

Volley Creek Lake

JOB PROGRESS REPORT

As required by

FEDERAL AID IN FISHERIES RESTORATION ACT

TEXAS

Federal Aid Project No. F-5-R-16

REGION I-B FISHERIES STUDIES

Job No. 13 Fisheries Management Recommendations

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April 22, 1969

SUMMARY

During this segment, fisheries surveys were conducted on 16 public bodies of water in Region I-B. Fish populations were sampled with gill nets, seines and trawl. Physical and ecological data were also collected.

Two changes in fish harvest regulations were recommended but failed to meet approval of the department.

Several of the lakes surveyed met the statistical criteria for chemical control measures. However, due to other interfering factors, only Valley Creek and San Angelo Reservoir could be seriously considered for renovation.

Substantial hatchery production provided ample numbers of fish for stocking the public waters in Region I-B. Thirteen public lakes received supplementary stocking this year. Also, the Concho River in Tom Green County received considerable numbers of fry and fingerling fish. Stocking of the new Robert Lee Reservoir was initiated.

Aquatic vegetation was found to be approaching the problematic stage in 2 public lakes. Restrictions on the use of chemicals and limitations of spot treatments prevented any control efforts during this period of study.

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April 22, 1969

## JOB PROGRESS REPORT

State Texas  
Project No.: F-5-R-16 Name: Region I-B Fisheries Studies  
Job No.: 13 Title: Fisheries Management Recommendations  
Period Covered: March 1, 1968 to February 28, 1969

### Objectives:

To determine the need for, in Region I-B waters;

1. Changes in fish harvest regulations
2. Population control
3. Stocking
4. Vegetation control
5. Emergency measures needed to correct unpredictable events adversely affecting fish populations.

### Procedures:

Current fisheries regulations for Region I-B regulatory counties, along with those in other regulatory districts, were reviewed. Past and present fisheries surveys from regional waters provided the basis for either the continuance of existing regulations or the recommended change.

Preliminary meetings with concerned departmental personnel were attended at Kerrville, May 13, 1968, for the Edwards Plateau Regulatory District and at Sweetwater for the Permian Basin Regulatory District. Existing laws and proposed changes were discussed. Public hearings were then held in each of the counties under regulatory authority to discuss the proposed regulations with the sportsmen and landowners. Locations, dates, and number of persons present are given in Table 1 for public hearings concerning this project.

For expediency and clarity, procedures for objectives 2 through 5 will be merged. For the same reasons, the findings and discussion will be reported separately for each concerned body of water.

All public impoundments were surveyed during this segment with the more important ones receiving 2 visits. A list of waters worked this segment are given in Table 2. Fish populations were sampled with standard 150-foot experimental gill nets with mesh sizes varying from 1 to 3½ inches. The number of gill nets set was determined by the size of the impoundment. The size of seines used is given with each seining table. A 10-foot sportsman shrimp trawl was also used as a collection method when possible. The exact dimensions are shown with the trawling results. A trawling sample unit or drag was a 10 minute haul at approximately 5 mph.

Table 1

## Regulatory Hearings Concerning Project F-5-R, 1968

| Permian Basin Area |                    |         |                   |
|--------------------|--------------------|---------|-------------------|
| County             | Location<br>(Town) | Date    | Number<br>Present |
| Andrews *          | Andrews            | 6-12-68 | NR                |
| Borden             | Gail               | 6-10-68 | 0                 |
| Cochran *          | Morton             | 6-10-68 | NR                |
| Coke *             | Robert Lee         | 6-12-68 | NR                |
| Crosby **          | Crosbyton          | 6-10-68 | 0                 |
| Dawson *           | Lamesa             | 6-12-68 | NR                |
| Gaines *           | Seminole           | 6-12-68 | NR                |
| Garza **           | Post               | 6-10-68 | 0                 |
| Glasscock          | Garden City        | 6-12-68 | 0                 |
| Howard             | Big Spring         | 6-11-68 | 0                 |
| Irion              | Mertzton           | 6-13-68 | 0                 |
| Martin             | Stanton            | 6-11-68 | 0                 |
| Midland            | Midland            | 6-12-68 | 4                 |
| Mitchell           | Colorado City      | 6-11-68 | 11                |
| Reagan             | Big Lake           | 6-12-68 | 1                 |
| Sterling           | Sterling City      | 6-17-68 | 0                 |
| Terry *            | Brownfield         | 6-11-68 | NR                |
| Tom Green          | San Angelo         | 6-13-68 | 4                 |
| Yoakum *           | Plains             | 6-11-68 | NR                |

## Edwards Plateau Area

|            |          |         |    |
|------------|----------|---------|----|
| Menard *   | Menard   | 6-11-68 | NR |
| Schleicher | Eldorado | 6-11-68 | NR |

NR - Official attendance not reported

\*\* - Not in Region I-B, but hearing attended by F-5-R personnel

\* - In Region I-B but not attended by F-5-R personnel

Table 2  
Waters Surveyed During This Segment

| Name                  | County            | Number of Visits |
|-----------------------|-------------------|------------------|
| Moss Creek Lake       | Howard            | 3                |
| Nasworthy Lake        | Tom Green         | 2                |
| San Angelo Reservoir  | Tom Green         | 3                |
| Oak Creek Reservoir   | Coke              | 2                |
| J. B. Thomas Lake     | Borden and Scurry | 2                |
| Champion Creek Lake   | Mitchell          | 2                |
| Twin Buttes Reservoir | Tom Green         | 2                |
| Colorado City Lake    | Mitchell          | 2                |
| Kinarum Lake          | Coke              | 1                |
| Valley Creek Lake     | Runnels           | 1                |
| New Winters Lake      | Runnels           | 1                |
| Elm Creek Lake        | Runnels           | 1                |
| Towle Park Lake       | Scurry            | 1                |
| Old Winters           | Runnels           | 1                |
| Mountain Creek Lake   | Coke              | 1                |
| Andrews City Lake     | Andrews           | 1                |

All fish collected in gill nets were counted, weighed, and measured. A sample of fish (usually to a maximum of 15 of each game species) was examined to determine sexual development and to record stomach content. Total numbers, total weight, percentages, average weights, and condition ("K" factor) were tabulated. Fish taken in seines and trawl were counted and a length range was recorded. Several specimens of each species were preserved in formalin solution and identifications were confirmed in the laboratory.

Vegetation checks were made during each survey and records were taken as to the kind and abundance. This information will be presented only when aquatic vegetation approaches the problematic stage.

Physical data including air and water temperatures, turbidity, hydrological records and weather conditions were recorded. This information will be discussed in the report when necessary.

Statistical data for each lake were examined to determine which waters would be considered for chemical control measures. The criteria for considering management efforts were populations of undesirable species in excess of 80 per cent by either weight and/or number, lake capacities, and the "cost-benefit ratio" of a treatment.

Stocking recommendations were made for many of these public waters based on the following: (1) the degree and survival of game fish reproduction, (2) water levels, (3) food availability, and (4) fishing pressure and past records.

On several occasions, the recommended stocking rates were exceeded and many hatchery reared fish were released in the Concho Rivers in and near Tom Green County due to an abundant hatchery production. Fish stocking records for all public lakes in Region I-B during 1968 are presented in Table 3. (All fish were fingerling size except where noted.)

Table 3  
Public Water Stocking - 1968, Region I-B

| Lakes                    | No. Released    |                 |                |
|--------------------------|-----------------|-----------------|----------------|
|                          | Largemouth Bass | Channel Catfish | Redear Sunfish |
| Champion Creek           |                 | 35,000          |                |
| Colorado City            | 25,000          |                 |                |
| Elm Creek                | 4,000           | 6,000           | 4,000          |
| J. B. Thomas             | 88,000          |                 |                |
| Mountain Creek           |                 | 2,000           |                |
| Nasworthy                |                 | 26,000          |                |
| New Winters              | 8,000           | 8,000           | 8,000          |
| Oak Creek                |                 | 56,000          |                |
| Old Winters              | 1,500           | 4,500           | 1,000          |
| San Angelo               | 124,000         |                 |                |
| Towle Park               | 500             | 850             | 1,000          |
| Twin Buttes              | 416,000 *       | 10,000          |                |
| Valley Creek             | 12,000          | 9,200           | 5,000          |
| <u>Concho River</u>      |                 |                 |                |
| Bell Street Dam          | 88,000 *        | 17,750          | 14,000         |
| Ben Ficklin Dam          | 24,000          | 4,000           |                |
| Lone Wolf Dam            | 65,000          | 8,000           |                |
| Metcalf Dam              | 62,000          | 8,000           | crappie        |
| Main Concho (General)    | 78,000 *        |                 | 16,250         |
| <u>Colorado River</u>    |                 |                 |                |
| (In new lake basin)      | 13,700 **       | 138,000         |                |
| * - Fry or advanced fry  |                 |                 |                |
| **- Advanced fingerlings |                 |                 |                |

Findings:

Objective No. 1.

For the most part, the existing fisheries regulations were found to be satisfactory for the present fishery resources in this region. Two changes were recommended but apparently failed to meet the approval of the Department and were not adopted.

