/l | $SO_4$ mg/l | $NO_3$ mg/l | $PO_4$ mg/l |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1/15 | S | 10.0 | 4.0 | 13.8 | 8.4 | 150 | 260 | 68 | | | | | |
| | 1 | | 3.5 | 14.2 | 8.4 | 144 | 260 | 70 | | | | | |
| 2/14 | S | 18.3 | 11.6 | 12.6 | 8.4 | 150 | 352 | 85 | 284 | 46 | | | |
| | 1 | | 11.4 | 12.4 | 8.4 | 148 | 352 | 95 | 281 | 45 | | | |
| | 2 | | 11.2 | 12.4 | 8.4 | 128 | 360 | 95 | 313 | 46 | | | |
| 3/-- | No data due to bad weather | | | | | | | | | | | | |
| 4/16 | S | 16.7 | 17.5 | 8.6 | 8.3 | 142 | 425 | 145 | 213 | 54 | 49 | 1.110 | .230 |
| | 1 | | 17.5 | 8.6 | 8.3 | 142 | 430 | 132 | 273 | 54 | 55 | 2.260 | .230 |
| | 2 | | 17.4 | 8.4 | 8.3 | 146 | 433 | 95 | 280 | 52 | 150 | 1.950 | .190 |
| 5/13 | S | 28.9 | 25.5 | 9.6 | 8.0 | 118 | 380 | 115 | 222 | 51 | | | |
| | 1 | | 25.2 | 9.2 | 8.0 | 120 | 380 | 117 | 220 | 51 | | | |
| | 2 | | 25.0 | 8.0 | 8.0 | 114 | 375 | 122 | 238 | 51 | | | |
| 6/20 | S | 25.6 | 27.2 | 6.3 | 7.7 | 100 | 337 | 120 | 189 | | | | |
| | 1 | | 27.1 | 6.2 | 7.6 | 104 | 340 | 135 | 199 | | | | |
| | 2 | | 27.1 | 6.2 | 7.6 | 108 | 342 | 135 | 208 | | | | |
| 7/16 | S | 31.1 | 31.0 | 8.5 | 8.8 | 107 | 380 | 39 | 251 | 30 | 44 | .354 | .162 |
| | 1 | | 30.5 | 7.9 | 8.7 | 107 | 385 | 51 | 256 | 31 | 47 | .177 | .088 |
| | 2 | | 30.1 | 6.8 | 8.7 | | 390 | | | | | | |
| 8/20 | S | 32.2 | 30.0 | 7.4 | 8.5 | 102 | 390 | 48 | 355 | 34 | | | |
| | 1 | | 30.0 | 7.4 | 8.5 | 106 | 392 | 50 | 357 | 33 | | | |
| | 2 | | 29.5 | 5.8 | 8.5 | 104 | 398 | 66 | 319 | 33 | | | |

Table 14
(continued)
Station I - Dam

| Date | Depth M | Temperature °C Air | Temperature °C Water | Oxygen mg/l | pH | Total Alkalinity mg/l | Specific Conductivity umoh/cm | Turbidity JTU | TDS mg/l | Cl mg/l | $SO_4$ mg/l | $NO_3$ mg/l | $PO_4$ mg/l |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9/5 | S | 26.7 | 26.5 | 7.4 | 8.2 | 98 | 336 | 17 | 211 | 23 | | | |
| | 6 | | 24.7 | 6.2 | 8.2 | 103 | 335 | 19 | 217 | 23 | | | |
| | 11 | | 24.7 | 5.9 | 8.2 | 106 | 343 | 36 | 221 | 23 | | | |
| 10/16 | S | 26.7 | 21.2 | 8.7 | 8.0 | 104 | 305 | 5 | 184 | 12 | 36 | | |
| | 6 | | 20.0 | 7.9 | 8.2 | 104 | 307 | 8 | 188 | 10 | 33 | | |
| | 12 | | 20.0 | 7.6 | 8.2 | 104 | 316 | 15 | 151 | 9 | 35 | | |

Table 15
(continued)

Station II - Upper End

| Date | Depth M | Temperature °C Air | Temperature °C Water | Oxygen mg/l | pH | Total Alkalinity mg/l | Specific Conductivity umoh/cm | Turbidity JTU | TDS mg/l | Cl mg/l | $SO_4$ mg/l | $NO_3$ mg/l | $SO_4$ mg/l |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9/5 | S | 26.7 | 26.4 | 10.8 | 8.9 | 70 | 348 | 48 | 303 | 30 | | | |
| | 1 | | 23.0 | 7.6 | 8.9 | 102 | 325 | 60 | 304 | 30 | | | |
| | 2 | | 22.4 | 4.4 | 8.8 | 102 | 308 | 79 | 318 | 30 | | | |
| 10/16 | S | 26.1 | 19.8 | 7.9 | 8.0 | 108 | 290 | 92 | 146 | 26 | 52 | | |
| | 1 | | 18.6 | 7.2 | 8.2 | 106 | 290 | 93 | 106 | 25 | 36 | | |
| | 2 | | 18.4 | 6.2 | 8.2 | 106 | 288 | 110 | 190 | 25 | 34 | | |

Table 16. Garza-Little Elm Reservoir Frame Netting Results for February and March 1974
15 Nets

| Species | Total No. | Percent of Total | Total Weight (Pounds) | Percent of Weight | **Catch/Unit Effort No. | Weight |
|---|---|---|---|---|---|---|
| Gizzard shad | 3 | .69 | 1.21 | .39 | .20 | .08 |
| Threadfin shad | 4 | .92 | .23 | .01 | .27 | .02 |
| River carpsucker | 6 | 1.38 | 13.23 | 4.14 | .40 | .88 |
| Smallmouth buffalo | 6 | 1.38 | 15.87 | 4.96 | .40 | 1.06 |
| Spotted sucker | 2 | .46 | 2.00 | .62 | .13 | .13 |
| White bass* | 1 | .23 | .04 | .01 | .07 | .01 |
| Green sunfish* | 4 | .92 | 1.61 | .50 | .27 | .11 |
| Bluegill* | 32 | 7.37 | 4.02 | 1.26 | 2.13 | .27 |
| Longear sunfish* | 13 | 3.00 | 1.05 | .34 | .87 | .07 |
| White crappie* | 361 | 83.19 | 278.77 | 86.95 | 24.07 | 18.59 |
| Walleye* | 1 | .23 | 2.10 | .66 | .07 | .14 |
| Freshwater drum | 1 | .23 | .52 | .16 | .07 | .04 |
| Total | 434 | 100.00 | 320.65 | 100.00 | 28.95 | 21.40 |
| Game fish* | 412 | 94.94 | 287.59 | 89.72 | | |
| Rough fish | 22 | 5.06 | 33.06 | 10.28 | | |

**Catch/Unit Effort - catch/one frame net

Table 17. Garza-Little Elm Reservoir Gill Netting Results for September and October 1974
12 Nets

| Species | Total No. | Percent of Total | Total Weight (Pounds) | Percent of Weight | **Catch/Unit Effort No. | **Catch/Unit Effort Weight |
|---|---|---|---|---|---|---|
| Spotted gar | 2 | .54 | 3.42 | .60 | .17 | .28 |
| Longnose gar | 11 | 3.01 | 69.02 | 12.17 | .92 | 5.75 |
| Gizzard shad | 89 | 24.25 | 31.84 | 5.61 | 7.45 | 2.65 |
| Carp | 14 | 3.81 | 34.43 | 6.07 | 1.17 | 2.89 |
| River carpsucker | 48 | 13.09 | 96.48 | 17.01 | 4.00 | 8.04 |
| Smallmouth buffalo | 65 | 17.71 | 214.99 | 37.91 | 5.42 | 17.92 |
| Channel catfish* | 6 | 1.63 | 12.99 | 2.29 | .50 | 1.08 |
| White bass* | 51 | 13.91 | 54.63 | 9.63 | 4.25 | 4.55 |
| WHB X STB Hybrid* | 1 | .27 | .35 | .06 | .08 | .03 |
| ırmouth* | 4 | 1.09 | .49 | .09 | .33 | .04 |
| Bluegill* | 6 | 1.63 | .54 | .09 | .50 | .05 |
| Longear sunfish* | 1 | .27 | .18 | .03 | .08 | .01 |
| Spotted bass* | 2 | .54 | .85 | .15 | .17 | .07 |
| Largemouth bass* | 2 | .54 | 2.12 | .37 | .17 | .18 |
| White crappie* | 50 | 13.63 | 19.91 | 3.52 | 4.17 | 1.66 |
| Walleye* | 9 | 2.45 | 21.49 | 3.79 | .75 | 1.79 |
| Freshwater drum | 6 | 1.63 | 3.46 | .61 | .50 | .29 |
| Total | 367 | 100.00 | 567.19 | 100.00 | 30.63 | 47.28 |
| Game fish* | 132 | 35.97 | 113.55 | 20.02 | | |
| Rough fish | 235 | 64.03 | 453.64 | 79.98 | | |

**Catch/Unit Effort - catch/one standard gill net

Table 18. Garza-Little Elm Reservoir Cove Rotenone Data for 1974

| Species | Cove 1 4.30 acres No. | Cove 1 4.30 acres lbs. | Cove 2 3.25 acres No. | Cove 2 3.25 acres lbs. | Cove 3 3.70 acres No. | Cove 3 3.70 acres lbs. | Average 11.25 acres *No. | Average 11.25 acres lbs. |
|---|---|---|---|---|---|---|---|---|
| Spotted gar | 4 | 5.58 | 1 | .48 | 2 | 3.06 | 23 | 3.04 |
| Gizzard shad | 390 | 18.17 | 132 | 9.88 | 2018 | 121.33 | 9575 | 49.79 |
| Threadfin shad | 29 | .21 | 27 | .14 | 1004 | 8.73 | 3928 | 3.03 |
| Carp | 18 | 31.20 | 8 | 17.36 | 4 | 6.24 | 116 | 18.27 |
| Spotted sucker | - | - | - | - | 1 | .28 | 2 | .09 |
| River carpsucker | 2 | 2.69 | 22 | 20.83 | 4 | 9.01 | 96 | 10.84 |
| Smallmouth buffalo | 4 | 7.13 | 4 | 9.60 | 5 | 4.93 | 52 | 7.22 |
| Channel catfish | 41 | 8.33 | 79 | 11.18 | 61 | 10.25 | 659 | 9.92 |
| Flathead catfish | 1 | .45 | - | - | 1 | 1.74 | 5 | .73 |
| Black bullhead | 1 | .01 | - | - | - | - | 1 | .01 |
| Yellow bullhead | 1 | .04 | - | - | - | - | 1 | .01 |
| Madtom sp. | 1 | .01 | - | - | 1 | .01 | 5 | .01 |
| White bass | 2 | .28 | 4 | .67 | 57 | 6.10 | 232 | 2.35 |
| WHB X STB hybrid | - | - | - | - | 4 | .32 | 14 | .11 |
| Warmouth | 4 | .11 | 1 | .01 | 7 | .36 | 45 | .16 |
| Green sunfish | 1 | .01 | - | - | 1 | .06 | 5 | .02 |
| Orangespotted sunfish | 3 | .02 | 7 | .04 | 2 | .02 | 42 | .03 |
| Bluegill | 27 | .87 | 1 | .09 | 89 | 1.48 | 449 | .81 |
| Longear sunfish | 122 | 4.18 | 57 | 1.57 | 181 | 3.94 | 1382 | 3.23 |
| Redear sunfish | 1 | .03 | 1 | .03 | - | - | 2 | .02 |
| Sunfish spp. | 202 | 2.24 | - | - | - | - | 868 | .75 |
| Largemouth bass | 48 | 7.10 | 7 | 1.02 | 36 | 11.68 | 361 | 6.60 |
| Spotted bass | 1 | .01 | - | - | 2 | .25 | 10 | .08 |
| White crappie | 5 | .74 | 1 | .09 | 5 | 1.47 | 43 | .77 |
| Big scale logperch | 49 | .25 | 8 | .03 | 35 | .35 | 366 | .21 |
| Freshwater drum | 134 | 19.65 | 144 | 22.73 | 128 | 19.40 | 1516 | 20.59 |
| Totals | 1088 | 109.29 | 503 | 95.75 | 3648 | 211.00 | 19798 | 138.68 |

