LITTLE RIVER

STATE Texas

PROJECT F-2-R-2, Job A-3

PERIOD June 1st through November 31st, 1954

Job Completion Report

by

Kenneth C. Jurgens and Billy Dale Cooper

TITLE

Basic survey of the remaining portions of the Leon, Lampasas and Little Rivers within Region 6-B, which were not covered in Job A-1, Project F-2-R-1.

OBJECTIVES

To gather fundamental data on the above waters in regard to their physical, chemical and biological aspects.

METHODS

Fifteen stations were selected on the Lampasas River and its two principal tributaries in Lampasas and Burnet Counties, Texas. In addition, six stations were selected on the Little River in Milam County, Texas. The data gathered for these twenty-one stations completes the work begun on the Leon, Lampasas and Little Rivers in Region 6-B, under Job A-1, Project F-2-R-1. The locations of these stations are shown in Table 1 and on the accompanying map.

Each of the stations were visited at least once during the course of the job. On the occasion of each visit, the following data were gathered: average width and depth; turbidity; volume of flow (wherever possible); pool size, type and frequency; bottom types, both in the pools and on the riffles; kinds and abundance of aquatic vegetation; a description of the surrounding country and immediate shoreline; a notation of the larger tributaries and evidences of pollution.

FINDINGS

A large portion of the drainage under study during the course of the present job was reported on under Job A-1, Project F-2-R-1. Therefore, this report is concerned only with that portion of the Lampasas River which lies within Region 6-B but outside of Bell County and with the remaining portion of the Little River within Region 6-B, from the Bell County line to where it joins the Brazos, on the Milam - Robertson County line.

The Lampasas River (Lampasas and Burnet Counties): - The Lampasas River flows in a southeasterly direction through gently rolling ranch country, in the northern part of Lampasas County and through rougher country, typical of the Edwards Plateau, in the southern part of Lampasas County and in Burnet County. All of this region is characterized by alternating layers of limestone and thin

bedded marls. Generally, there is a thin soil mantle on the hills and soils of sufficient depth for farming in the valleys and also on the flood plains, especially to the east of the River in Lampasas County.

The only tributaries of any consequence in this region are Sulphur Creek, in Lampasas County and Rocky Creek, in Burnet County. Sulphur Creek had very little flow during the study period and Rocky Creek had stopped running entirely.

Water in the Lampasas itself was found only in small, silt bottomed pools, although there was a trickle of water from pool to pool in some places.

Normally, the Lampasas River, in Lampasas and Burnet Counties, could be described as a small, shallow, clear stream with relatively short, shallow pools and long, shallow riffles. Bottom types could be fairly well generalized as being bedrock and/or gravel in the pools and either bedrock or gravel on the riffles. The banks of this portion of the stream are low in the northern section of Lampasas County and more deep cut in the southeast section of Lampasas County and in North eastern Burnet County. Vegetation in the main stream is limited to filamentous green algae and musk grass (Chara sp.) in the pools.

Since no large stream of running water was encountered, recent stream flow data was not obtainable. However, the United States Geological Survey, in SURFACE WATER SUPPLY OF THE UNITED STATES 1950, reports for Youngsport, the Bell County Station, an annual average discharge rate of 320 second feet, for the period 1924 to 1950. The maximum discharge rate also reported by this federal agency was 10,900 second feet on September 5, 1950. At present there is little or no surface flow in the Lampasas River.

Water temperatures recorded for the Lampasas River of Lampasas and Burnet Counties varied from 79 to 94 degrees Fahrenheit during the study period with the pH ranging from 7.7 to 8.7. (See Table 11.)

The fish found to occur in the approximately 60 miles of stream surveyed during the course of the study period consisted of 21 species of 9 families, and were restricted almost entirely to the small pools.

The severity of the prolonged drouth has seriously reduced the numbers of fish existing in this portion of the Lampasas River and unless the drouth is soon broken, these fish populations will be reduced even further. A checklist of the species found to occur in the Lampasas River of Lampasas and Burnet Counties is presented in Table IV.

The Little River (Milam County): - The Little River in Milam County may be ecologically divided into two sections on the basis of the country through which it flows: an upstream section, flowing through the Blackland Prairie of Texas, and a downstream section which flows through a portion of the Post Oak Belt.

The soils of the Blackland Prairie are mostly dark crumbly clays, whereas the soils of the Post Oak Belt are sands or sandy loams which are from light red to chocolate brown in color. Since the soils of the Post Oak Belt are very porous, runoff is reduced to a nimimum and little surface water is added to the mainstream of the Little River in Milam County.