The first proposed change in the fishing regulations was that all trotlines bear the name and address of the fisherman on a legible permanent tag. The reason being that most public waters are becoming heavily infested with abandoned trotlines which are a hindrance to fishermen and can be detrimental to fish, especially catfish.

The second recommended change was a 7½-month closed fishing season on the portion of the Colorado River to be inundated by the New Robert Lee Reservoir. This change was needed to protect the brood game fish being placed in the existing water of the lake basin to insure adequate stocking when impoundment begins.

Findings and Discussion:

Objectives 2 through 5

#### Moss Creek Lake

The Colorado River Municipal Water District controls the water of this 145-acre impoundment and uses it as a storage reservoir. Although the city of Big Spring is the actual owner, they control only the recreation.

Moss Creek Lake was chemically treated in November 1967 in an effort to reduce the large number of gizzard shad and thereby increase the harvest of the abundant game fish population. This control effort reduced the gizzard shad from a previous 40 per cent of fish netted to 0.62 per cent of a netting sample made shortly after treatment. Since that time, the number of gizzard shad have steadily increased and accounted for 17.58 per cent of the number of fish netted in a 3-sample netting composite (Table 4). It should be noted that these were adult shad averaging 0.62 pounds, and only 5 small shad were taken in seines and trawl during the same sampling.

Channel catfish, flathead catfish, and largemouth bass continued to be the most significant game species by weight, and comprised 9.55, 4.02, and 5.53 per cent respectively by number in netting collections. Flathead catfish accounted for 15.45 per cent of the weight of this year's netting collections, and 7 of the 8 individuals taken were tagged fish released for management purposes earlier in the year.

The large number of age class 0 largemouth bass taken in seining collections clearly indicates that stocking with hatchery-reared fish was not necessary (Table 4).

Although the turbidity of the reservoir is usually low, it supports only nominal amounts of muskgrass (Chara sp.) and cattail (Typha latifolia). The fluctuating water level probably controls this vegetation.

Table 4

Survey Results Moss Creek Reservoir, April 4, July 10, and December 18, 1968.  
Results of 16 gill nets.

| Species            | Number     | Per Cent<br>by No. | Total Wgt.<br>Pounds | Avg. Wgt.<br>Pounds | Per Cent<br>by Wgt. | Average<br>"K" |
|--------------------|------------|--------------------|----------------------|---------------------|---------------------|----------------|
| Gizzard shad       | 35         | 17.58              | 21.85                | .62                 | 6.16                |                |
| Carp               | 36         | 18.09              | 174.66               | 4.85                | 49.27               |                |
| Golden shiner      | 9          | 4.53               | 1.65                 | .18                 | .47                 |                |
| River carpsucker   | 4          | 2.01               | 19.16                | 4.79                | 5.40                |                |
| Black bullhead     | 38         | 19.09              | 8.03                 | .21                 | 2.27                |                |
| Channel catfish *  | 19         | 9.55               | 43.45                | 2.28                | 12.26               | 2.14           |
| Flathead catfish * | 8          | 4.02               | 54.78                | 6.84                | 15.45               | 2.12           |
| White bass *       | 4          | 2.01               | 9.30                 | 2.32                | 2.62                | 2.98           |
| Warmouth *         | 1          | .50                | .24                  | .24                 | .07                 | 3.91           |
| Bluegill *         | 8          | 4.02               | .63                  | .07                 | .18                 | 4.27           |
| Redear sunfish *   | 5          | 2.51               | .55                  | .11                 | .15                 | 4.20           |
| Largemouth bass *  | 11         | 5.53               | 17.19                | 1.56                | 4.85                | 2.83           |
| White crappie *    | 21         | 10.56              | 2.98                 | .14                 | .85                 | 2.77           |
| <b>Total</b>       | <b>199</b> | <b>100.00</b>      | <b>354.47</b>        |                     | <b>100.00</b>       |                |
| Game Fish *        | 77         | 38.70              | 129.12               |                     | 36.43               |                |
| Rough Fish         | 122        | 61.30              | 225.35               |                     | 63.57               |                |

Seining Results Moss Creek Reservoir (Bag 26 by 6 by 1/4-inch mesh seine and 20 by 6 by 1/8-inch mesh seine).

| Species               | Number     | Size Range in Inches |
|-----------------------|------------|----------------------|
| Gizzard shad          | 5          | 3-6                  |
| Golden shiner         | 149        | 1-7                  |
| Red shiner            | 93         | 1½-3                 |
| Bullhead minnow       | 2          | 2½                   |
| Black bullhead        | 28         | 2-3                  |
| Mosquitofish          | 3          | 1½-2                 |
| Warmouth              | 6          | 2½-3½                |
| Green sunfish         | 15         | 2-3½                 |
| Orangespotted sunfish | 65         | 2-4                  |
| Bluegill              | 72         | 1-4½                 |
| Longear sunfish       | 7          | 2-3                  |
| Largemouth bass       | 232        | 2-8                  |
| White crappie         | 29         | 3-5                  |
| <b>Total</b>          | <b>706</b> |                      |

Trawling Results Moss Creek Reservoir, April 4 and July 10, 1968. (16 by 10 by 1/2-inch mesh trawl).

| Species               | Number     | Size Range in Inches |
|-----------------------|------------|----------------------|
| Black bullhead        | 76         | 3-5                  |
| Channel catfish       | 2          | 4                    |
| Warmouth              | 48         | 2-3½                 |
| Orangespotted sunfish | 4          | 3                    |
| Bluegill              | 51         | 2-5                  |
| Redear sunfish        | 3          | 3                    |
| Largemouth bass       | 1          | 4                    |
| White crappie         | 177        | 3-7                  |
| <b>Total</b>          | <b>362</b> |                      |

### Nasworthy Lake

Lake Nasworthy, located just south of San Angelo, serves the city as a water supply, as well as a recreational area. During both collection trips, this 1,600-acre impoundment was 2 to 4 feet low because water was not available for release from Twin Buttes Reservoir immediately upstream.

The combined survey results (Table 5) indicate an improved game fish population. The number of catfish, both channel and flathead, have increased considerably over previous surveys, accounting for almost 35 per cent of the total weight of fish netted. Largemouth bass and white crappie continue to be well represented in the netting sample, as well as in reported creels. Gizzard shad, carp, and river carpsucker dominate the rough fish catch, accounting for more than 90 per cent by number and 80 per cent by weight of the total undesirable species.

Seining and trawling collections found adequate numbers of young game fish present; however, channel catfish were stocked this year because of heavy fishing pressure on the lake and an abundant supply of hatchery-produced fingerlings. These samples also indicated an ample supply of forage available to support the supplemental stocking of catfish.

The shoreline supports a moderate to heavy growth of bulrush (Scirpus validus) and cattail. However, these plants were not found in amounts that would interfere with access or fishing at public points.

### San Angelo Reservoir

The U. S. Corps of Engineers constructed this impoundment on the North Concho River near the northwest limits of San Angelo in the early 1950's. Shortly thereafter it filled to its normal capacity of 119,000 acre-feet but has steadily decreased since and contained less than 10,000 acre-feet of water during the last survey. This reservoir lost another 1,000 acre-feet by mid-January 1969, when an extra collection was made. This water loss is attributed to city use, evaporation, and little runoff for the past several years.

This year's survey results (Table 6) found that game fish had increased slightly in both number and weight over the past several checks. Channel catfish, white bass, and white crappie accounted for most of the 35.90 per cent by number and 29.89 per cent by weight of game fish collected. White crappie were the most improved game fish, comprising 22.65 per cent of the number of fish netted. These prized pan fish averaged more than 1/3-pound each, and in the extra survey (Table 7) exhibited the highest "K" factor (3.52) for this species found in the region. An increase in the number of smallmouth buffalo is the only significant change found in the rough fish population.

Seining and trawling revealed a valuable new forage fish, threadfin shad. Young-of-the-year fish were taken with seines in October, while trawling yielded both fingerlings and adults during the same survey. This was the first time this species was collected in this region. They were not introduced by our department and can hardly be assumed to be a bait fish introduction.