*No. - the actual total number of each species that were recovered from all coves
No. & lbs. - per acre calculated totals for each cove

Table 19
(continued)

Station I - Dam

| Date | Depth M | Temperature °C Air | Temperature °C Water | Oxygen mg/l | pH | Total Alkalinity mg/l | Specific Conductivity umoh/cm | Turbidity JTU | TDS mg/l | Cl mg/l | $SO_4$ mg/l | $NO_3$ mg/l | $PO_4$ mg/l |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9/30 | S | 24.4 | 22.0 | 6.8 | 7.9 | 104 | 3250 | 10 | 1997 | 1000 | | | |
| | 13 | | 21.5 | 6.4 | 7.9 | 102 | 3360 | 5 | 2017 | 1000 | | | |
| | 26 | | 16.5 | 2.0 | 7.5 | 120 | 2980 | 5 | 2110 | 950 | | | |
| 10/7 | S | 19.4 | 21.7 | 7.8 | 8.0 | 66 | 3400 | 8 | 2100 | 1249 | | | |
| | 13 | | 21.3 | 6.5 | 8.2 | 94 | 3420 | 10 | 2065 | 1299 | | | |
| | 25 | | 18.7 | 1.2 | 7.4 | 130 | 3100 | 4 | 2192 | 949 | | | |

Table 20
(continued)

Station II - Upper End

| Date | Depth M | Temperature °C Air | Temperature °C Water | Oxygen mg/l | pH | Total Alkalinity mg/l | Specific Conductivity umoh/cm | Turbidity JTU | TDS mg/l | Cl mg/l | $SO_4$ mg/l | $NO_3$ mg/l | $PO_4$ mg/l |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9/30 | S | 29.4 | 22.4 | 9.3 | 8.1 | 74 | 1500 | 12 | 292 | 350 | | | |
| | 4 | | 18.5 | 7.5 | 7.9 | 78 | 1380 | 26 | 786 | 350 | | | |
| | 7 | | 18.5 | 7.3 | 7.8 | 90 | 1720 | 24 | 1218 | 350 | | | |
| 10/7 | S | 17.8 | 20.8 | 8.8 | 8.6 | 84 | 1580 | 14 | 986 | 420 | | | |
| | 4 | | 20.3 | 7.4 | 8.5 | 86 | 1750 | 10 | 1113 | 450 | | | |
| | 7 | | 20.2 | 6.1 | 8.4 | 82 | 2050 | 6 | 1098 | 460 | | | |

Table 20. Water Quality Data for Possum Kingdom Reservoir in 1974

Station II - Upper End

| Date | Depth M | Temperature °C Air | Temperature °C Water | Oxygen mg/l | pH | Total Alkalinity mg/l | Specific Conductivity umoh/cm | Turbidity JTU | TDS mg/l | Cl mg/l | $SO_4$ mg/l | $NO_3$ mg/l | $SO_4$ mg/l |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1/22 | S | 10.0 | 7.1 | 11.8 | 7.8 | 106 | 2600 | 32 | 2283 | | | | |
| | 4 | | 7.0 | 12.0 | 7.9 | 106 | 2600 | 33 | 2282 | | | | |
| | 8 | | 7.0 | 12.0 | 8.0 | 104 | 2610 | 33 | 2768 | | | | |
| 2/20 | S | 24.4 | 11.2 | 10.2 | 8.0 | 110 | 2900 | 5 | 2724 | 1150 | | | |
| | 4 | | 11.2 | 10.3 | 8.1 | 100 | 2900 | 10 | 2670 | 1200 | | | |
| | 7 | | 10.7 | 9.3 | 8.1 | 110 | 2950 | 10 | 3098 | 1250 | | | |
| 3/20 | S | 11.1 | 17.2 | 8.3 | 7.8 | 110 | 3450 | 15 | 2561 | 2099 | | | |
| | 4 | | 17.2 | 8.1 | 7.8 | 110 | 3450 | 25 | 2656 | 2199 | | | |
| | 8 | | 16.4 | 4.0 | 7.6 | 110 | 3300 | 90 | 2457 | 2199 | | | |
| 4/17 | S | 23.3 | 17.6 | 9.1 | 8.1 | 108 | 3500 | 5 | 2607 | 1140 | 325 | .310 | .020 |
| | 4 | | 17.4 | 8.9 | 8.1 | 110 | 3500 | 15 | 2633 | 1270 | 325 | .120 | .020 |
| | 7 | | 16.9 | 8.1 | 8.1 | 110 | 4050 | 35 | 2505 | 1200 | 550 | .310 | .060 |
| 5/20 | S | 28.9 | 25.4 | 10.3 | 8.0 | 106 | 3900 | 5 | 2419 | 1450 | | | |
| | 4 | | 25.2 | 9.9 | 8.0 | 114 | 3890 | 7 | 2461 | 1450 | | | |
| | 7 | | 25.1 | 9.6 | 8.0 | 106 | 3890 | 10 | 2507 | 1450 | | | |
| 6/11 | S | 28.9 | 26.7 | 9.4 | 8.4 | 90 | 3680 | 17 | 2084 | 850 | | | |
| | 4 | | 25.7 | 5.8 | 8.2 | 94 | 3870 | 17 | 2077 | 850 | | | |
| | 8 | | 26.3 | 3.0 | 8.2 | 92 | 5600 | 75 | 3497 | 1400 | | | |
| 7/12 | S | 33.9 | 28.4 | 8.8 | 8.3 | 82 | 4150 | 45 | 2092 | 955 | 575 | .199 | .041 |
| | 4 | | 28.0 | 8.6 | 8.3 | 82 | 4100 | 23 | 2357 | 955 | 575 | .199 | .034 |
| | 7 | | 27.3 | 6.1 | 8.3 | 86 | 4090 | 43 | 2474 | 955 | 575 | .288 | .041 |
| 8/29 | S | 30.0 | 29.0 | 7.8 | 8.2 | 84 | 4150 | 11 | 2568 | 1200 | | | |
| | 4 | | 26.0 | 6.0 | 8.0 | 80 | 4000 | 12 | 2523 | 1150 | | | |
| | 7 | | 27.0 | 5.6 | 8.0 | 82 | 4050 | 17 | 2791 | 1250 | | | |

Table 21. Possum Kingdom Reservoir Frame Netting Results for February and March 1974
15 Nets

| Species | Total No. | Percent of Total | Total Weight (Pounds) | Percent of Weight | **Catch/Unit Effort No. | Weight |
|---|---|---|---|---|---|---|
| Gizzard shad | 1 | .94 | .75 | 8.22 | .10 | .08 |
| Redbreast sunfish* | 32 | 30.19 | 2.75 | 30.15 | 3.20 | .27 |
| Green sunfish* | 2 | 1.89 | .40 | 4.28 | .20 | .04 |
| Warmouth* | 1 | .94 | .33 | 3.62 | .10 | .03 |
| Bluegill* | 68 | 64.15 | 4.72 | 51.75 | 6.80 | .43 |
| Redear sunfish* | 1 | .94 | .05 | .55 | .10 | .01 |
| Largemouth bass* | 1 | .94 | .13 | 1.43 | .10 | .01 |
| Total | 106 | 100.00 | 9.12 | 100.00 | 10.60 | .91 |
| Game fish* | 105 | 99.06 | 8.37 | 91.78 | | |
| Rough fish | 1 | .94 | .75 | 8.22 | | |

**Catch/Unit Effort - catch/one frame net

Table 22. Possum Kingdom Reservoir Gill Netting Results for September and October 1974
12 Nets

| Species | Total No. | Percent of Total | Total Weight (Pounds) | Percent of Weight | **Catch/Unit Effort No. | Weight |
|---|---|---|---|---|---|---|
| Longnose gar | 2 | 1.55 | 4.87 | 2.46 | .17 | .41 |
| Gizzard shad | 24 | 18.60 | 15.26 | 7.73 | 2.00 | 1.27 |
| Carp | 6 | 4.65 | 21.68 | 10.99 | .50 | 1.81 |
| Golden shiner | 2 | 1.55 | .36 | .18 | .17 | .03 |
| River carpsucker | 15 | 11.63 | 33.38 | 16.91 | 1.25 | 2.78 |
| Smallmouth buffalo | 4 | 3.10 | 23.17 | 11.74 | .33 | 1.93 |
| Channel catfish* | 20 | 15.50 | 36.92 | 18.71 | 1.67 | 3.08 |
| Flathead catfish* | 3 | 2.33 | 15.11 | 7.66 | .25 | 1.26 |
| White bass* | 19 | 14.73 | 19.63 | 9.95 | 1.58 | 1.64 |
| Redbreast sunfish* | 5 | 3.88 | 1.21 | .61 | .42 | .10 |
| Green sunfish* | 2 | 1.55 | .10 | .05 | .17 | .01 |
| Bluegill* | 2 | 1.55 | .40 | .20 | .17 | .03 |
| Spotted bass* | 16 | 12.40 | 18.59 | 9.42 | 1.33 | 1.55 |
| Largemouth bass* | 7 | 5.53 | 4.80 | 2.43 | .58 | .40 |
| Walleye* | 1 | .77 | .73 | .37 | .08 | .06 |
| Freshwater drum | 1 | .77 | 1.16 | .59 | .08 | .10 |
| Total | 129 | 100.00 | 197.36 | 100.00 | 10.75 | 16.46 |
| Game fish* | 75 | 58.15 | 97.48 | 49.40 | | |
| Rough fish | 54 | 41.85 | 99.88 | 50.60 | | |