In the Blackland Prairie section, the Little River is a deeply entrenched, slightly turbid stream with steep, sloping banks, covered with dense vegetation in the form of brush and trees. The pools of this section are long and relatively deep (from four to six feet in depth), with silty bottoms, while the riffles are short and shallow, with either bedrock or gravel bottoms. Aquatic vegetation in this section was limited to the riffles and along the edges of the pools and was composed of filamentous green algae and musk grass (Chara sp.)

The Little River in the Post Oak Belt becomes wider and less deeply entrenched due to the lessened degree of stream gradient. The pools are deeper (from four to eight feet in depth) and longer with bottoms of sand and gravel. As in the upstream section of the river, aquatic vegetation was limited to filamentous algae and musk grass along the edges of the pools and on the riffles.

No oxygen deficiency was detected anywhere in the Little River of Milam County during the study period. Water temperatures ranged from 82 to 88 degrees Fahrenheit and the pH varied from 7.8 to 8.2 (See Table 111). Dissolved carbon dioxide was found in small amounts in all parts of the river but no pollution was detected during the study.

Stream flow data obtained from the U. S. Geological Survey Water Supply Paper 1178, SURFACE WATER SUPPLY OF THE UNITED STATES 1950, shows the Little River at Cameron, in Milam County, had an annual average discharge rate of 1,924 second feet for the period 1917 to 1950. The maximum during this period was 647,000 second feet and the minimum was 2.6 second feet on September 10, 1921 and September 3, 1918, respectively.

In the approximately 50 miles of the Little River studied under this job heading, 23 species of fish, representing 8 families, were found to occur in the Little River of Milam County. These species are shown in the checklist of species, Table IV.

SUMMARY

1. The work done under this job was divided between those portions of the Lampasas River lying in Lampasas and Burnet Counties and the Little River in Milam County, and completes the work begun under Job A-1, Project F-2-R-1.

2. The Lampasas River in Lampasas and Burnet Counties is best described as a small, shallow, clear stream with short shallow, bedrock or gravel bottomed pools and long, shallow, bedrock or gravel riffles.

3. The Little River in Milam County is deeply entrenched in the Blackland Prairie, with steep sloping banks covered with dense vegetation and long, deep, silty bottomed pools and short, shallow, bedrock or gravel bottomed riffles. In the Post Oak Belt, the river is not so deeply entrenched and the pools are longer and deeper, with sandy, gravel and silt bottoms, while the infrequent riffles are short and shallow with sand and gravel bottoms.

4. Limited amounts of aquatic vegetation are found in both the Lampasas and Little Rivers and is confined to the edges of the pools in the Little River.

5. Drouth conditions have stopped all surface flow in the Lampasas River and have reduced the flow of the Little River to a minimum.

6. In the approximately 60 miles of the Lampasas River in Lampasas and Burnet Counties and the 50 miles of the Little River in Milam Co., 32 fish species,

representing 11 families were found. Of these, 21 species were found in the Lampasas and 25 were found in the Little River.

7. No evidences of pollution were found.

Table 1. Locations of Survey Stations Used During Study Period For Job A-3, Project F-2-R-2, Basic Survey of the Remaining Portions of the Leon, Lampasas and Little Rivers Within Region 6-B, Which Were Not Covered in Job A-1, Project F-2-R-1.

Stream Survey Stations

Lampasas River (Lampasas and Burnet Counties)

| Station No. | Location |
|---|---|
| 1. | Lampasas River, 11 mi. N. Adamsville |
| 2. | Lampasas River, 6 mi. N. Adamsville |
| 3. | Lampasas River, 1 mi. S. Adamsville |
| 4. | Lampasas River, 7 mi. S. E. Adamsville |
| 5. | Lampasas River, Rumeley Crossing |
| 6. | Donaldson Creek, 5 mi. W. Lampasas on Farm Road 580 |
| 7. | Donaldson Creek, 5 mi. W. Lampasas on Farm Road 1494 |
| 8. | Burleson Creek, 1 mi. N. W. Lampasas |
| 9. | Sulphur Creek, 3 blocks W. of Lampasas Golf Course |
| 10. | Sulphur Creek, 2 mi. E. Lampasas in City Municipal Park |
| 11. | Lampasas River, at mouth of Sulphur Creek. |
| 12. | Lampasas River, 1 mi. N. Oakalla |
| 13. | Rocky Creek, 1 mi. N. Watson on Farm Road 74. |
| 14. | Rocky Creek, 2 mi. S. Watson |
| 15. | Rocky Creek, 3 mi. N. E. Watson |

Little River (Milam County)

| | |
|---|---|
| 1. | Little River, 4 mi. W. Buckholts |
| 2. | Little River, 6 mi. W. Cameron |
| 3. | Little River, 6 mi. S. W. Cameron |
| 4. | Little River, 1½ mi. E. Cameron |
| 5. | Little River, 4½ mi. N. E. Station 4 |
| 6. | Little River, 3 mi. N. W. Gause |