Table 5

Survey Results Nasworthy Lake, May 1 and October 10, 1968. Results of 15 gill nets.

| Species            | Number | Per Cent by No. | Total Wgt. Pounds | Avg. Wgt. Pounds | Per Cent by Wgt. | Average "K" |
|--------------------|--------|-----------------|-------------------|------------------|------------------|-------------|
| Longnose gar       | 5      | .55             | 28.02             | 5.60             | 4.39             |             |
| Gizzard shad       | 456    | 50.67           | 66.34             | .14              | 10.39            |             |
| Carp               | 82     | 9.11            | 170.53            | 2.08             | 26.73            |             |
| Golden shiner      | 3      | .33             | .45               | .15              | .07              |             |
| River carpsucker   | 18     | 2.00            | 51.04             | 2.83             | 8.00             |             |
| Black bullhead     | 20     | 2.22            | 7.26              | 3.63             | 1.13             |             |
| Channel catfish *  | 77     | 8.56            | 141.85            | 1.84             | 22.23            | 2.12        |
| Flathead catfish * | 16     | 1.78            | 80.22             | 5.01             | 12.57            | 2.21        |
| White bass *       | 13     | 1.45            | 17.24             | 1.32             | 2.71             | 3.04        |
| Warmouth *         | 1      | .11             | .09               | .09              | .01              | 3.00        |
| Bluegill *         | 36     | 4.00            | 2.94              | .08              | .46              | 4.27        |
| Longear sunfish *  | 3      | .33             | .27               | .09              | .04              | 4.09        |
| Redear sunfish *   | 6      | .66             | .63               | .10              | .10              | 3.29        |
| Largemouth bass *  | 5      | .55             | 9.65              | 1.93             | 1.51             | 2.89        |
| White crappie *    | 133    | 14.79           | 29.93             | .22              | 4.69             | 2.90        |
| Freshwater drum    | 26     | 2.89            | 31.66             | 1.22             | 4.97             |             |
| Total              | 900    | 100.00          | 638.12            |                  | 100.00           |             |
| Game fish *        | 290    | 32.23           | 282.82            |                  | 44.32            |             |
| Rough fish         | 610    | 67.77           | 355.30            |                  | 55.68            |             |

Seining Results Nasworthy Lake (Bag 26 by 6 by 1/4-inch mesh seine and 20 by 6 by 1/8-inch mesh seine).

| Species               | Number | Size Range in Inches |
|-----------------------|--------|----------------------|
| Gizzard shad          | 48     | 3-8                  |
| Golden shiner         | 17     | 4-8                  |
| Red shiner            | 15     | 1/2-2                |
| Blacktail shiner      | 2      | 2-3                  |
| Bullhead minnow       | 36     | 1-2 1/2              |
| Orangespotted sunfish | 7      | 2 1/2-3              |
| Bluegill              | 19     | 2-3 1/2              |
| Longear sunfish       | 12     | 1 1/2-4              |
| Redear sunfish        | 4      | 3                    |
| Largemouth bass       | 5      | 3                    |
| Logperch              | 8      | 2 1/2-4              |
| Total                 | 173    |                      |

Trawling Results Nasworthy Lake, April 23 and October 10, 1968. (16 by 10 by 1/2-inch mesh trawl)

| Species               | Number | Size Range in Inches |
|-----------------------|--------|----------------------|
| Gizzard shad          | 41     | 2-7                  |
| Carp                  | 2      | 15                   |
| Bullhead minnow       | 8      | 2                    |
| Channel catfish       | 72     | 2-7                  |
| Warmouth              | 4      | 1 1/2-3              |
| Orangespotted sunfish | 7      | 1-3                  |
| Bluegill              | 145    | 1-6                  |
| Longear sunfish       | 6      | 2-4                  |
| Redear sunfish        | 9      | 2-5                  |
| Largemouth bass       | 1      | 7                    |
| White crappie         | 18     | 4-6                  |
| Drum                  | 1      | 8                    |
| Total                 | 314    |                      |

Table 6

Survey Results San Angelo Reservoir, June 7 and October 23, 1968. Results of 12 gill nets

| Species            | No. | Per Cent<br>by No. | Total Wgt.<br>Pounds | Avg. Wgt.<br>Pounds | Per Cent<br>by No. | Avg.<br>"K" |
|--------------------|-----|--------------------|----------------------|---------------------|--------------------|-------------|
| Longnose gar       | 18  | 3.84               | 56.39                | 3.13                | 14.03              |             |
| Gizzard shad       | 86  | 18.38              | 9.63                 | .11                 | 2.39               |             |
| Threadfin shad     | 1   | .21                | .02                  | .02                 | .01                |             |
| Carp               | 32  | 6.84               | 45.03                | 1.41                | 11.20              |             |
| River carpsucker   | 88  | 18.80              | 116.35               | 1.32                | 28.96              |             |
| Smallmouth buffalo | 28  | 5.98               | 26.15                | .93                 | 6.50               |             |
| Channel catfish *  | 12  | 2.57               | 16.87                | 1.40                | 4.20               | 1.87        |
| Flathead catfish * | 3   | .64                | 15.80                | 5.26                | 3.93               | 2.28        |
| White bass *       | 42  | 8.97               | 42.69                | 1.01                | 10.63              | 3.06        |
| Bluegill *         | 4   | .86                | .38                  | .09                 | .09                | 4.70        |
| Largemouth bass *  | 1   | .21                | 7.10                 | 7.10                | 1.77               | 3.45        |
| White crappie *    | 106 | 22.65              | 37.27                | .35                 | 9.27               | 3.13        |
| Freshwater drum    | 47  | 10.05              | 28.18                | .60                 | 7.02               |             |
| Total              | 468 | 100.00             | 401.86               |                     | 100.00             |             |
| Game fish *        | 168 | 35.90              | 120.11               |                     | 29.89              |             |
| Rough fish         | 300 | 64.10              | 281.75               |                     | 70.11              |             |

Seining Results San Angelo Reservoir (Bag 26 by 6 by 1/4-inch mesh seine and 20 by 6 by 1/8-inch mesh seine).

| Species               | Number | Size Range in Inches |
|-----------------------|--------|----------------------|
| Longnose gar          | 2      | 5                    |
| Gizzard shad          | 96     | 1/2-8                |
| Threadfin shad        | 407    | 1-3                  |
| Carp                  | 17     | 1 1/2-10             |
| Golden shiner         | 2      | 2 1/2-3              |
| Red shiner            | 247    | 1-2 1/2              |
| Bullhead minnow       | 63     | 1-3                  |
| Mosquitofish          | 14     | 1-2 1/2              |
| Green sunfish         | 4      | 2-3                  |
| Orangespotted sunfish | 1      | 2                    |
| Bluegill              | 2      | 2                    |
| Longear sunfish       | 6      | 1-3                  |
| Largemouth bass       | 63     | 1-6                  |
| Logperch              | 4      | 2-3                  |
| Total                 | 928    |                      |

Trawling Results San Angelo Reservoir, June 6 and October 22, 1968. (16 by 10 by 1/2-inch mesh trawl).

| Species         | Number | Size Range in Inches |
|-----------------|--------|----------------------|
| Gizzard shad    | 71     | 3-10                 |
| Threadfin shad  | 188    | 1 1/2-5 1/2          |
| Carp            | 125    | 5-14                 |
| Channel catfish | 14     | 5-12                 |
| White crappie   | 36     | 2 1/2-10             |
| Total           | 434    |                      |

Table 7

Survey Results San Angelo Reservoir, January 17, 1969. Results of 6 gill nets.

| Species            | Number | Per Cent<br>by No. | Total Wgt.<br>Pounds | Avg. Wgt.<br>Pounds | Per Cent<br>by Wgt. | Average<br>"K" |
|--------------------|--------|--------------------|----------------------|---------------------|---------------------|----------------|
| Longnose gar       | 19     | 8.52               | 32.22                | 1.69                | 17.08               |                |
| Gizzard shad       | 7      | 3.13               | .81                  | .11                 | .43                 |                |
| Carp               | 5      | 2.24               | 2.01                 | .40                 | 1.07                |                |
| River carpsucker   | 27     | 12.10              | 27.47                | 1.02                | 14.57               |                |
| Smallmouth buffalo | 32     | 14.35              | 28.14                | .88                 | 14.92               |                |
| Channel catfish *  | 15     | 6.73               | 8.65                 | .58                 | 4.59                | 1.84           |
| White bass *       | 57     | 25.56              | 41.84                | .73                 | 22.19               | 3.13           |
| Bluegill *         | 3      | 1.35               | .25                  | .08                 | .13                 | 4.20           |
| Largemouth bass *  | 3      | 1.35               | 6.82                 | 2.27                | 3.62                | 3.09           |
| White crappie *    | 43     | 19.28              | 20.20                | .47                 | 10.71               | 3.52           |
| Walleye *          | 11     | 4.94               | 6.33                 | .57                 | 3.36                | 1.75           |
| Freshwater drum    | 1      | .45                | 13.82                | 13.82               | 7.33                |                |
| Total              | 223    | 100.00             | 188.56               |                     | 100.00              |                |
| Game fish *        | 132    | 59.21              | 84.09                |                     | 44.60               |                |
| Rough fish         | 91     | 40.79              | 104.47               |                     | 55.40               |                |

Seining Results San Angelo Reservoir (Bag 26 by 6 by 1/4-inch mesh seine)

| Species         | Number | Size Range in Inches |
|-----------------|--------|----------------------|
| Gizzard shad    | 9      | 2½-5                 |
| Threadfin shad  | 18     | 1½-3                 |
| Red shiner      | 8      | 1-1½                 |
| Bullhead minnow | 6      | 2-2½                 |
| Logperch        | 5      | 3½-4                 |
| Total           | 46     |                      |

Trawling Results San Angelo Reservoir, January 16, 1969. (16 by 10 by 1/2-inch mesh trawl)

| Species            | Number | Size Range in Inches |
|--------------------|--------|----------------------|
| Gizzard shad       | 32     | 4-8                  |
| Threadfin shad     | 12     | 1½-4                 |
| Carp               | 80     | 8-12                 |
| Smallmouth buffalo | 1      | 12                   |
| Channel catfish    | 36     | 3-12                 |
| White bass         | 3      | 8-10                 |
| Bluegill           | 1      | 4                    |
| White crappie      | 6      | 6-10                 |
| Logperch           | 7      | 3-5                  |
| Freshwater drum    | 1      | 8                    |

Total 179

An extra survey was conducted on this reservoir in mid-January 1969 to check the winter survival of the threadfin shad. They were readily collected with both seines and trawl but not in the numbers as found earlier. During this additional survey, walleye were collected for the first time in this area.