**Catch/Unit Effort - catch/one standard gill net

Table 23. Possum Kingdom Reservoir Cove Rotenone Data for 1974

| Species | Cove 1 2.10 acres | | Cove 2 3.86 acres | | Cove 3 3.65 acres | | Average 9.61 acres | |
|---|---|---|---|---|---|---|---|---|
| | No. | lbs. | No. | lbs. | No. | lbs. | No. | lbs. |
| Longnose gar | | - | .26 | .40 | .27 | .11 | 2 | .17 |
| Spotted gar | | - | 3.64 | 7.16 | 2.46 | 3.44 | 23 | 3.53 |
| Gizzard shad | 96.67 | 27.90 | 102.34 | 13.26 | 356.16 | 90.08 | 1898 | 43.75 |
| Threadfin shad | 97.61 | .98 | 6.73 | .05 | 836.43 | 2.88 | 3284 | 1.30 |
| Carp | 2.87 | 13.87 | 19.96 | 94.62 | 36.69 | 229.34 | 216 | 112.61 |
| River carpsucker | | - | 1.82 | 4.97 | 1.64 | .56 | 13 | 1.84 |
| Smallmouth buffalo | 5.26 | 70.69 | 3.64 | 40.85 | 3.29 | 32.26 | 37 | 47.93 |
| Channel catfish | 14.28 | 15.01 | 29.82 | 15.52 | 91.77 | 22.67 | 480 | 17.73 |
| Flathead catfish | .48 | .04 | .52 | 1.06 | 3.01 | 4.05 | 14 | 1.72 |
| Black bullhead | - | - | - | - | 1.10 | + | 4 | + |
| Yellow bullhead | - | - | - | - | 1.10 | .02 | 4 | .01 |
| White bass | .96 | .24 | .78 | .95 | 6.03 | 4.42 | 27 | 1.87 |
| Warmouth | 12.38 | .25 | 11.66 | .57 | 12.32 | 1.10 | 116 | .64 |
| Redbreast sunfish | 117.89 | 5.96 | 20.74 | .88 | - | - | 315 | 2.28 |
| Green sunfish | 19.53 | .32 | 1.30 | .06 | 6.57 | .47 | 70 | .28 |
| Bluegill | 71.91 | 2.35 | 39.12 | 1.03 | 129.05 | 4.44 | 538 | 2.61 |
| Longear sunfish | 7.14 | .16 | 10.88 | .30 | 65.21 | 1.91 | 295 | .79 |
| Redear sunfish | 60.29 | 3.14 | 65.29 | 4.13 | 15.34 | 1.12 | 435 | 8.39 |
| Sunfish spp. | - | - | - | - | 142.74 | 5.77 | 1621 | 1.92 |
| Largemouth bass | 9.53 | 6.05 | 4.16 | 3.42 | 23.28 | 4.25 | 121 | 4.57 |
| Spotted bass | 2.78 | 1.11 | .26 | + | - | - | 7 | .37 |
| White crappie | 2.87 | 1.69 | 1.56 | 1.10 | 23.02 | 6.08 | 96 | 2.96 |
| Black crappie | - | - | .26 | .03 | 1.09 | .15 | 5 | .06 |
| Walleye | - | - | .26 | .21 | - | - | 1 | .07 |
| Freshwater Drum | 28.09 | 10.14 | 67.11 | 24.36 | 185.19 | 50.96 | 995 | 28.49 |
| Totals | 550.54 | 159.90 | 392.11 | 214.93 | 1943.76 | 466.08 | 10617 | 285.89 |

*No.-the actual total number of each species that were recovered from all coves
No. & lbs.-per acre calculated totals for each cove
+ -less than 0.01 lbs. per acre

Figure 2. **LAKE DIVERSION**

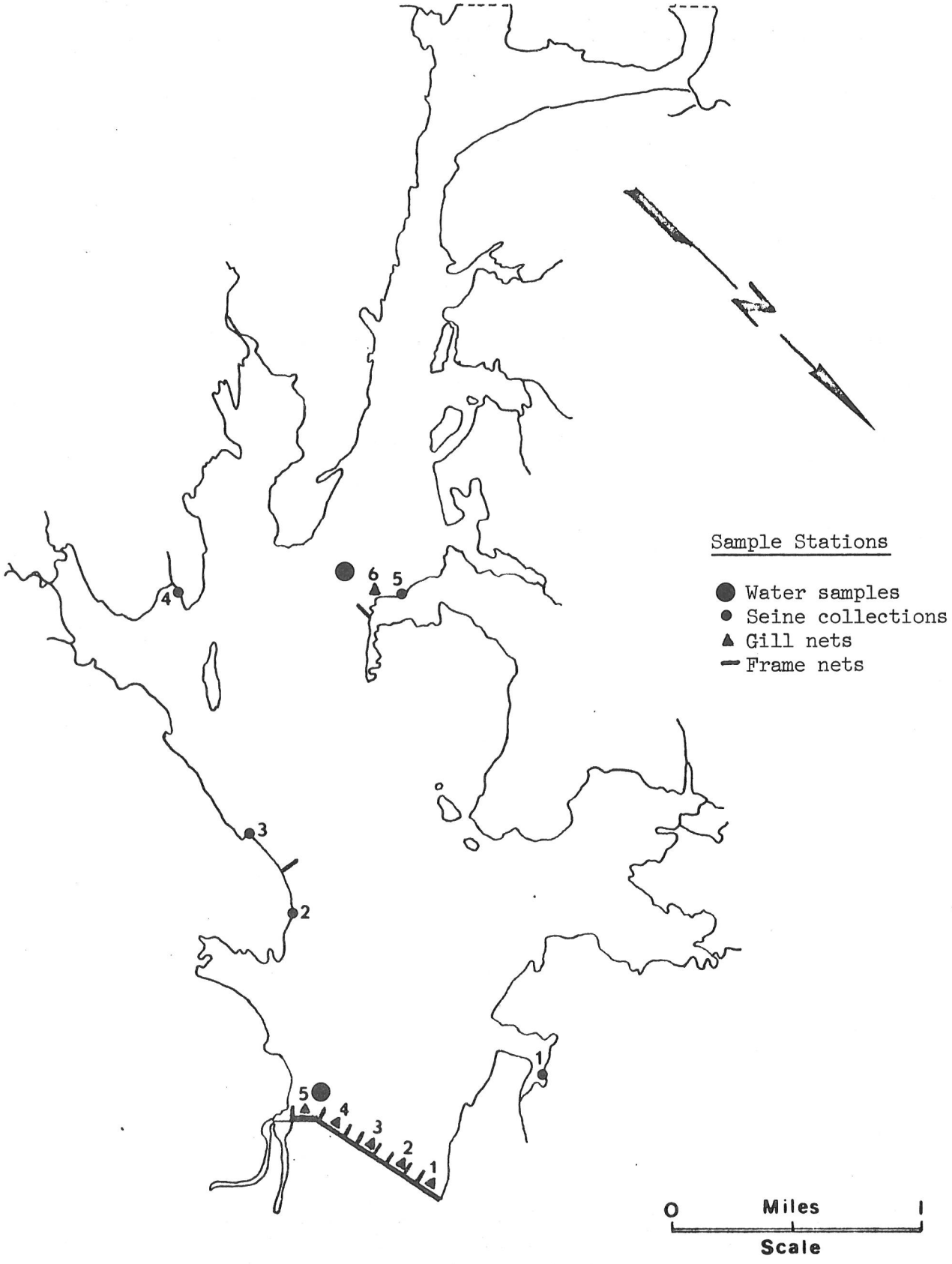


Figure 3

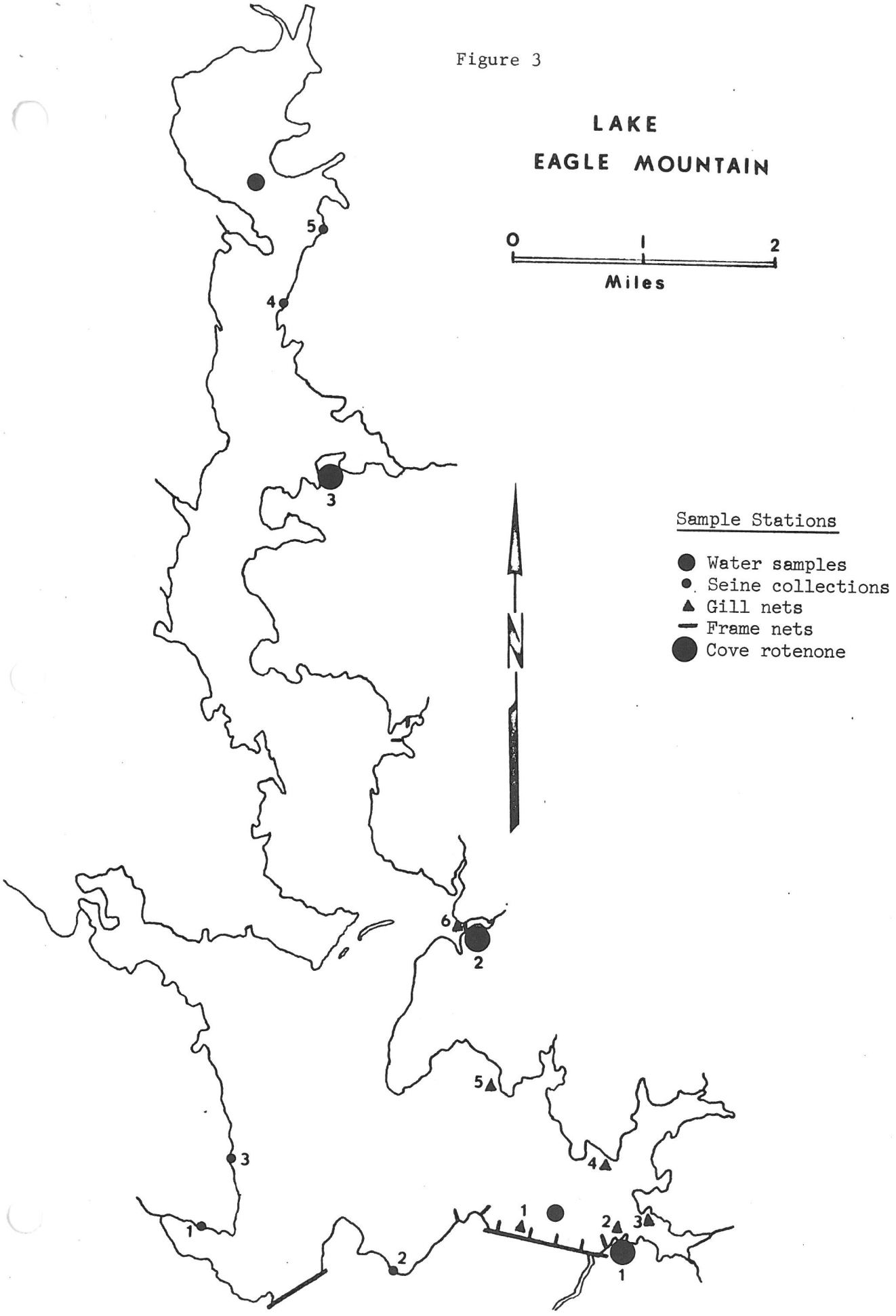
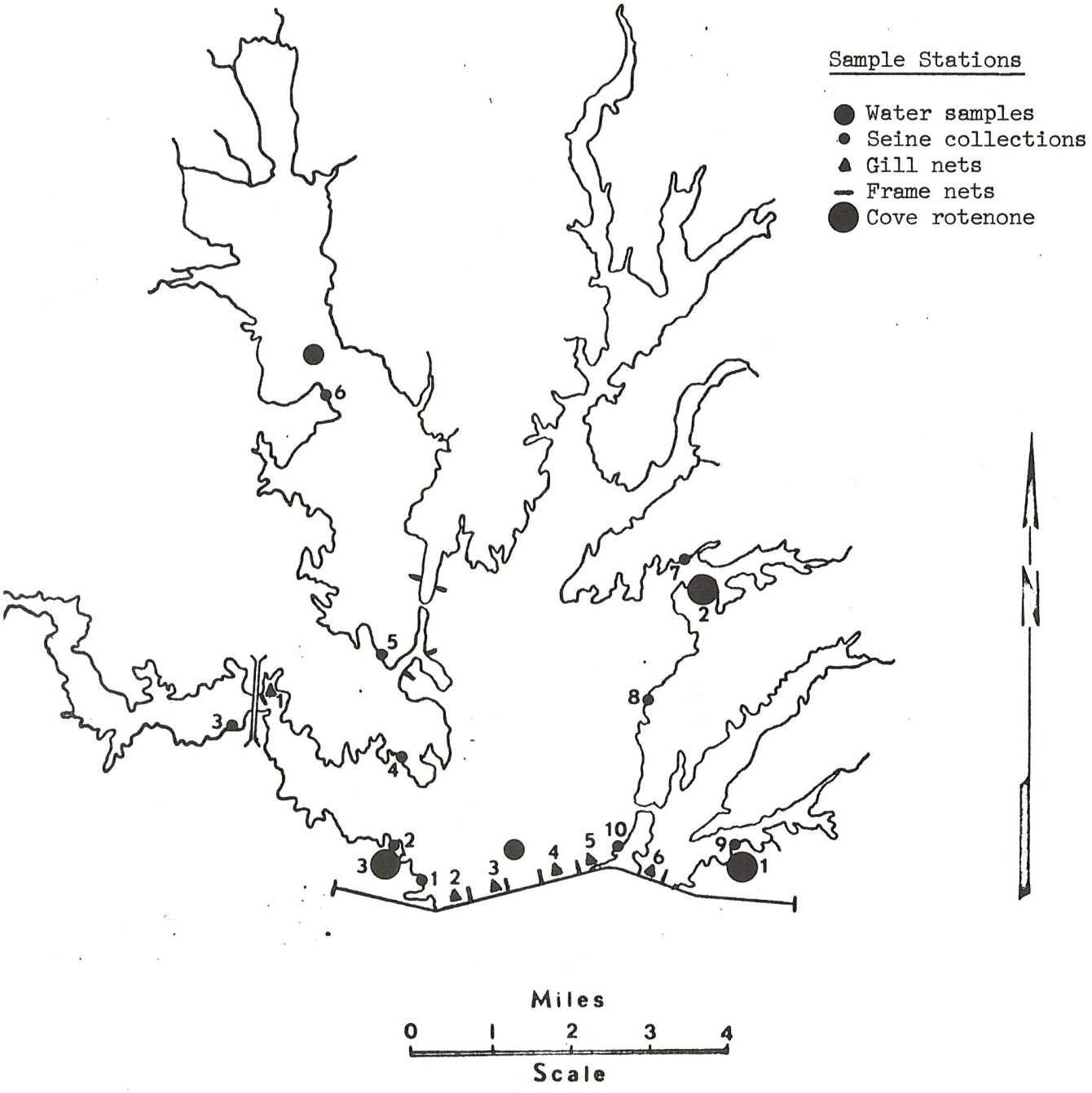

