FILE

JOB COMPLETION REPORT

Investigations Projects

STATE OF TEXAS

Project No. F2R4 Name Fisheries Investigations and Surveys of the Waters of Region 6-B.

Job No. B-17 Title Basic Survey and Inventory of Species Present and Their Distribution in Those Portions of the San Saba River within the Boundaries of Region 6-B and the Upper Portion in Region 3-B.

Period Covered: February 1, 1956 through January 31, 1957.

ABSTRACT

Fifty-one seine, and twenty gill net collections produced a total of 19,817 specimens for study. Thirty-four species of fresh water fish were found to occur in the San Saba River. Rough and forage species are extremely abundant throughout the drainage. The game fish population was found to be inadequate, but no management practices to increase this population appear feasible at this time.

OBJECTIVES

To gather fundamental data on these waters including their physical, chemical and biological aspects. To determine the fish species present, their relative abundance, and the ecological aspects influencing their distribution.

TECHNIQUES

Two collecting methods were used in sampling the fish population of the San Saba River. Seining produced the greatest number of specimens for study, while netting with experimental type gill nets proved more effective for collecting many of the larger fish species.

A total of 51 seine and 20 gill net collections were made during the segment period. With the exception of April and November, 1956 and January, 1957 when no collections were made, three days a month were spent on the river.

Thirty foot by six foot straight seines and 20 feet by 4 feet bobbinet seines were used in collecting the seined material, while experimental type gill nets, 125 feet by 8 feet were used exclusively to take the netted specimens. Random sampling was intended but due to limited access to the river, collecting stations were established, although these stations were sampled at irregular intervals.

All material collected in seines was taken to the laboratory for identification and study. Netted specimens were identified, weighed, measured, and checked for gonadal development in the field.

With each fish collection observations on bottom type, water temperature, vegetation present, stream width, depth of water, available cover and physical descriptions of the immediate shoreline and surrounding country were made and recorded.

The chemical characteristics of the water were determined from water analyses at five stations and included dissolved oxygen, dissolved carbon dioxide, pH, and salinitv.

PHYSICAL DESCRIPTION

The San Saba River rises in eastern Schleicher County and flows in a northeasterly direction for approximately 100 miles to its confluence with the Colorado River on the San Saba-Mills County line. The river is confined to the hill country, or Edwards Plateau region of Texas. Thin limestone derived soils are characteristic of this area, with wool and mohair production providing the chief income. Vegetation is composed chiefly of short grasses, shin oak, and live oak with numerous pecans along the river bottom.

Overy six years of drouth has reduced thousands of acres of this region to barren ground with only sparsely scattered grasses. With the lack of ground cover, the watershed of the river is susceptible to heavy topsoil wash with every rain.

The river is fed from springs of the Edwards and associated limestones formation. With the exception of Clear Creek, all tributaries are intermittent, although numerous springs are present in at least the upper third of the river.

Aquatic vegetation is heavy in the headwaters of the river but becomes quite sparse in the lower reaches. The principal aquatic forms are Myriophyllum sp., Chara sp., and several species of Potamogeton. Abundant cover is provided by aquatic vegetation, roots, logs and rock outcrops. Undercut banks from water erosion also provide cover for a variety of species.

The San Saba River floods periodically, and causes widespread damage to farms and cities along its course. Floods of 30 feet over normal water level are not uncommon and one such rise took place during this segment period.

The San Saba River valley is quite scenic throughout its course and draws a great number of anglers annually. Although there are few public parks on the river, camping and fishing privileges may be obtained from landowners either free or at very nominal fees. Because of its location on the fringe of the more arid West Texas region, the San Saba River serves many small stream anglers from West Texas.

CHEMICAL CHARACTERISTICS

Five water samples were taken and analyzed during the segment period. In addition, six dissolved oxygen determinations were run in May after a heavy rise had receded.

The water of the San Saba River was found to be slightly alkaline, with an average pH of 7.7. With the exception of May, 1956, water quality was adequate to support fish life.

On May 2, rains of up to eight inches on the watershed had caused heavy flooding on the entire river. On May 9, shortly after the water had receded to normal level, water analyses were made on five water samples taken between Menard and the headwaters. One complete analysis and four dissolved oxygen determinations were made. Two of the samples showed dissolved oxygen at three p.p.m. and three samples indicated less than one p.p.m. There was evidence of a fish kill but the extent of the kill could not be immediately determined.

Investiagation as to the cause of the oxyten deficiency revealed heavy concentration of sheep and goat manure in the river bed. The watershed had received little rainfall in many years and the eight inch rains washed several years accumulation of manure into the river.

For nearly a month the water stayed a rich coffee-brown color, probably due to the decomposition of the tons of organic material. No fish were taken in seines during the May collecting period, although some fish were taken in gill nets. The water had cleared by June and for the remainder of the segment period, water quality was satisfactory. No evidence of municipal or industrial pollution was found during the study period.

FINDINGS

A total of 34 species representing ten families of fresh water fish were taken from the San Saba River during the segment period and a checklist of species included as Table 1. Most species are apparently distributed throughout the drainage but Gambusia sp., Etheostoma spectabile, and Etheostoma lepidum seemingly have a more limited distribution. E. lepidum and E. spectabile were taken only in Schleicher and the western portions of Menard Counties. Gambusia sp. was taken form one locality in Menard County.

Rough and forage species excluding sunfish dominated the catch in both seine and net collections (Tables 2, 3, and 4). This group comprised 86.99% of the total pounds and 84.30% of the total numbers collected in gill nets. In the seine collections 95.11% of the collected material consisted of rough or forage species.