Eleven individuals, averaging 0.57 pound, were taken in gill nets. However, this catch confirmed only their survival, since they were introduced by our Department as fry and fingerlings earlier in the year. This stocking was part of Project F-21- and conducted by the state biologist in this area.

A large number of largemouth bass fingerlings were stocked in San Angelo Reservoir due to low representation of this species in this year's sample and previous surveys.

#### Oak Creek Reservoir

The city of Sweetwater owns and operates this 2,375-acre municipal water supply located in northern Coke County. The water also is used by a West Texas Utilities generating plant for cooling purposes.

This impoundment was surveyed in June and September 1968, and the combined results are given in Table 8. The ratio of game to rough fish netted (approximately 20 to 80 per cent by number and 40 to 60 per cent by weight respectively) was very similar to that of last year. Channel catfish and white bass dominated the number of desirable fish netted while flathead catfish accounted for the largest weight percentage. An increase in the number of river carpsucker was noted along with a decrease in the number of gizzard shad.

The seining collection (Table 8) included a fair supply of forage, predominately blacktail and red shiners. A large number of age class 0 largemouth bass was also taken.

Stocking of this public reservoir consisted of 56,000 channel catfish fingerlings.

Submerged plants, mainly water milfoil (Myriophyllum sp.) coontail (Ceratophyllum sp.) and bushy pondweed (Najas sp.) are abundant in this clear water lake. Water milfoil was found to be the most problematic species. Chemical control of this plant in a reservoir of this size would not be feasible, however, spot treatments in strategic access areas may be recommended.

Table 8

Survey Results Oak Creek Reservoir, June 19, 20 and September 26, 1968. Results of 20 gill nets.

| Species            | No. | Per Cent<br>by No. | Total Wgt.<br>Pounds | Avg. Wgt.<br>Pounds | Per Cent<br>by Wgt. | Average<br>"K" |
|--------------------|-----|--------------------|----------------------|---------------------|---------------------|----------------|
| Gizzard shad       | 218 | 46.78              | 29.89                | .14                 | 5.73                |                |
| Carp               | 62  | 13.30              | 82.70                | 1.33                | 15.88               |                |
| River carpsucker   | 84  | 18.03              | 197.41               | 2.35                | 37.89               |                |
| Black bullhead     | 14  | 3.00               | 3.43                 | .24                 | .65                 |                |
| Channel catfish *  | 23  | 4.94               | 19.21                | .83                 | 3.69                | 1.79           |
| Flathead catfish * | 10  | 2.15               | 123.89               | 12.39               | 23.78               | 2.16           |
| White bass *       | 32  | 6.87               | 47.96                | 1.50                | 9.21                | 2.95           |
| Bluegill *         | 10  | 2.15               | .92                  | .09                 | .17                 | 4.42           |
| Largemouth bass *  | 6   | 1.28               | 11.88                | 1.98                | 2.28                | 2.74           |
| White crappie *    | 7   | 1.50               | 3.71                 | .53                 | .72                 | 3.04           |
| Total              | 466 | 100.00             | 521.00               |                     | 100.00              |                |
| Game fish *        | 88  | 18.89              | 207.57               |                     | 39.85               |                |
| Rough fish         | 378 | 81.11              | 313.43               |                     | 60.15               |                |

Seining Results Oak Creek Reservoir (Bag 26 by 6 by 1/4-inch mesh seine, 20 by 6 by 1/4-inch mesh seine and 20 by 6 by 1/8-inch seine).

| Species           | Number | Size Range in Inches |
|-------------------|--------|----------------------|
| Gizzard shad      | 11     | 4-7                  |
| Carp              | 1      | 4                    |
| Red shiner        | 143    | 1-2½                 |
| Blacktail shiner  | 50     | 2-2½                 |
| Mosquitofish      | 35     | 1-2                  |
| Redbreast sunfish | 14     | 2-3                  |
| Green sunfish     | 14     | 2-4                  |
| Bluegill          | 37     | 2-3                  |
| Longear sunfish   | 14     | 3-4                  |
| Largemouth bass   | 391    | 3-6                  |
| Logperch          | 4      | 3½                   |
| Total             | 714    |                      |

J. B. Thomas Lake

This Colorado River Municipal Water District Lake is located on the Colorado River in Borden and Scurry Counties. At normal level, it covers 7,820 acres and furnishes water for the cities of Big Spring, Odessa, and Snyder. This turbid reservoir has failed to receive any large amounts of runoff for the past few years and was less than one-half in size when checked this year.

For the first time in many years, the netting results (Table 9) shows the game fish to be greater in both per cent number and weight than the rough fish. Of the game fish, white bass and white crappie exhibited the highest increase in number, with flathead catfish and white bass showing the largest increase in weight of the sample. The rough fish netted (gizzard shad, carp, river carpsucker, and drum) shared about an equal decrease in number and weight.

Available forage revealed by seining was mainly small gizzard shad and blacktail shiners. The trawl collection yielded several small white crappie. Only 13 largemouth bass were taken by all 3 collection methods, therefore 88,000 largemouth bass fingerlings were introduced.

Champion Creek Reservoir

Champion Creek Lake was constructed by the Texas Electric Service Company to serve as an auxiliary water supply for the generating plant located on the nearby Colorado City Lake. Since completion in 1958, it has never filled to its conservation size of 1,560 acres and was some 24 feet from that elevation mark when surveyed.

Table 9

Survey Results J. B. Thomas Reservoir, July 16, 17, and November 15, 1968.  
Results of 18 gill nets.

| Species            | Number | Per Cent<br>by No. | Total Wgt.<br>Pounds | Avg. Wgt.<br>Pounds | Per Cent<br>by Wgt. | Average<br>"K" |
|--------------------|--------|--------------------|----------------------|---------------------|---------------------|----------------|
| Gizzard shad       | 11     | 3.72               | 1.58                 | .14                 | .56                 |                |
| Carp               | 17     | 5.77               | 18.38                | 1.08                | 6.62                |                |
| River carpsucker   | 45     | 15.25              | 44.10                | .98                 | 15.87               |                |
| Channel catfish *  | 39     | 13.21              | 41.98                | 1.08                | 15.11               | 1.86           |
| Flathead catfish * | 14     | 4.76               | 72.44                | 5.17                | 26.08               | 2.19           |
| White bass *       | 54     | 18.30              | 66.82                | 1.24                | 24.05               | 3.00           |
| Bluegill *         | 1      | .34                | .12                  | .12                 | .05                 | 4.24           |
| Largemouth bass *  | 5      | 1.70               | 11.41                | 2.28                | 4.10                | 2.89           |
| White crappie *    | 62     | 21.01              | 15.47                | .25                 | 5.57                | 2.96           |
| Freshwater drum    | 47     | 15.94              | 5.51                 | .12                 | 1.99                |                |
| Total              | 295    | 100.00             | 277.81               |                     | 100.00              |                |
| Game fish *        | 175    | 59.32              | 208.24               |                     | 74.96               |                |
| Rough fish         | 120    | 40.68              | 69.57                |                     | 25.04               |                |

Seining Results J. B. Thomas Reservoir (100 by 10 by 1/2-inch mesh seine, 50 by 10 by 1/2-inch mesh seine, bag 26 by 6 by 1/4-inch mesh seine and 20 by 6 by 1/8-inch mesh seine).

| Species               | Number | Size Range in Inches |
|-----------------------|--------|----------------------|
| Gizzard shad          | 4,006  | 1-4                  |
| Carp                  | 11     | 4-6                  |
| Golden shiner         | 7      | 2-6                  |
| Red shiner            | 75     | 1-2½                 |
| Blacktail shiner      | 228    | 1-2½                 |
| River carpsucker      | 5      | 5-7                  |
| Channel catfish       | 16     | 2-3                  |
| White bass            | 33     | 2-7                  |
| Green sunfish         | 7      | 2-6                  |
| Orangespotted sunfish | 16     | 2-3                  |
| Bluegill              | 27     | 1½-4                 |
| Longear sunfish       | 29     | 2-4                  |
| Largemouth bass       | 8      | 2-18                 |
| White crappie         | 13     | 3-4                  |
| Logperch              | 3      | 4-5                  |
| Freshwater drum       | 2      | 4                    |
| Total                 | 4,486  |                      |

Trawling Results J. B. Thomas Reservoir, July 17, 1968. (16 by 10 by 1/2-inch mesh trawl).

| Species       | Number | Size Range in Inches |
|---------------|--------|----------------------|
| Gizzard shad  | 21     | 3-6                  |
| Carp          | 3      | 4-5                  |
| Bluegill      | 1      | 3                    |
| White crappie | 65     | 3-5                  |
| Total         | 90     |                      |

Bluegill continue to keep the game fish numbers high as revealed in Table 10. This year's gill netting produced 183 of this sunfish species with a utilizable average size of 0.32 pounds. Largemouth and white bass were also important in this collection. This is the only major reservoir in Region I-B where gizzard shad are rarely collected. The only specimen of this species collected in the last 3 years was taken with gill nets in 1967.