LAKE
EAGLE MOUNTAIN
0
1
2
Miles
N
Sample Stations
Water samples
Seine collections
Gill nets
Frame nets
Cove rotenone
5
4
3
6
2
5
4
3
1
2
1
2
3
1

Figure 4

# GARZA LITTLE ELM RESERVOIR




POSSUM KINGDOM
RESERVOIR
0
2
4
Miles
Sample Stations
Water samples
Seine collections
Gill nets
Frame nets
Cove rotenone
N
1
2
3
4
5
6
7
8
9
10

Figure 5

Figure 6. **LAKE DIVERSION**

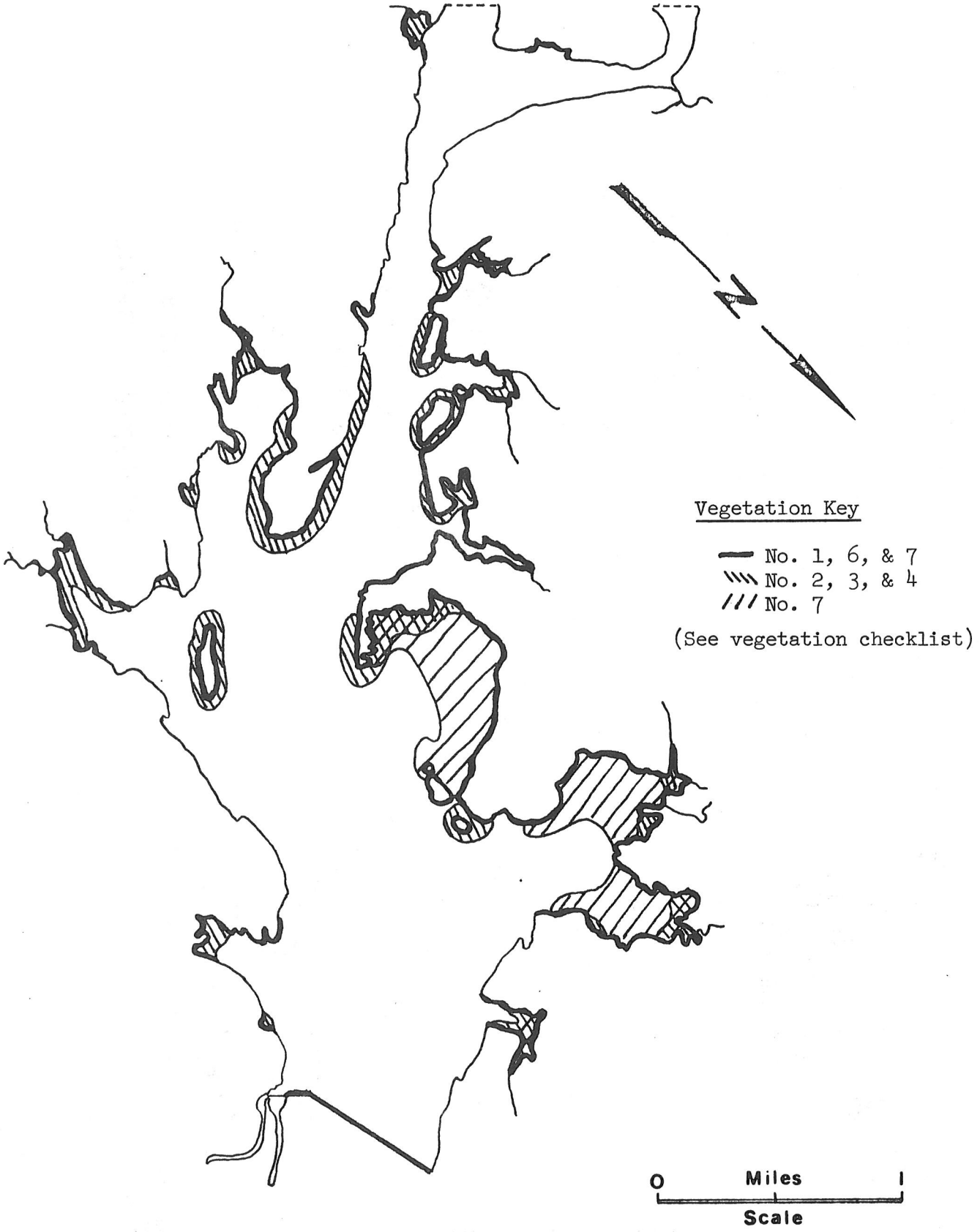


Figure 7.

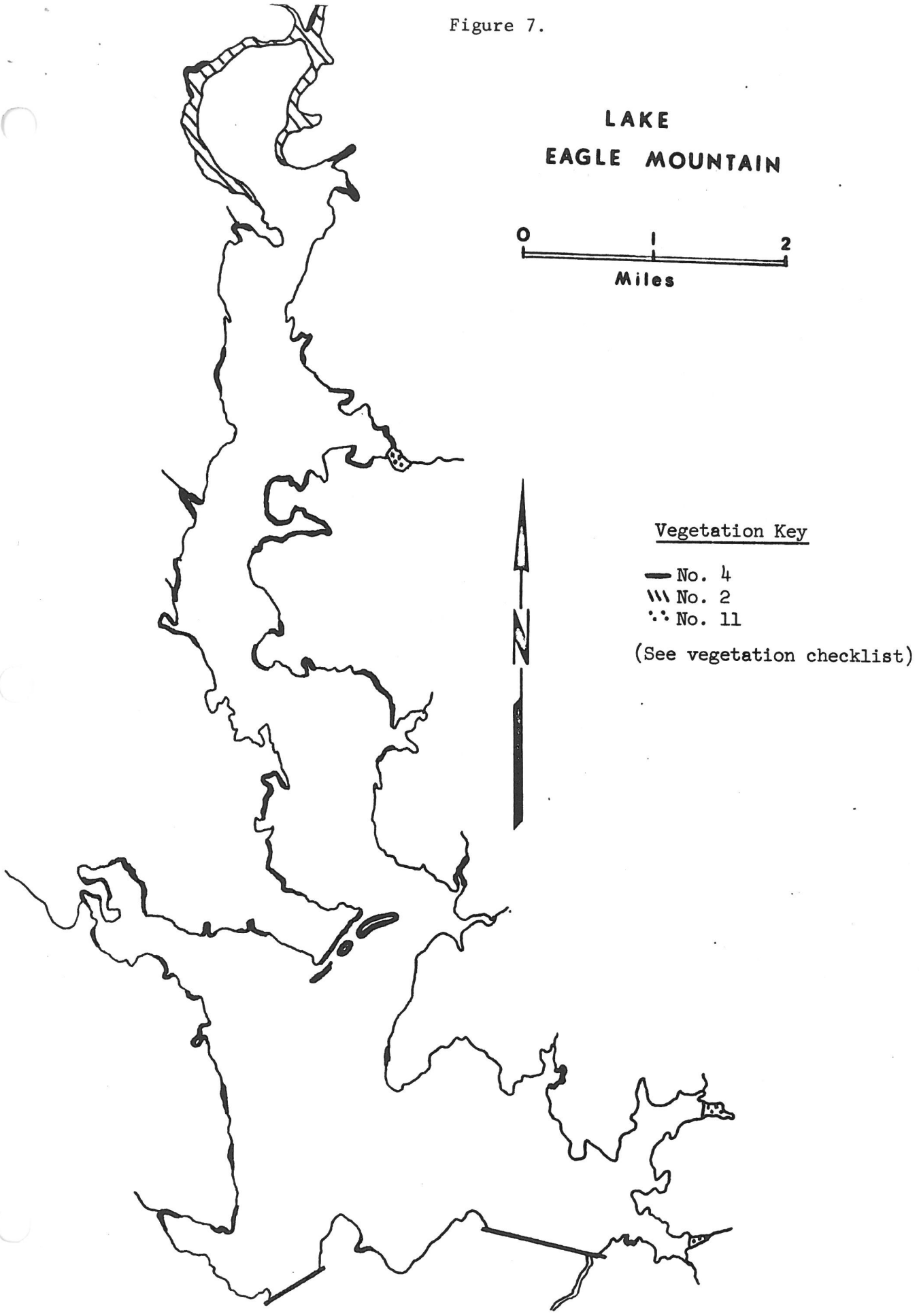
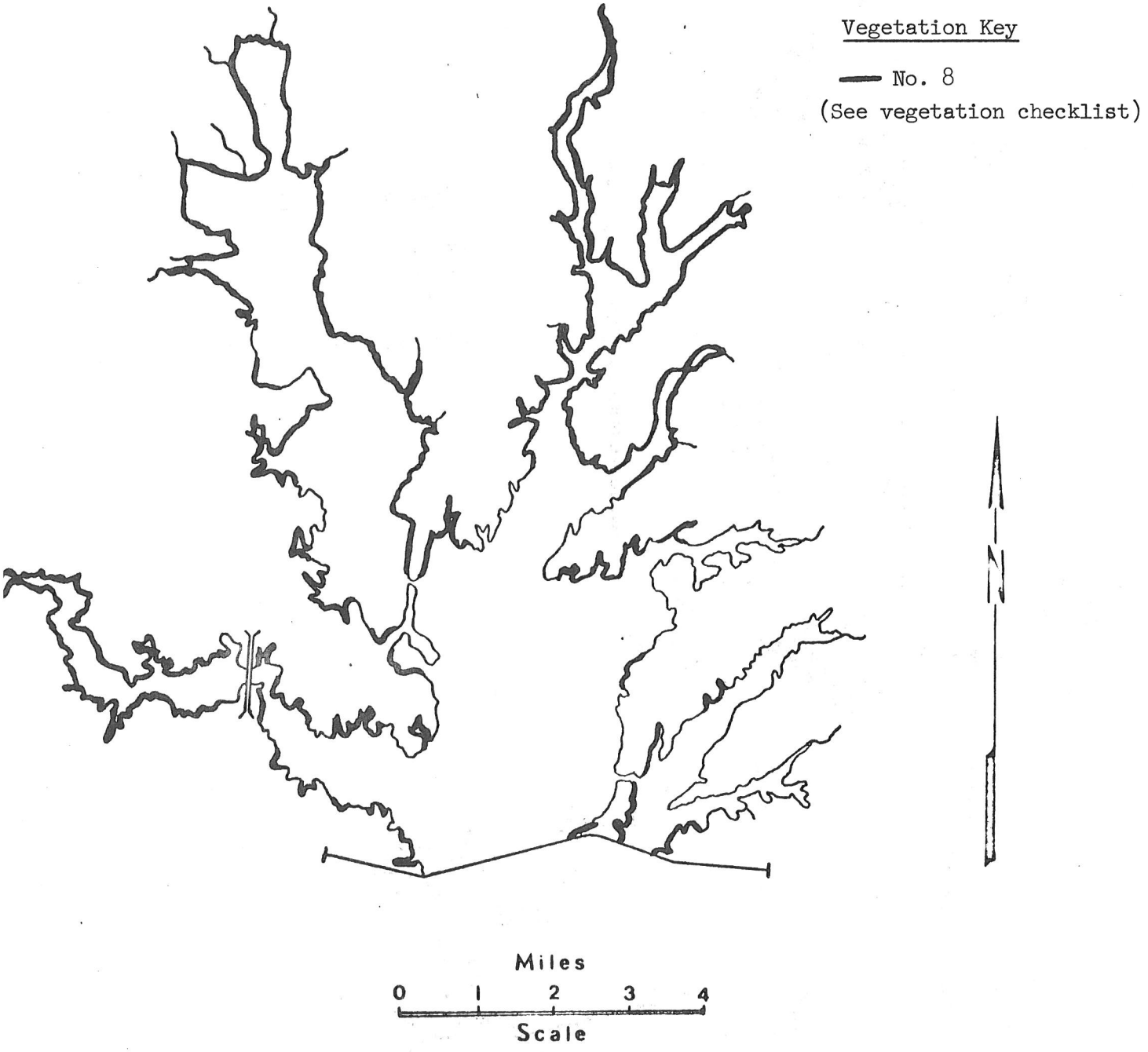