Table 11. Record of Temperature, pH and Secchi Disc Conditions On the Lampasas River and its Principal Tributaries In Lampasas and Burnet Counties, June and July 1954.

| Temperature, pH and Secchi Disc Records Lampasas River, Lampasas and Burnet Counties | | | | | |
|---|---|---|---|---|---|
| Station No. | Date | Air Temp. °F | Water Temp. °F | pH | Secchi Disc |
| 1. | July 1 | 95 | 90 | 8.6 | Too shallow |
| 2. | July 1 | 95 | 82 | 8.5 | Too shallow |
| 3. | July 1 | 98 | 84 | 8.7 | 4" |
| 4. | July 1 | 99 | 94 | 8.2 | 12.5" |
| 5. | July 1 | 98 | 88 | 8.2 | Too shallow |
| 6. | July 12 | -- | no water | -- | |
| 7. | July 12 | -- | no water | -- | |
| 8. | July 12 | -- | no water | -- | |
| 9. | July 12 | 99 | 80-91 | 7.7 | 57" |
| 10. | July 12 | 102 | 88 | 8.5 | 29" |
| 11. | July 12 | 102 | 92 | 8.2 | 50" |
| 12. | June 22 | 95 | 79 | 8.3 | not taken |
| 13. | June 22 | 95 | 78 | 8.5 | not taken |
| 14. | June 22 | 93 | 79 | 8.4 | not taken |
| 15. | June 22 | 92 | 80 | 8.3 | not taken |

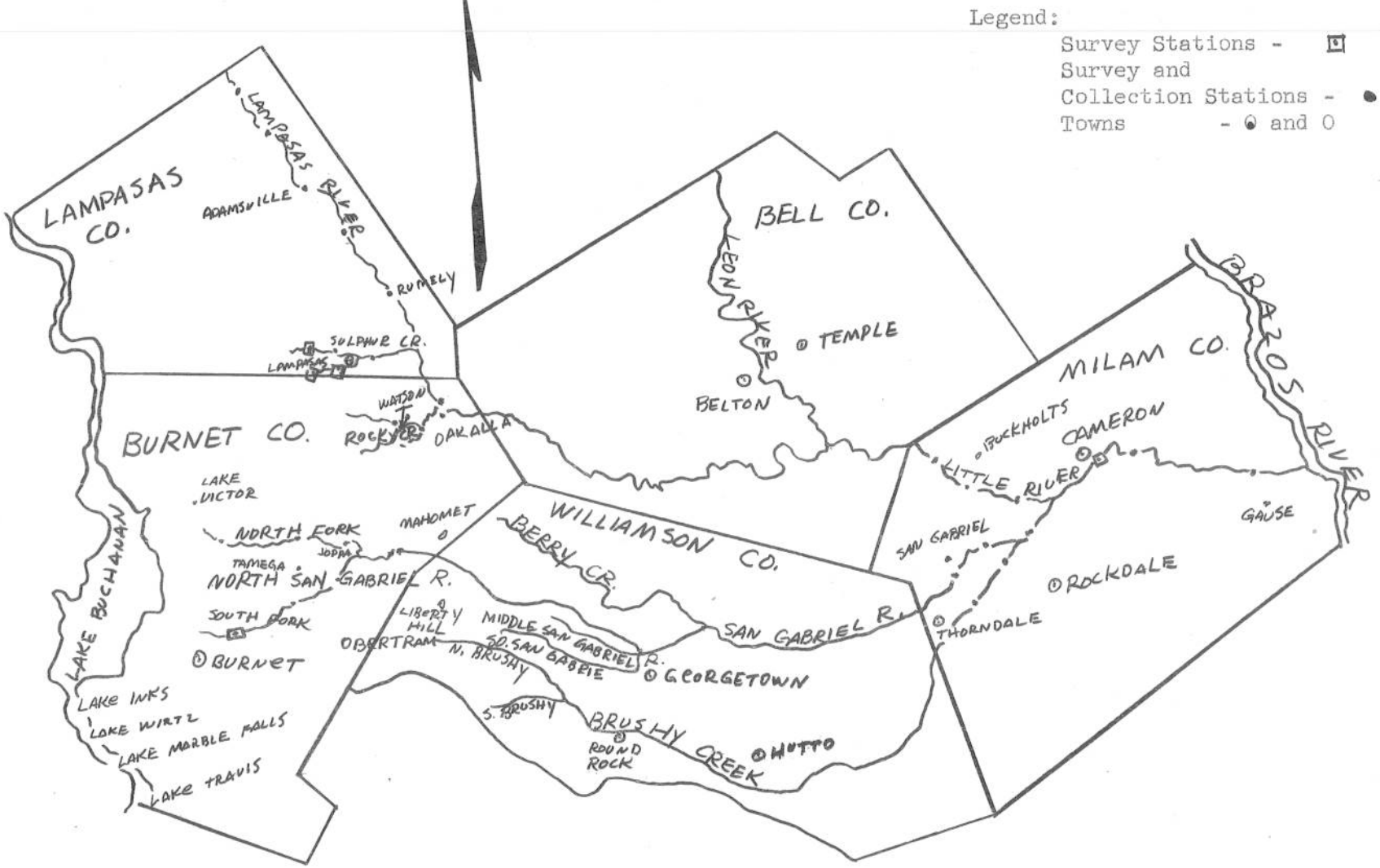
Table 111. Records of Temperature and pH Conditions on the Little River in Milam County, July 1954.