An adequate number of red shiners and other forage fish were collected with seines (Table 10). Largemouth bass fingerlings were also prominent. Supplementary stocking consisted of 35,000 channel catfish.

Submerged vegetation, primarily bushy pondweed, was abundant over much of this clear reservoir and may become a hindrance to fishermen in the future. Chemical control in the form of spot treatments may be recommended.

Table 10

Survey Results Champion Creek Reservoir, July 24, 25 and November 7, 1968.  
Results of 18 gill nets.

| Species            | Number | Per Cent<br>by No. | Total Wgt.<br>Pounds | Avg. Wgt.<br>Pounds | Per Cent<br>by Wgt. | Average<br>"K" |
|--------------------|--------|--------------------|----------------------|---------------------|---------------------|----------------|
| Carp               | 71     | 16.82              | 243.55               | 3.43                | 47.72               |                |
| Golden shiner      | 11     | 2.61               | 2.85                 | .26                 | .56                 |                |
| River carpsucker   | 7      | 1.66               | 17.45                | 2.49                | 3.41                |                |
| Black bullhead     | 5      | 1.18               | 4.73                 | .95                 | .93                 |                |
| Channel catfish *  | 20     | 4.74               | 37.45                | 1.87                | 7.34                | 2.03           |
| Flathead catfish * | 5      | 1.18               | 24.77                | 4.95                | 4.85                | 1.98           |
| White bass *       | 88     | 20.86              | 92.59                | 1.05                | 18.15               | 3.24           |
| Warmouth *         | 1      | .23                | .24                  | .24                 | .04                 | 4.08           |
| Green sunfish *    | 8      | 1.90               | 1.62                 | .20                 | .32                 | 3.73           |
| Bluegill *         | 183    | 43.36              | 59.92                | .33                 | 11.74               | 4.59           |
| Largemouth bass *  | 12     | 2.85               | 19.46                | 1.62                | 3.81                | 2.47           |
| White crappie *    | 11     | 2.61               | 5.72                 | .52                 | 1.13                | 3.00           |
| Total              | 422    | 100.00             | 510.35               |                     | 100.00              |                |
| Game fish *        | 328    | 77.73              | 241.77               |                     | 47.38               |                |
| Rough fish         | 94     | 22.27              | 268.58               |                     | 52.62               |                |

Seining Results Champion Creek Reservoir (Bag 26 by 6 by 1/4-inch mesh seine and 20 by 6 by 1/4-inch mesh seine).

| Species          | Number | Size Range in Inches |
|------------------|--------|----------------------|
| Plains minnow    | 11     | 2-3                  |
| Red shiner       | 110    | 1-2½                 |
| Blacktail shiner | 81     | 1-4                  |
| River carpsucker | 1      | .4                   |
| Green sunfish    | 8      | 1-3                  |
| Bluegill         | 46     | ½-3                  |
| Largemouth bass  | 83     | 1½-4                 |
| Logperch         | 7      | 2½-3                 |
| Total            | 347    |                      |

Twin Buttes Reservoir

In 1963, the Bureau of Reclamation constructed a large dam on South and Middle Concho Rivers and Spring Creek southwest of San Angelo. Flood control, irrigation, and municipal water supply are the intended usages for the potential 183,000 acre-foot lake. This impoundment has not received any major runoff and contained approximately 5,000 acre-feet of water when surveys were conducted this year.

Game fish accounted for 31.58 per cent by number and 30.75 per cent by weight of this year's netting sample (Table 11). The majority of rough fish weight was comprised of river carpsucker, with gizzard shad dominating the total number of fish taken.

A variety of minnows and a large number of small gizzard shad were collected with seines. Table 11 also reveals 304 largemouth bass were taken by shoreline seining. This was probably due to the large number of advanced bass fry released earlier in the year as shown in Table 3.

Table 11

Survey Results Twin Buttes Reservoir, July 30 and October 25, 1968. Results of 18 gill nets.

| Species            | Number | Per Cent<br>by no. | Total Wgt.<br>Pounds | Avg. Wgt.<br>Pounds | Per Cent<br>by Wgt. | Average<br>"K" |
|--------------------|--------|--------------------|----------------------|---------------------|---------------------|----------------|
| Longnose gar       | 8      | 1.14               | 20.42                | 2.55                | 3.79                |                |
| Gizzard shad       | 246    | 35.14              | 38.07                | .15                 | 7.07                |                |
| Goldfish           | 2      | .29                | .72                  | .36                 | .14                 |                |
| Carp               | 35     | 5.00               | 53.61                | 1.53                | 9.96                |                |
| River carpsucker   | 151    | 21.57              | 255.48               | 1.69                | 47.46               |                |
| Channel catfish *  | 34     | 4.86               | 53.38                | 1.57                | 9.92                | 1.74           |
| Flathead catfish * | 6      | .85                | 39.88                | 6.65                | 7.41                | 1.93           |
| White bass *       | 43     | 6.15               | 39.02                | .91                 | 7.25                | 2.84           |
| Bluegill *         | 46     | 6.57               | 4.32                 | .09                 | .80                 | 3.97           |
| Longear sunfish *  | 1      | .14                | .08                  | .08                 | .02                 | 4.56           |
| Largemouth bass *  | 9      | 1.29               | 13.85                | 1.54                | 2.57                | 2.85           |
| White crappie *    | 82     | 11.71              | 14.94                | .18                 | 2.78                | 2.72           |
| Freshwater drum    | 37     | 5.29               | 4.45                 | .12                 | .83                 |                |
| Total              | 700    | 100.00             | 538.22               |                     | 100.00              |                |
| Game fish *        | 221    | 31.58              | 165.47               |                     | 30.75               |                |
| Rough fish         | 479    | 68.42              | 372.75               |                     | 69.25               |                |

Seining Results Twin Buttes Reservoir (Bag 26 by 6 by 1/4-inch mesh seine and 20 by 6 by 1/4-inch mesh seine).

| Species               | Number | Size Range in Inches |
|-----------------------|--------|----------------------|
| Gizzard shad          | 811    | 2-8                  |
| Carp                  | 5      | 3-6                  |
| Plains minnow         | 5      | 2½-3½                |
| Golden shiner         | 27     | 2-4                  |
| Red shiner            | 161    | 1-2½                 |
| Blacktail shiner      | 16     | 1-2½                 |
| Fathead minnow        | 19     | 1-2½                 |
| Bullhead minnow       | 208    | 1-2½                 |
| River carpsucker      | 2      | 3½-5                 |
| Mosquitofish          | 44     | ½-2                  |
| White bass            | 1      | 5                    |
| Green sunfish         | 19     | 1-4                  |
| Orangespotted sunfish | 15     | ½-3                  |
| Bluegill              | 34     | 1-4                  |
| Longear sunfish       | 28     | 1½-5                 |
| Largemouth bass       | 304    | 1-14                 |
| White crappie         | 30     | 1-3                  |
| Logperch              | 29     | 2-4                  |
| Total                 | 1,758  |                      |

Colorado City Lake

The Texas Electric Service Company built this 1,655-acre lake on Morgan Creek, 6 miles southwest of Colorado City. The waters from this 20-year old reservoir is used for cooling operations by the plant and as a water supply for Colorado City. When last surveyed, the water level was down 14 feet despite the pumping of water from an auxiliary impoundment.

Surveys this segment were conducted in May and September. The combined results are given in Table 12. The composition of the fish population has been fairly steady for the past 3 years according to our data. Desirable species comprised 42.25 per cent by number and 65.28 per cent by weight of the netting sample. Flathead catfish was the main contributor to the large weight percentage.

Small gizzard shad and red shiners comprised the most abundant forage species in seine samples. Largemouth bass were stocked because of the apparent poor reproduction of this species as reflected in the shoreline seining.