LAKE
EAGLE MOUNTAIN
0
1
2
Miles
N
Vegetation Key
No. 4
No. 2
No. 11
(See vegetation checklist)

Figure 8.

# GARZA LITTLE ELM RESERVOIR



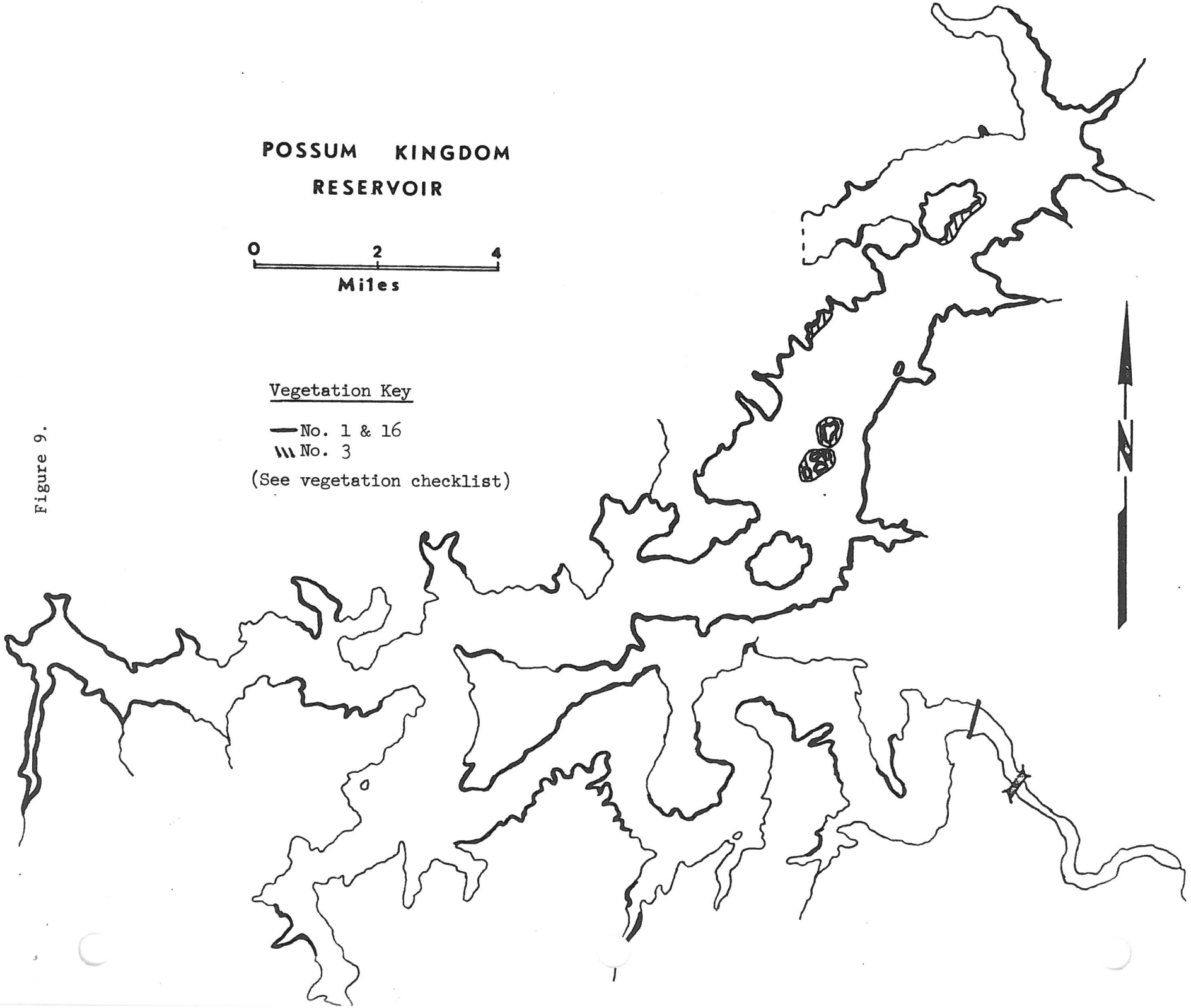
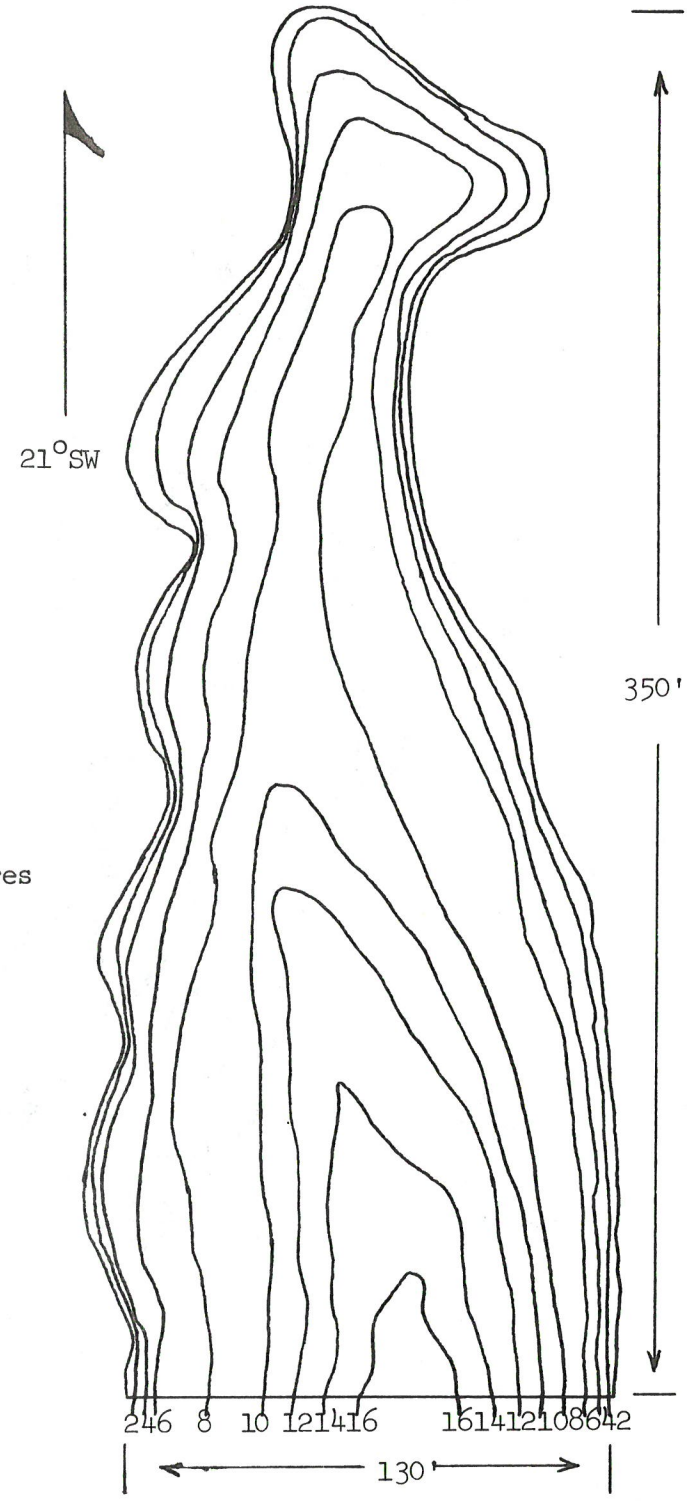

POSSUM KINGDOM
RESERVOIR
0
2
4
Miles
Vegetation Key
No. 1 & 16
No. 3
(See vegetation checklist)
N

Figure 9.