| Temperature and pH Conditions on the Little River in Milam County, July 1954 | | | | |
|---|---|---|---|---|
| Station No. | Date | Air Temp °F | Water Temp °F | pH |
| 1. | July 27 | 100 | 86 | 8.1 |
| 2. | July 27 | 100 | 88 | 8.2 |
| 3. | July 27 | 97 | 86 | 7.8 |
| 4. | July 23 | 91 | 83 | 7.9 |
| 5. | July 24 | 87 | 82 | 7.8 |
| 6. | July 26 | 86 | 84 | 7.8 |

Checklist of Freshwater Fishes

| | SCIENTIFIC NAME | COMMON NAME | LAMPASAS RIVER | LITTLE RIVER |
|---|---|---|---|---|
| 1. | Lepisosteus platostomus | shortnose gar | | x |
| 2. | Dorosoma cepedianum | gizzard shad | | x |
| 3. | Astyanax fasciatus | Rio Grande tetra | x | |
| 4. | Cycleptus elongatus | blue sucker | | x |
| 5. | Carpiodes carpio | river carpsucker | x | x |
| 6. | Moxostoma congestum | grey redhorse | x | |
| 7. | Cyprinus carpio | European carp | | x |
| 8. | Hybopsis aestivalus | speckled dace | | x |
| 9. | Notropis potteri | broadhead shiner | | x |
| 10. | Notropis venustus | blacktail shiner | x | x |
| 11. | Notropis lutrensis | red shiner | x | x |
| 12. | Notropis volucellus | mimic shiner | x | x |
| 13. | Notropis buchanani | ghost shiner | | x |
| 14. | Pimephales vigilax | parrot minnow | x | x |
| 15. | Campostoma anomalum | stoneroller | x | x |
| 16. | Pimephales promelas | fathead minnow | x | |
| 17. | Ictalurus punctatus | channel catfish | x | x |
| 18. | Pilodictus olivaris | flathead catfish | | x |
| 19. | Schilbeodes gyrinus | tadpole madtom | | x |
| 20. | Fundulus notatus | blackstripe topminnow | x | |
| 21. | Gambusia affinis | common mosquitofish | x | x |
| 22. | Micropterus punctulatus | spotted black bass | x | x |
| 23. | Micropterus salmoides | largemouth black bass | x | x |
| 24. | Chaenobryttus coronarius | warmouth | x | |
| 25. | Lepomis cyanellus | green sunfish | x | x |
| 26. | Lepomis macrochirus | bluegill | x | x |
| 27. | Lepomis humilis | orangespotted sunfish | x | |
| 28. | Lepomis megalotis | longear | x | x |
| 29. | Hadropterus scierus | dusky darter | | x |
| 30. | Percina caprodes | logperch | x | |
| 31. | Etheostoma spectabile | orangethroat darter | x | x |
| 32. | Aplodinotus grunniens | freshwater drum | | x |

Table IV. A Checklist of Freshwater Fishes Found to Occur in the Lampasas River, of Lampasas and Burnet Counties and in the Little River of Milam County, Texas.




LITTLE RIVER DRAINAGE
Region 6-B

| River | Basic Surveys | Inventories of Species |
|---|---|---|
| Lampasas River (Lampasas and Burnet Counties) | Job A-3 | Job B-9 |
| Little River (Milam County) | Job A-3 | Job B-9 |
| North San Gabriel River (Burnet County) | Job A-4 | Job B-10 |
| San Gabriel River (Milam County) | Job A-4 | Job B-10 |
| Brushy Creek (Milam County) | Job A-4 | Job B-10 |

Note: For work done in Bell County, see Jobs A-1 and B-6, Project F-2-R-1
For work done in Williamson County, see Jobs A-2 and B-7, Project F-2-R-1