Table 12

Survey Results Colorado City Lake, May 22, 23, and September 12, 1968. Results of 18 gill nets.

| Species            | Number | Per Cent by No. | Total Wgt. Pounds | Avg. Wgt. Pounds | Per Cent by Wgt. | Average "K" |
|--------------------|--------|-----------------|-------------------|------------------|------------------|-------------|
| Gizzard shad       | 178    | 42.48           | 31.54             | .18              | 7.09             |             |
| Carp               | 16     | 3.82            | 41.31             | 2.58             | 9.30             |             |
| River carpsucker   | 48     | 11.45           | 81.43             | 1.70             | 18.33            |             |
| Channel catfish *  | 47     | 11.22           | 44.09             | .94              | 9.93             | 1.77        |
| Flathead catfish * | 38     | 9.07            | 202.32            | 5.32             | 45.54            | 1.99        |
| White bass *       | 11     | 2.62            | 11.35             | 1.03             | 2.55             | 2.74        |
| Bluegill *         | 21     | 5.02            | 1.96              | .09              | .44              | 4.46        |
| Redear sunfish *   | 2      | .47             | .16               | .08              | .04              | 4.61        |
| Largemouth bass *  | 8      | 1.91            | 11.16             | 1.39             | 2.51             | 2.57        |
| White crappie *    | 50     | 11.94           | 18.95             | .38              | 4.27             | 3.14        |
| <hr/>              |        |                 |                   |                  |                  |             |
| Total              | 419    | 100.00          | 444.27            |                  | 100.00           |             |
| Game fish *        | 177    | 42.25           | 289.99            |                  | 65.28            |             |
| Rough fish         | 242    | 57.75           | 154.28            |                  | 34.72            |             |

Seining Results Colorado City Lake (50 by 10 by 1/2-inch mesh seine, Bag 26 by 6 by 1/4-inch mesh seine and 20 by 6 by 1/8-inch mesh seine).

| Species          | Number | Size Range in Inches |
|------------------|--------|----------------------|
| Gizzard shad     | 480    | 1-8                  |
| Carp             | 1      | 5                    |
| Golden shiner    | 1      | 3½                   |
| Red shiner       | 83     | 1½-3                 |
| Blacktail shiner | 667    | 1-3½                 |
| Bullhead minnow  | 30     | 1-3                  |
| River carpsucker | 5      | 4-8                  |
| Channel catfish  | 42     | 3-6                  |
| Mosquitofish     | 2      | 2                    |
| White bass       | 1      | 10                   |
| Warmouth         | 1      | 3½                   |
| Green sunfish    | 1      | 1½                   |
| Bluegill         | 202    | 1-5                  |
| Longear sunfish  | 1      | 2½                   |
| Redear sunfish   | 13     | 3-5                  |
| Largemouth bass  | 2      | 2                    |
| White crappie    | 5      | 3-5                  |
| Logperch         | 3      | 3-4                  |
| <hr/>            |        |                      |
| Total            | 1,540  |                      |

Kinarum Lake

A survey of this small lake, located near Bronte, was requested by Coke County officials early this segment. After it was checked and found to have an excessive number of gizzard shad and stunted sunfish (Table 13), plans were made for a complete renovation and restocking program. Some of the local fishermen objected to such plans and the treatment did not materialize. No stocking or further work was conducted.

Table 13

Survey Results Kinarum Lake, March 6, 1968. Results of 3 gill nets.

| Species           | Number | Per Cent by No. | Total Wgt. Pounds | Avg. Wgt. Pounds | Per Cent by Wgt. | Average "K" |
|-------------------|--------|-----------------|-------------------|------------------|------------------|-------------|
| Gizzard shad      | 13     | 24.52           | 2.86              | .22              | 6.72             |             |
| Bluegill *        | 27     | 50.95           | 2.31              | .08              | 5.44             | 3.63        |
| Largemouth bass * | 11     | 20.75           | 36.41             | 3.31             | 85.67            | 3.23        |
| White crappie *   | 2      | 3.78            | .92               | .46              | 2.17             | 3.35        |
| Total             | 53     | 100.00          | 42.50             |                  | 100.00           |             |
| Game fish *       | 40     | 75.48           | 39.64             |                  | 93.28            |             |
| Rough fish        | 13     | 24.52           | 2.86              |                  | 6.72             |             |

Seining Results Kinarum Lake (Bag 26 by 6 by 1/4-inch mesh seine)

| Species       | Number | Size Range in Inches |
|---------------|--------|----------------------|
| Gizzard shad  | 2,500  | 2-8                  |
| Golden shiner | 21     | 1½-2                 |
| Red shiner    | 14     | 1-1½                 |
| Total         | 2,535  |                      |

Trawling Results Kinarum Lake, March 6, 1968. (16 by 10 by 1/2-inch mesh trawl)

| Species               | Number | Size Range in Inches |
|-----------------------|--------|----------------------|
| Gizzard shad          | 4      | 5                    |
| Golden shiner         | 2      | 7                    |
| Largemouth bass       | 1      | 8                    |
| Orangespotted sunfish | 1      | 3½                   |
| Bluegill              | 242    | 2-3½                 |
| White crappie         | 2      | 8                    |

Total 252

Valley Creek Lake

This 185-acre water supply reservoir is located 6 miles west of Ballinger. The results of the past survey, conducted in May 1968, continues to reflect low game fish production. Gizzard shad alone accounted for more than half of the total fish netted (Table 14). Desirable species totaled only 13.46 per cent by number and 20.47 per cent by weight of this netting sample. However, this is slightly better than found in 1967.

Trawling yielded only 2 species but revealed a substantial number of small white crappie. Forage was found to be satisfactory with blacktail and red shiners being the most prominent species in the seining collection.

Should the game fish population remain at the present low standings, the possibility of a chemical treatment will be investigated.

Valley Creek Lake was stocked with 12,000 largemouth bass, 9,200 channel catfish and 5,000 redear sunfish during this segment.

Table 14

Survey Results Valley Creek Reservoir, May 15, 1968. Results of 6 gill nets.

| Species            | Number | Per Cent<br>by No. | Total Wgt.<br>Pounds | Avg. Wgt.<br>Pounds | Per Cent<br>by Wgt. | Average<br>"K" |
|--------------------|--------|--------------------|----------------------|---------------------|---------------------|----------------|
| Longnose gar       | 22     | 5.80               | 98.01                | 4.45                | 29.41               |                |
| Gizzard shad       | 205    | 54.09              | 32.43                | .16                 | 9.74                |                |
| Carp               | 7      | 1.85               | 36.12                | 5.16                | 10.84               |                |
| Golden shiner      | 1      | .27                | .24                  | .24                 | .07                 |                |
| River carpsucker   | 57     | 15.04              | 79.24                | 1.39                | 23.78               |                |
| Channel catfish *  | 8      | 2.11               | 20.69                | 2.59                | 6.21                | 2.38           |
| Flathead catfish * | 7      | 1.85               | 41.20                | 5.88                | 12.37               | 2.39           |
| Bluegill *         | 10     | 2.64               | 1.11                 | .11                 | .33                 | 4.82           |
| Longear sunfish *  | 4      | 1.05               | .33                  | .08                 | .10                 | 4.65           |
| Redear sunfish *   | 1      | .27                | .14                  | .14                 | .04                 | 4.13           |
| White crappie *    | 21     | 5.54               | 4.72                 | .22                 | 1.42                | 2.97           |
| Freshwater drum    | 36     | 9.49               | 18.94                | .53                 | 5.69                |                |
| Total              | 379    | 100.00             | 333.17               |                     | 100.00              |                |
| Game fish *        | 51     | 13.46              | 68.19                |                     | 20.47               |                |
| Rough fish         | 328    | 86.54              | 264.98               |                     | 79.53               |                |

Seining Results Valley Creek Reservoir (Bag 26 by 6 by 1/4-inch mesh seine and 20 by 6 by 1/8-inch mesh seine).

| Species               | Number | Size Range in Inches |
|-----------------------|--------|----------------------|
| Gizzard shad          | 90     | 3-8                  |
| Golden shiner         | 3      | 1/2-2                |
| Red shiner            | 370    | 1-3                  |
| Blacktail shiner      | 310    | 1 1/2-3 1/2          |
| Bullhead minnow       | 75     | 1 1/2-2 1/2          |
| River carpsucker      | 4      | 3                    |
| Orangespotted sunfish | 2      | 2-2 1/2              |
| Bluegill              | 11     | 3-5                  |
| Longear sunfish       | 7      | 3-4                  |
| Largemouth bass       | 6      | 2 1/2-3              |
| White crappie         | 15     | 4-8                  |
| Total                 | 893    |                      |

Trawling Results Valley Creek Reservoir, May 15, 1968. (16 by 10 by 1/2-inch mesh trawl)

| Species       | Number | Size Range in Inches |
|---------------|--------|----------------------|
| Gizzard shad  | 8      | 4-6                  |
| White crappie | 76     | 2½-7                 |
| Total         | 84     |                      |

New Winters Lake

New Winters Lake is a 250-acre water supply for the city of Winters. It is very turbid and has a fairly constant water level.

According to survey results (Table 15), the fish population of this impoundment is steadily returning to the very poor condition it was in before its 1965 renovation. Without the many stunted white crappie, the game fish would account for only 10 per cent by number and 12 per cent by weight of this year's netting collection.

Seining or trawling failed to produce age class 0 or 1 largemouth bass, therefore 8,000 fingerling bass along with 8,000 channel catfish and 8,000 redear sunfish were added.