Figure 10




Eagle Mountain Reservoir

Cove # 1

Survey Data

| | |
|---|---|
| Date: | 10-10-74 |
| Elevation: | 648.92 |
| Area: | .95 surface acres |
| Volume: | 8.87 acre feet |
| Maximum depth: | 16 feet |
| Mean depth: | 9.34 feet |

Treatment Data

| | |
|---|---|
| Date: | 7-25-74 |
| Elevation: | 646.54 |
| Area: | .92 surface acres |
| Volume: | 6.61 acre feet |

Figure 11

Eagle Mountain Reservoir

Cove # 2

Survey Data

| | |
|---|---|
| Date: | 6-18-74 |
| Elevation: | 647.14 |
| Area: | 1.16 surface acres |
| Volume: | 5.80 acre feet |
| Maximum depth: | 12 feet |
| Mean depth: | 5.00 feet |

Treatment Data

| | |
|---|---|
| Date: | 7-23-74 |
| Elevation: | 646.52 |
| Area: | 1.00 surface acres |
| Volume: | 5.02 acre feet |

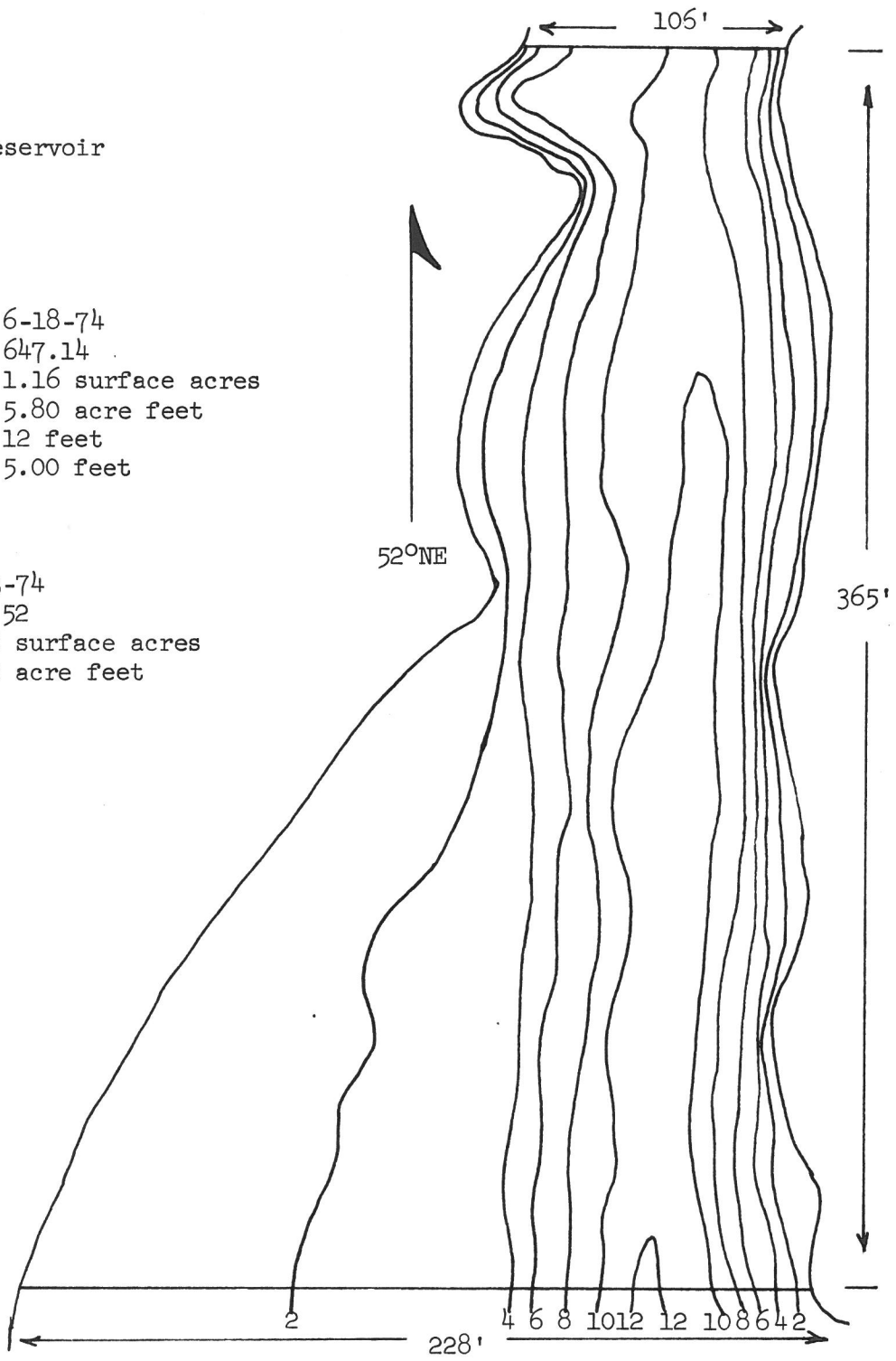
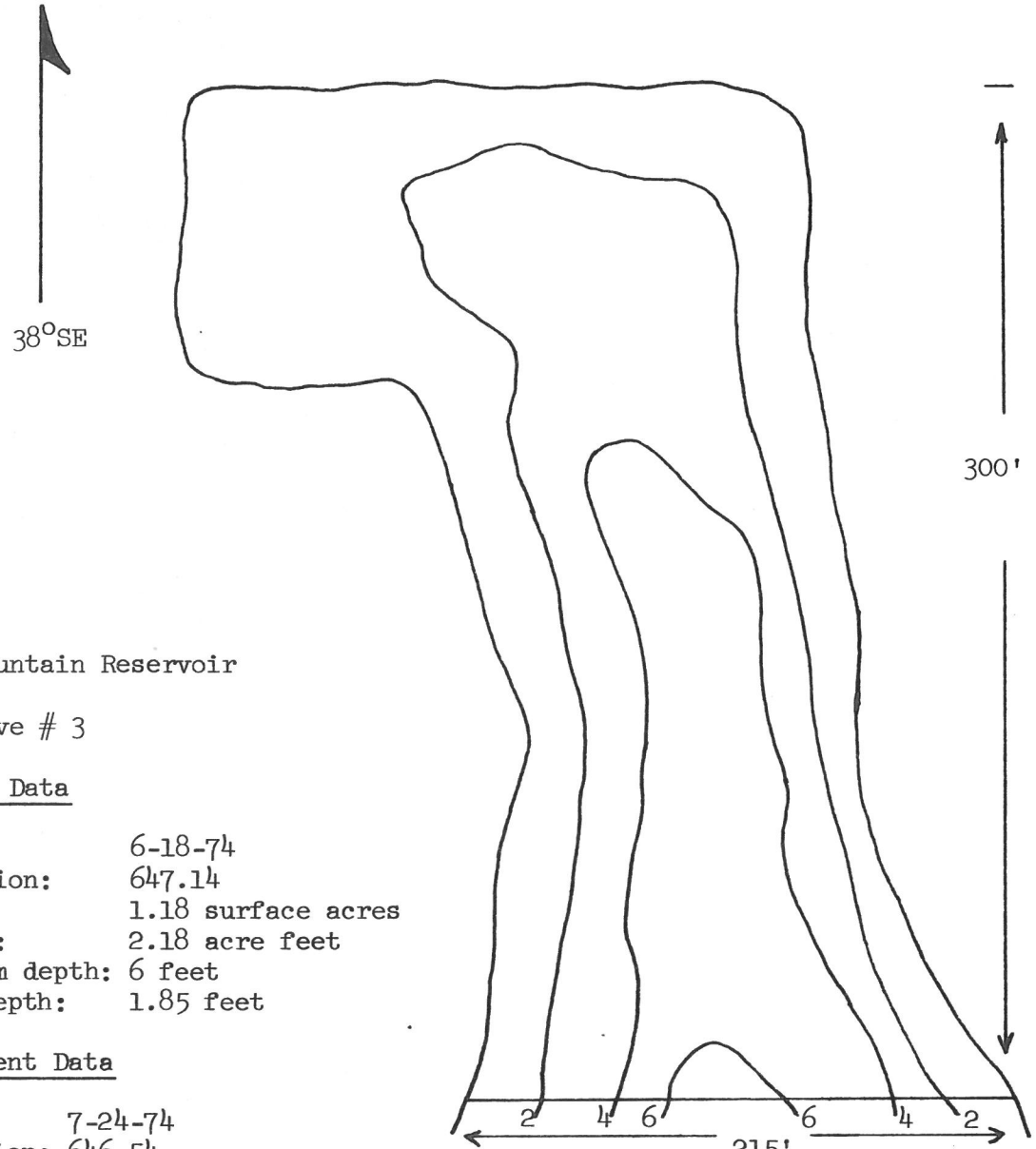


Figure 12




Eagle Mountain Reservoir

Cove # 3

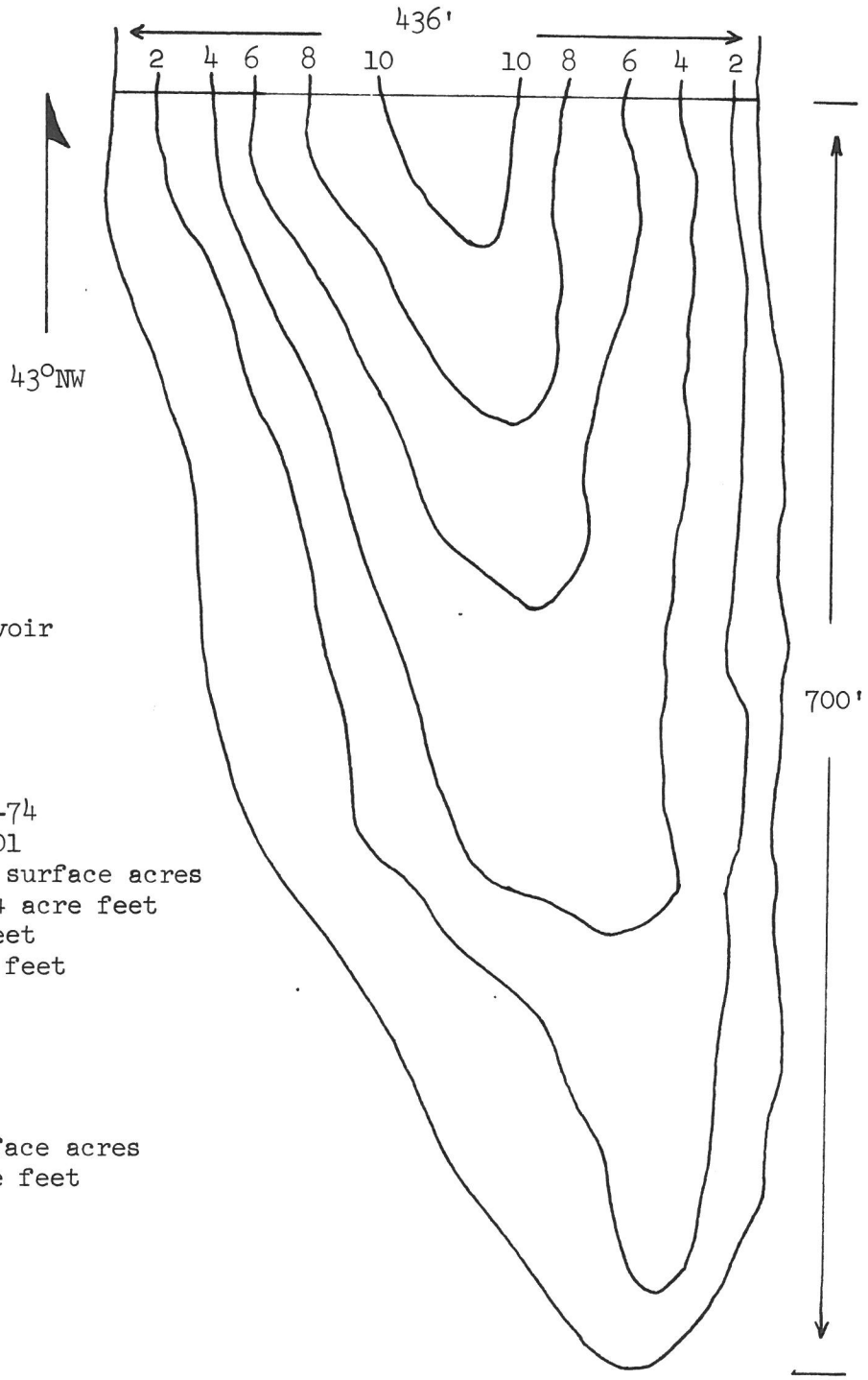
Survey Data

| | |
|---|---|
| Date: | 6-18-74 |
| Elevation: | 647.14 |
| Area: | 1.18 surface acres |
| Volume: | 2.18 acre feet |
| Maximum depth: | 6 feet |
| Mean depth: | 1.85 feet |