Table 15

Survey Results New Winters Lake, June 12, 1968. Results of 5 gill nets.

| Species            | Number | Per Cent by No. | Total Wgt. Pounds | Avg. Wgt. Pounds | Per Cent by Wgt. | Average "K" |
|--------------------|--------|-----------------|-------------------|------------------|------------------|-------------|
| Gizzard shad       | 28     | 13.46           | 4.07              | .14              | 2.77             |             |
| Carp               | 21     | 10.09           | 40.42             | 1.92             | 27.59            |             |
| River carpsucker   | 19     | 9.14            | 21.03             | 1.11             | 14.36            |             |
| Smallmouth buffalo | 9      | 4.32            | 36.56             | 4.06             | 24.95            |             |
| Black bullhead     | 12     | 5.77            | 2.64              | .22              | 1.81             |             |
| Channel catfish *  | 15     | 7.22            | 6.30              | .42              | 4.30             | 1.78        |
| Flathead catfish * | 1      | .49             | 10.35             | 10.35            | 7.06             | 2.67        |
| Bluegill *         | 5      | 2.40            | .40               | .08              | .27              | 4.35        |
| White crappie *    | 70     | 33.65           | 12.84             | .18              | 8.77             | 2.85        |
| Freshwater drum    | 28     | 13.46           | 11.89             | .42              | 8.12             |             |
| Total              | 208    | 100.00          | 146.50            |                  | 100.00           |             |
| Game fish *        | 91     | 43.76           | 29.89             |                  | 20.40            |             |
| Rough fish         | 117    | 56.24           | 116.61            |                  | 79.60            |             |

Seining Results New Winters Lake (100 by 10 by 1/2-inch mesh seine, Bag 26 by 6 by 1/4-inch mesh seine and 20 by 6 by 1/8-inch mesh seine).

| Species               | Number | Size Range in Inches |
|-----------------------|--------|----------------------|
| Gizzard shad          | 193    | 1-10                 |
| Golden shiner         | 21     | 3-5                  |
| Red shiner            | 200    | 1½-2½                |
| Bullhead minnow       | 14     | 2-2½                 |
| River carpsucker      | 1      | 8                    |
| Channel catfish       | 3      | 8-16                 |
| Mosquitofish          | 166    | 1½-2½                |
| Green sunfish         | 2      | 2½-6                 |
| Orangespotted sunfish | 29     | 2-4                  |
| Bluegill              | 23     | 2-5                  |
| Longear sunfish       | 1      | 1½                   |
| Largemouth bass       | 1      | 16                   |
| White crappie         | 33     | 3-7                  |
| Drum                  | 3      | 1                    |

Total 690

Trawling Results New Winters Lake, June 12, 1968. (16 by 10 by 1/2-inch mesh trawl)

| Species               | Number | Size Range in Inches |
|-----------------------|--------|----------------------|
| Black bullhead        | 4      | 7-9                  |
| Channel catfish       | 7      | 6-11                 |
| Orangespotted sunfish | 4      | 2½-4                 |
| White crappie         | 14     | 4-7                  |
| Drum                  | 26     | ½-1                  |

Total 55

#### Elm Creek Lake

This old 55-acre reservoir was formed by a small dam on Elm Creek in the city limits of Ballinger. It served as a city water supply until 1952 and since that time it has been used for limited irrigation and fishing.

The survey conducted this year was similar to those of the past. Netting results indicate the game fish population to be very low, comprising 7.84 per cent by number and 5.29 per cent by weight (Table 16). Gizzard shad and river carpsucker dominated both weight and numbers of fish netted.

Both methods of collecting produced no channel catfish and only 2 large-mouth bass. Supplementary stocking employed this year included 4,000 large-mouth bass, 6,000 channel catfish, and 4,000 redear sunfish.

Renovation procedures are not justifiable at this time because several miles of permanent water stream connected to the lake is privately controlled and could not be treated.

Table 16

| Survey Results Elm Creek Lake, June 14, 1968. |        | Results of 4 gill nets. |                      |                     |                     |                |
|---|--------|-------------------------|----------------------|---------------------|---------------------|----------------|
| Species                                       | Number | Per Cent<br>by No.      | Total Wgt.<br>Pounds | Avg. Wgt.<br>Pounds | Per Cent<br>by Wgt. | Average<br>"K" |
| Longnose gar                                  | 5      | 2.45                    | 10.57                | 2.11                | 6.75                |                |
| Gizzard shad                                  | 142    | 69.60                   | 54.51                | .38                 | 34.83               |                |
| Carp  | 3      | 1.47                    | 10.90                | 3.63                | 6.97                |                |
| River carpsucker                              | 19     | 9.32                    | 44.27                | 2.33                | 28.29               |                |
| Smallmouth buffalo                            | 5      | 2.45                    | 22.24                | 4.45                | 14.21               |                |
| Black bullhead                                | 11     | 5.40                    | 2.86                 | .26                 | 1.83                |                |
| Flathead catfish *                            | 1      | .49                     | 5.06                 | 5.06                | 3.24                | 1.82           |
| Bluegill *                                    | 5      | 2.45                    | .45                  | .09                 | .28                 | 4.80           |
| White crappie *                               | 10     | 4.90                    | 2.76                 | .28                 | 1.77                | 2.98           |
| Freshwater drum                               | 3      | 1.47                    | 2.86                 | .95                 | 1.83                |                |
| Total   | 204    | 100.00                  | 156.48               |                     | 100.00              |                |
| Game fish *                                   | 16     | 7.84                    | 8.27                 |                     | 5.29                |                |
| Rough fish                                    | 188    | 92.16                   | 148.21               |                     | 94.71               |                |

Seining Results Elm Creek Lake, (20 by 6 by 1/4-inch mesh seine and 20 by 6 by 1/8-inch mesh seine).

| Species          | Number | Size Range in Inches |
|------------------|--------|----------------------|
| Red shiner       | 60     | 1½-2                 |
| Bullhead minnow  | 11     | 1½-2                 |
| River carpsucker | 3      | ½-3                  |
| Mosquitofish     | 170    | ½-1½                 |
| Bluegill         | 26     | 2-3½                 |
| Longear sunfish  | 33     | 2-4                  |
| Largemouth bass  | 2      | 2-2½                 |
| Total            | 305    |                      |

Towle Park Lake

This small impoundment, located at a county park in Snyder, provides a heavily used fishery for children.

A high game fish ratio was shown in the survey results during this segment. Of the 40 fish captured in gill nets, 30 were game fish (Table 17). The rough fish included 1 carp, 3 golden shiners and 6 black bullheads. Seining and trawling produced similar results.

Towle Park Lake was stocked with largemouth bass, channel catfish and redear sunfish this year. Also, a few sub-adult flathead catfish were placed in this 5-acre lake in an effort to control the bullhead catfish population.

Table 17

Survey Results Towle Park Lake, August 14, 1968. Results of 3 gill nets.

| Species           | Number | Per Cent<br>by No. | Total Wgt.<br>Pounds | Avg. Wgt.<br>Pounds | Per Cent<br>by Wgt. | Average<br>"K" |
|-------------------|--------|--------------------|----------------------|---------------------|---------------------|----------------|
| Carp              | 1      | 2.50               | .83                  | .83                 | 4.41                |                |
| Golden shiner     | 3      | 7.50               | .48                  | .16                 | 2.55                |                |
| Black bullhead    | 6      | 15.00              | 1.70                 | .28                 | 9.03                |                |
| Channel catfish * | 5      | 12.50              | 12.08                | 2.42                | 64.19               | 2.32           |
| Green sunfish *   | 1      | 2.50               | .09                  | .09                 | .47                 | 3.38           |
| Largemouth bass * | 2      | 5.00               | 1.33                 | .66                 | 7.07                | 2.66           |
| White crappie *   | 22     | 55.00              | 2.31                 | .10                 | 12.28               | 2.80           |
| Total             | 40     | 100.00             | 18.82                |                     | 100.00              |                |
| Game fish *       | 30     | 75.00              | 15.81                |                     | 84.01               |                |
| Rough fish        | 10     | 25.00              | 3.01                 |                     | 15.99               |                |

Seining Results Towle Park Lake (Bag 26 by 6 by 1/4-inch mesh seine and 20 by 6 by 1/8-inch mesh seine).

| Species         | Number | Size Range in Inches |
|-----------------|--------|----------------------|
| Mexican tetra   | 1      | 2                    |
| Carp            | 1      | 10                   |
| Red shiner      | 2      | 1/2-1                |
| Black bullhead  | 351    | 2-4                  |
| Green sunfish   | 758    | 1-5                  |
| Bluegill        | 606    | 1-7                  |
| Largemouth bass | 515    | 1/2-7                |
| White crappie   | 5      | 6-9                  |
| Total           | 2,239  |                      |

Trawling Results Towle Park Lake, August 13, 1968. (16 by 10 by 1/2-inch mesh trawl)

| Species         | Number | Size Range in Inches |
|-----------------|--------|----------------------|
| Bluegill        | 1      | 4                    |
| Largemouth bass | 2      | 3                    |
| Total           | 3      |                      |

Old Winters Lake

This former water supply reservoir is located 2 miles north of Winters. It covers about 50 acres when full but is normally less than 20 acres in size with a maximum depth of 7 feet.