Treatment Data

| | |
|---|---|
| Date: | 7-24-74 |
| Elevation: | 646.54 |
| Area: | 1.01 surface acres |
| Volume: | 1.44 acre feet |

Figure 13




Garza Little Elm Reservoir

Cove # 1

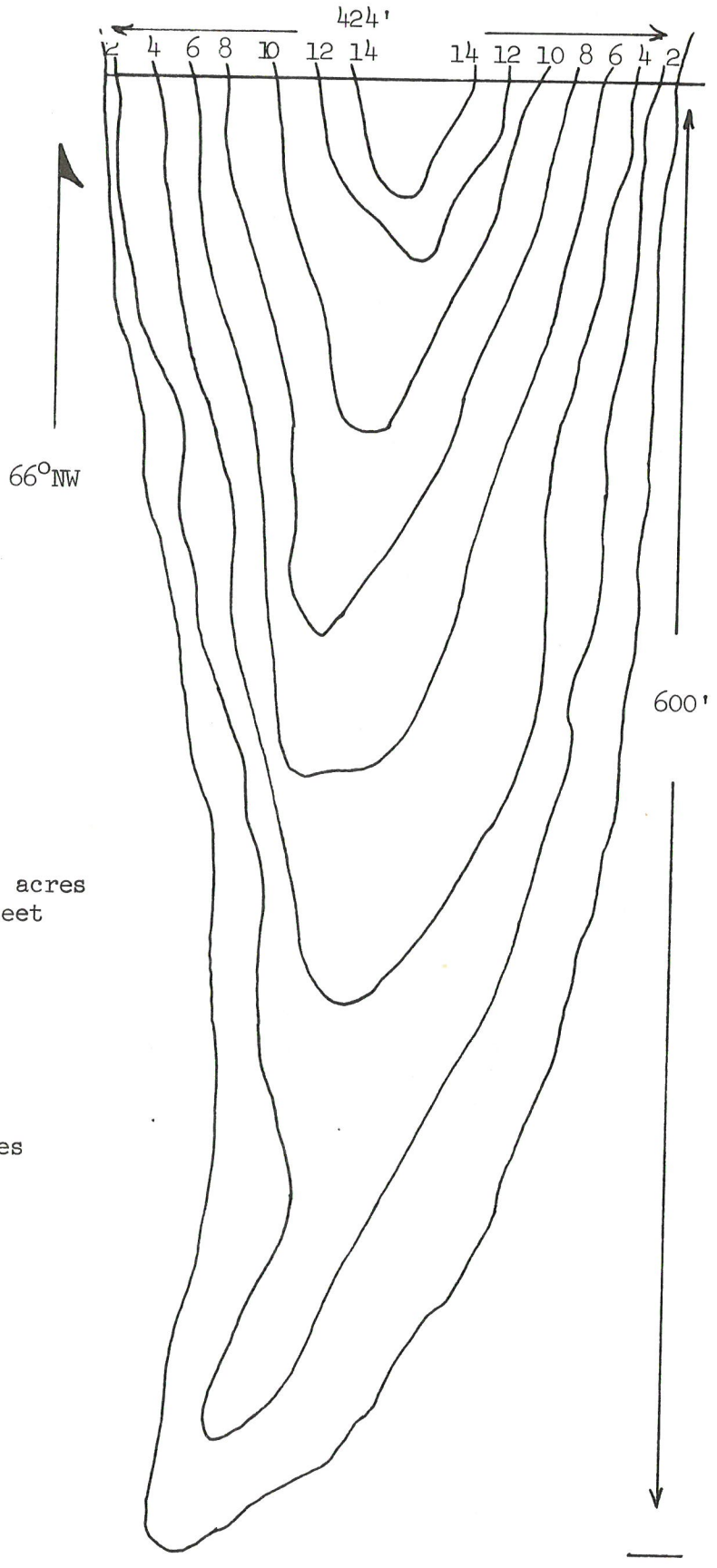
Survey Data

| | |
|---|---|
| Date: | 6-19-74 |
| Elevation: | 516.01 |
| Area: | 5.38 surface acres |
| Volume: | 17.34 acre feet |
| Maximum depth: | 10 feet |
| Mean depth: | 3.22 feet |

Treatment Data

| | |
|---|---|
| Date: | 8-15-74 |
| Elevation: | 513.84 |
| Area: | 4.30 surface acres |
| Volume: | 6.60 acre feet |

Figure 14




Garza Little Elm Reservoir

Cove # 2

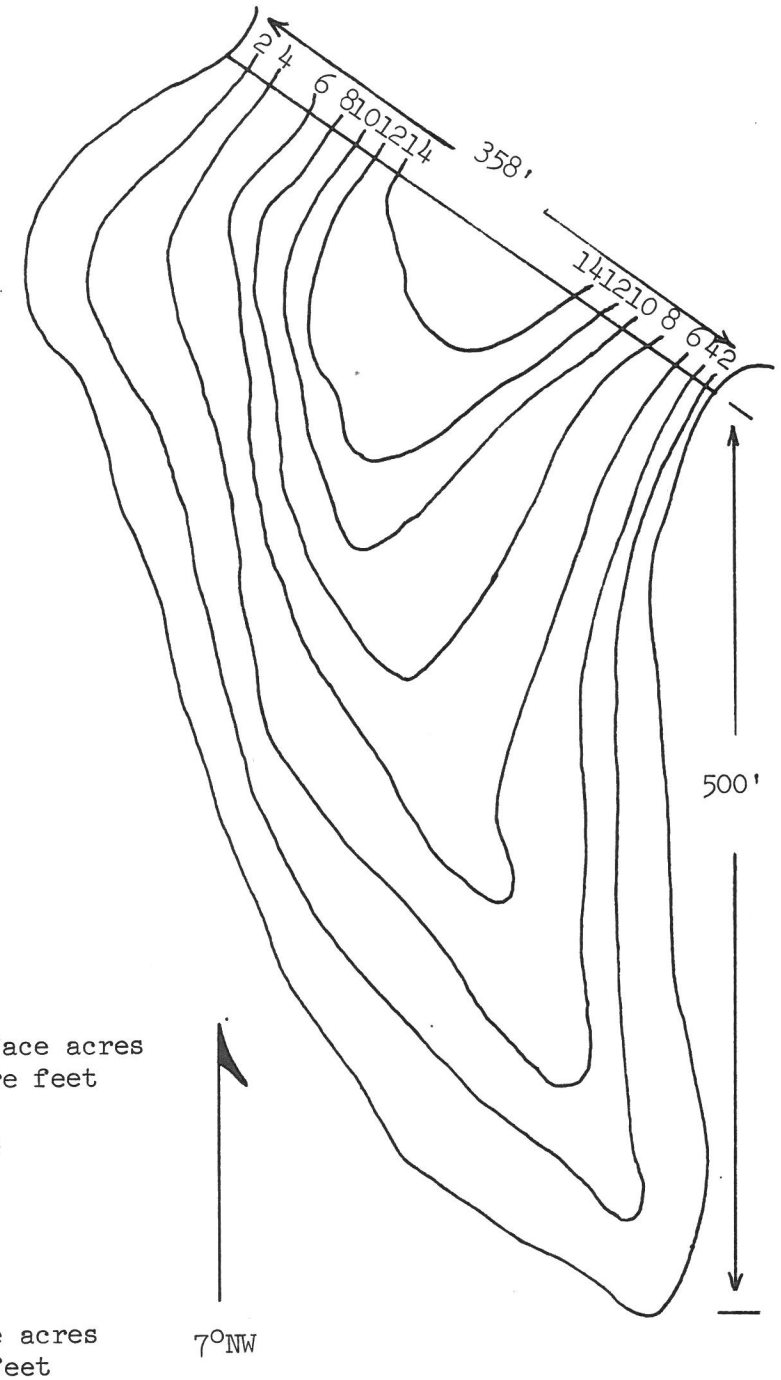
Survey Data

| | |
|---|---|
| Date: | 6-20-74 |
| Elevation: | 515.95 |
| Area: | 3.99 surface acres |
| Volume: | 16.28 acre feet |
| Maximum depth: | 14 feet |
| Mean depth: | 4.08 feet |

Treatment Data

| | |
|---|---|
| Date: | 8-20-74 |
| Elevation: | 513.74 |
| Area: | 3.25 surface acres |
| Volume: | 8.53 acre feet |

Figure 15




Garza Little Elm Reservoir

Cove # 3

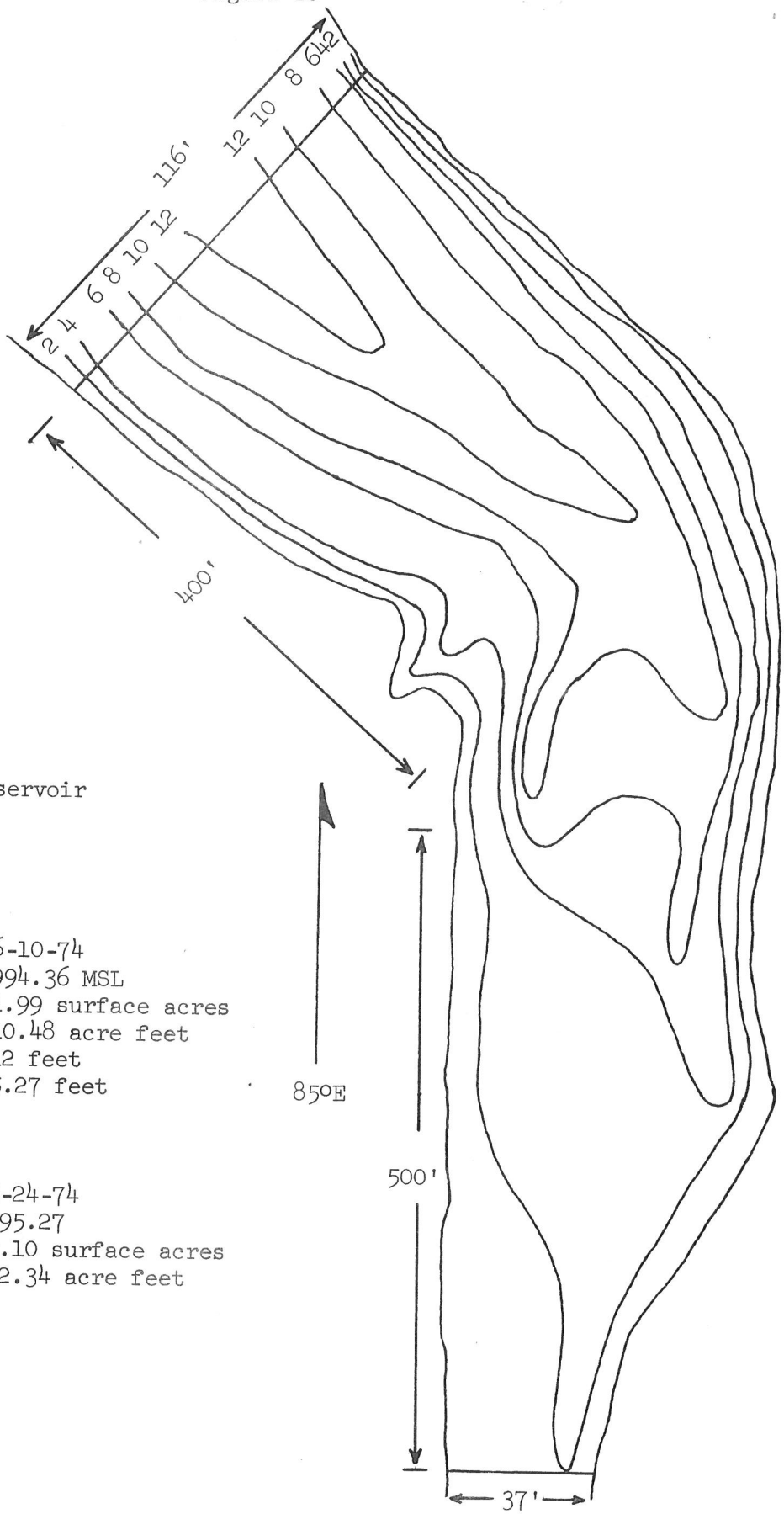
Survey Data

| | |
|---|---|
| Date: | 7-16-74 |
| Elevation: | 514.59 |
| Area: | 3.96 surface acres |
| Volume: | 18.66 acre feet |
| Maximum depth: | 14 feet |
| Mean depth: | 4.71 feet |

Treatment Data

| | |
|---|---|
| Date: | 8-22-74 |
| Elevation: | 513.62 |
| Area: | 3.70 surface acres |
| Volume: | 15.19 acre feet |

Figure 16




Possum Kingdom Reservoir

Cove # 1

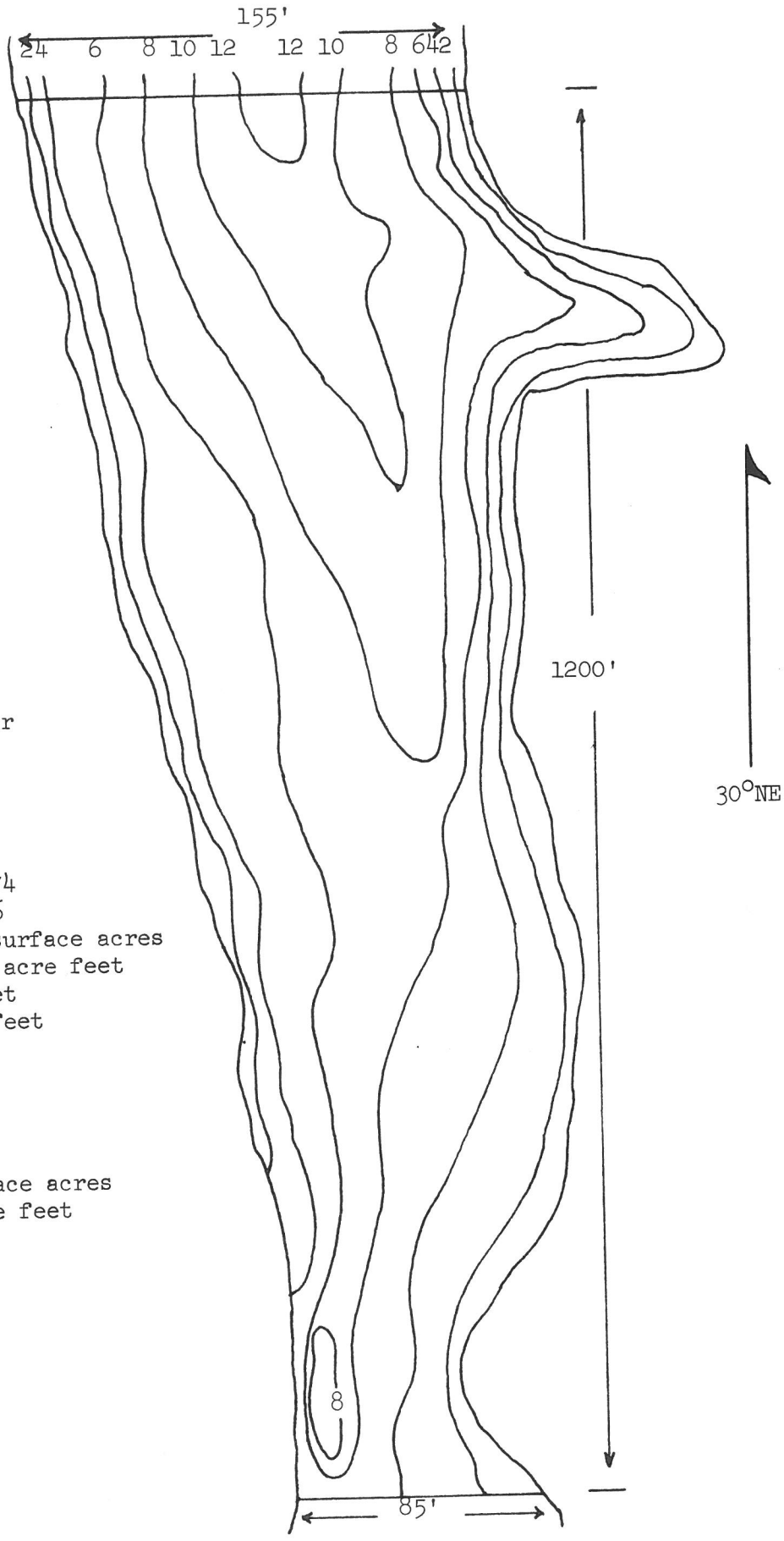
Survey Data

| | |
|---|---|
| Date: | 6-10-74 |
| Elevation: | 994.36 MSL |
| Area: | 1.99 surface acres |
| Volume: | 10.48 acre feet |
| Maximum depth: | 12 feet |
| Mean depth: | 5.27 feet |

Treatment Data

| | |
|---|---|
| Date: | 9-24-74 |
| Elevation: | 995.27 |
| Area: | 2.10 surface acres |
| Volume: | 12.34 acre feet |

Figure 17




Possum Kingdom Reservoir

Cove # 2

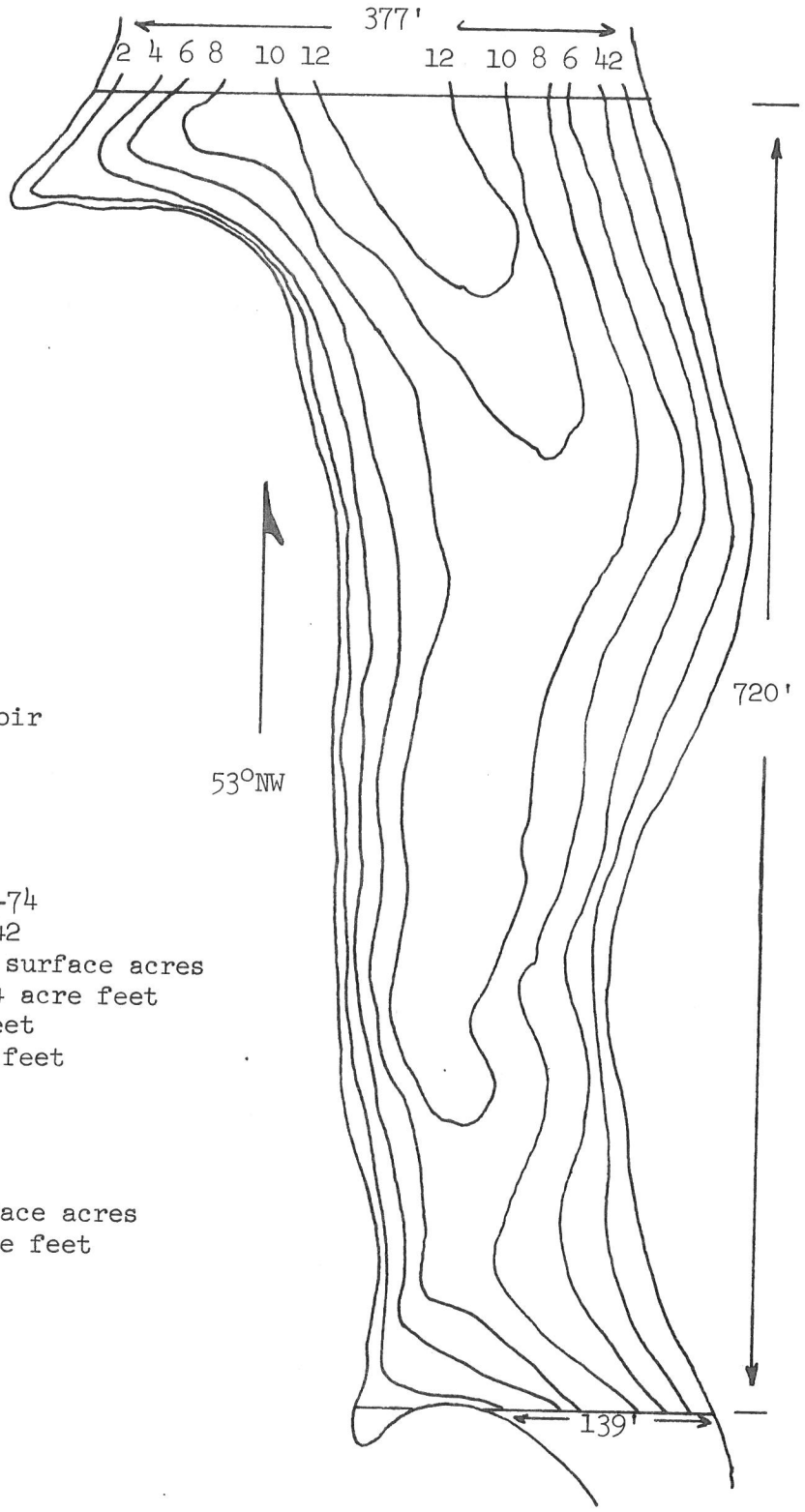
Survey Data

| | |
|---|---|
| Date: | 6-10-74 |
| Elevation: | 994.36 |
| Area: | 3.53 surface acres |
| Volume: | 16.47 acre feet |
| Maximum depth: | 12 feet |
| Mean depth: | 4.67 feet |

Treatment Data

| | |
|---|---|
| Date: | 9-24-74 |
| Elevation: | 995.27 |
| Area: | 3.86 surface acres |
| Volume: | 19.86 acre feet |

Figure 18




Possum Kingdom Reservoir

Cove # 3

Survey Data

| | |
|---|---|
| Date: | 6-11-74 |
| Elevation: | 994.42 |
| Area: | 4.24 surface acres |
| Volume: | 21.24 acre feet |
| Maximum depth: | 12 feet |
| Mean depth: | 5.01 feet |

Treatment Data

| | |
|---|---|
| Date: | 9-18-74 |
| Elevation: | 991.70 |
| Area: | 3.65 surface acres |
| Volume: | 10.32 acre feet |