Only 6 species of fish were collected in gill nets this year (Table 18). Gizzard shad accounted for 65.18 per cent of the 247 fish netted. Three flathead catfish comprised the majority of total weight. Seining and trawling failed to improve the game fish statistics.

Hatchery fish were released in this small lake (Table 3) but little benefit is expected because of the shallow, fluctuating, turbid water.

Table 18

Survey Results Old Winters Lake, August 16, 1968. Results of 4 gill nets.

| Species            | Number | Per Cent<br>by No. | Total Wgt.<br>Pounds | Avg. Wgt.<br>Pounds | Per Cent<br>by Wgt. | Average<br>"K" |
|--------------------|--------|--------------------|----------------------|---------------------|---------------------|----------------|
| Gizzard shad       | 161    | 65.18              | 19.10                | .12                 | 24.94               |                |
| Carp               | 30     | 12.14              | 20.04                | .67                 | 26.18               |                |
| Channel catfish *  | 15     | 6.08               | 3.61                 | .24                 | 4.71                | 1.62           |
| Flathead catfish * | 3      | 1.21               | 27.31                | 9.10                | 35.67               | 1.93           |
| Bluegill *         | 3      | 1.21               | .27                  | .09                 | .36                 | 4.33           |
| White crappie *    | 35     | 14.18              | 6.23                 | .18                 | 8.14                | 3.37           |
| Total              | 247    | 100.00             | 76.56                |                     | 100.00              |                |
| Game fish *        | 56     | 22.68              | 37.42                |                     | 48.88               |                |
| Rough fish         | 191    | 77.32              | 39.14                |                     | 51.12               |                |

Seining Results Old Winters Lake (Bag 26 by 6 by 1/4-inch mesh seine and 20 by 6 by 1/8-inch mesh seine).

| Species         | Number | Size Range in Inches |
|-----------------|--------|----------------------|
| Gizzard shad    | 33     | 1-3                  |
| Carp            | 2      | 3½-4                 |
| Golden shiner   | 9      | 2-4                  |
| Red shiner      | 105    | 1-2½                 |
| Bullhead minnow | 8      | 1½-2                 |
| Mosquitofish    | 3      | 1-1½                 |
| Bluegill        | 16     | 1-2½                 |
| Largemouth bass | 8      | 1½-4                 |
| White crappie   | 55     | 1½-5                 |
| Total           | 239    |                      |

Trawling Results Old Winters Lake, August 15, 1968. (16 by 10 by 1/2-inch mesh trawl)

| Species         | Number | Size Range in Inches |
|-----------------|--------|----------------------|
| Gizzard shad    | 8      | 2-4                  |
| Channel catfish | 9      | 2-3½                 |
| White crappie   | 23     | 2½-5                 |
| Total           | 40     |                      |

Mountain Creek Reservoir

Municipal water for Robert Lee is supplied by this 95-acre lake located in the northern limits of the city.

The survey for this segment was conducted in late November 1968. Channel catfish and largemouth bass dominated the weight of game fish netted with 26.11 and 34.86 per cent respectively (Table 19). The gizzard shad population was significant in the netting results for the first time since the chemical treatment effectuated in the early 1960's.

Seining results (Table 19) reflect a change in the sunfish population from a previous dominance of bluegill to redear.

Stocking consisted of 2,000 fingerling channel catfish.

Table 19

Survey Results Mountain Creek Reservoir, November 21, 1968. Results of 3 gill nets.

| Species           | Number | Per Cent<br>by No. | Total Wgt.<br>Pounds | Avg. Wgt.<br>Pounds | Per Cent<br>by Wgt. | Average<br>"K" |
|-------------------|--------|--------------------|----------------------|---------------------|---------------------|----------------|
| Gizzard shad      | 41     | 62.11              | 9.36                 | .23                 | 26.88               |                |
| Golden shiner     | 3      | 4.55               | .58                  | .19                 | 1.66                |                |
| Black bullhead    | 2      | 3.03               | .21                  | .10                 | .60                 |                |
| Channel catfish * | 3      | 4.55               | 9.09                 | 3.03                | 26.11               | 1.90           |
| Bluegill *        | 3      | 4.55               | .30                  | .10                 | .86                 | 4.26           |
| Redear sunfish *  | 3      | 4.55               | .90                  | .30                 | 2.59                | 3.95           |
| Largemouth bass * | 4      | 6.06               | 12.14                | 3.03                | 34.86               | 3.11           |
| White crappie *   | 7      | 10.60              | 2.24                 | .32                 | 6.44                | 2.67           |
| Total             | 66     | 100.00             | 34.82                |                     | 100.00              |                |
| Game fish *       | 20     | 30.31              | 24.67                |                     | 70.86               |                |
| Rough fish        | 46     | 69.69              | 10.15                |                     | 29.14               |                |

Seining Results Mountain Creek Reservoir (Bag 26 by 6 by 1/4-inch mesh seine and 20 by 6 by 1/4-inch mesh seine).

| Species               | Number | Size Range in Inches |
|-----------------------|--------|----------------------|
| Gizzard shad          | 1      | 8                    |
| Golden shiner         | 1      | 4                    |
| Orangespotted sunfish | 3      | 2-2½                 |
| Redear sunfish        | 57     | 1½-2                 |
| Largemouth bass       | 6      | 1½-2½                |
| Total                 | 68     |                      |

Andrews City Lake

This small city park lake was surveyed by project personnel for the first time this year. Covering only 4 surface acres, it provides fishing for children and other limited recreation.

A chemical renovation, followed by stocking with hatchery-reared channel catfish and largemouth bass, was attempted by the county early in 1967. This year, 3-standard gill nets set overnight yielded only 7 channel catfish which averaged 0.20 of a pound each. Shoreline seining produced a single individual of 3 species - goldfish, blacktail shiner, and largemouth bass. The trawling sample consisted of 202 goldfish.

The desire of the controlling authority must be known before any attempt can be made to improve the condition of this fishery.

Conclusions and Recommendations:

As recommended last segment, fisheries technicians that serve as public hearing witnesses should be chosen from projects that serve the particular counties concerned. This would be of more benefit to the public and to the Department because the witness would be more familiar with the public waters concerned.

Chemical control measures for Valley Creek Lake will be discussed with controlling authorities. If permissible, an attempt should be made to improve the fishing in this impoundment.

Chemical renovation of San Angelo Reservoir will probably be recommended if the volume continues to decline. Several factors that must be considered are (1) the cost-benefit ratio; (2) availability of hatchery-reared fish for restocking; and (3) the desire of the controlling authority.

The benefits of supplementary stocking of hatchery-produced fry into waters with established fish populations are questionable. However, this practice will be continued until sufficient knowledge is acquired to justify a change.

The control of problematic aquatic vegetation is needed at strategic access points on 2 of the public waters surveyed this segment. Because of the restrictions on the use of chemicals in public water supplies, remedial recommendations for such waters are quite limited.

Emergency measures to correct unpredictable events adversely affecting fish populations were found to be unnecessary during this segment's work.

It is recommended that this job be continued in an effort to provide the best fishery possible at each public water in Region I-B.

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Approved by Marion Toole  
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Date April 22, 1969

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A checklist of scientific names is presented so that common names may be used in this report. These names are specified in "A List of Common and Scientific Names of Fishes from the United States and Canada". Second Edition, American Fisheries Society, Special Publication Number 2, 1960.

COMMON NAMES

Longnose gar  
Gizzard shad  
Threadfin shad  
Mexican tetra  
Goldfish  
Carp  
Plains minnow  
Golden shiner  
Red shiner  
Blacktail shiner  
Fathead minnow  
Bullhead minnow  
River carpsucker  
Smallmouth buffalo  
Black bullhead  
Channel catfish  
Flathead catfish  
Mosquitofish  
White bass  
Warmouth  
Redbreast sunfish  
Green sunfish  
Orangespotted sunfish  
Bluegill  
Longear sunfish  
Redear sunfish  
Largemouth bass  
White crappie  
Logperch  
Walleye  
Freshwater drum

SCIENTIFIC NAMES

Lepisosteus osseus  
Dorosoma cepedianum  
Dorosoma petenense  
Astyanax mexicanus  
Carassius auratus  
Cyprinus carpio  
Hybognathus placita  
Notemigonus crysoleucas  
Notropis lutrensis  
Notropis venustus  
Pimephales promelas  
Pimephales vigilax  
Carpionodes carpio  
Ictiobus bubalus  
Ictalurus melas  
Ictalurus punctatus  
Pylodictis olivaris  
Gambusia affinis  
Roccus chrysops  
Chaenobryttus gulosus  
Lepomis auritus  
Lepomis cyanellus  
Lepomis humilis  
Lepomis macrochirus  
Lepomis megalotis  
Lepomis microlophus  
Micropterus salmoides  
Pomoxis annularis  
Percina caprodes  
Stizostedion vitreum vitreum  
Aplodinotus grunniens