Channel catifsh were the most abundant of the game species making up 5.64% of the total number and 8.89% of total weight taken in the net collections.

The estimate of relative abundance (Table 1) is based entirely on material gathered by Texas Game and Fish Commission personnel. In Table 1, estimated relative abundance is shown by the following symbols: VA, very abundant; A, abundant; C, Common; and R, rare. If there is a noticeable shift in relative abundance between river sections, these shifts are noted.

Table 5 shows success of gill netting on the river in terms of both number and pounds of fish per net and foot of net.

Map A through E present distribution by species of the 34 species collected during the segment period.

RECOMMENDATIONS

Although the game fish population in the San Saba River is limited, and is competing with an overwhelming rough fish population, little can be done to improve this condition at the present time. Several basic changes in the river are necessary before any management practices can be carried out. The primary need is for better soil management on the watershed to prevent the runoff which destroys fish habitat and causes periodic fish kills. Second in importance is the need for a barrier to prevent rough fish from moving in to the San Saba River from the Colorado River. Two dams have been proposed for the San Saba River and if developed would prove effective fish barriers.

If a dam reaches the construction stage it would be advisable to carry out a short pre-impoundment survey to determine the status of the population at the time and plan a management program based on collections from this segment period and the pre-impoundment survey.

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Date May 21, 1957

Table 1. Checklist of Species Found to Occur in the San Saba River.

Scientific Name	Common Name	Estimate of Relative Abundance
Lepisosteus osseus	longnose gar	A
Dorosoma cepedianum	gizzard shad	A
Ictiobus bubalus	smallmouth buffalo	A
Carpiodes carpio	river carpsucker	A
Moxostoma congestum	gray redhorse sucker	C
Cyprinus carpio	carp	C
Notemigonus crysoleucas	golden shiner	C
Notropis roseus	central weed shiner	C
Notropis venustus	spottail shiner	VA
Notropis lutrensis	redhorse shiner	VA
Dionda episcopa	roundnose minnow	A (M)
Pimephales vigilax	parrot minnow	C
Pimephales promelas	fathead minnow	R
Campostoma anomalum	stoneroller	R
Ictalurus punctatus	southern channel catfish	A
Ictalurus natalis	yellow bullhead	C
Pylodictus olivaris	flathead catfish	R
Gambusia affinis	common mosquitofish	C
Gambusia sp.	Clear Creek mosquitofish	A (CC)
Roccus chrysops	white bass	R (SS)
Micropterus punctulatus	Kentucky spotted bass	R
ropterus treculi	Texas spotted bass	C
Micropterus salmoides	largemouth black bass	C
Chaenobryttus gulosus	warmouth	C
Lepomis cyanellus	green sunfish	C
Lepomis macrochirus	bluegill	C
Lepomis humilis	orangespotted sunfish	R
Lepomis auritus	yellowbelly sunfish	R
Lepomis megalotis	longear sunfish	C
Pomoxis annularis	white crappie	C
Percina caprodes	logperch	C (M)
Etheostoma spectabile	orangethroat darter	R (M)
Etheostoma lepidum	greenthroat darter	C (M)
Cichlasoma cyanoguttatum	Rio Grande perch	R

Symbols: (M) - Taken only in Menard and Schleicher Counties
(CC)- Restricted to Portions of Clear Creek
(SS)- Taken only in San Saba County

Table 2. Number of Specimens taken in Seines from the San Saba River, February through December, 1956.

Fish Species	February	March	June	July	August	September	October	Total	Percent of Total
L. osseus		3	204	14	4	14	4	243	1.26
D. cepedianum	5	7	148	197	72	14	72	515	2.69
I. bubalus			52	5		37		94	0.49
Carpiodes carpio		1	169	4	11	7	1	193	1.01
M. congestum						1		1	0.01
Cyprinus carpio		1	29	26		16	1	73	0.38
N. crysoleucas	2		31		21	46		100	0.53
N. roseus			81	2			362	445	2.32
N. venustus	92	2640		92	1271	191	775	5061	26.41
N. lutrensis	62	1314	4604	1	4964	19		10964	57.22
D. episcopa						22		22	0.12
P. vigilax	7	21			2			30	0.15
P. promelas	4	1			4			9	0.05
C. anomalum	1							1	0.01
I. punctatus	6	1	8		1	4		20	0.10
I. natalis			2			2		4	0.02
G. affinis	61	6	20	10	28	118	168	411	2.15
Gambusia sp.	0	0	0	0	0	0	0	0	0.00
R. chrysops					1			1	0.01
M. punctulatus		1				1		2	0.01
M. treculi	1		2	3	2	2		10	0.05
M. salmoides	4		11	4	1	7	2	29	0.16
C. gulosus	2			1			3	6	0.03
L. cyanellus	56		50	30	7	27	217	387	2.02
L. macrochirus	59		4	50	57	174	92	436	2.27
L. humilis	2	1						3	0.02
L. auritus	2						3	5	0.02
L. megalotis	1	33						34	0.18
P. annularis	1	1	5			1		8	0.04
P. caprodes	6							6	0.03
E. spectabile	1							1	0.01
E. lepidum	25		1			19		45	0.23
C. cyanoguttatum					2			2	0.02
Total	400	4031	5421	439	6448	722	1700	19161	100.00

Table 3. Number of Specimens taken in Gill Nets from the San Saba River, May through December, 1956.

Fish Species	May	June	July	September	December	Total	Percent of Total
L. osseus	64	8	8	16	1	97	14.78
D. cepedianum	41	4	39	103	49	236	35.98
I. bubalus	7	11	3	8	1	30	4.57
Carpiodes carpio	36	26	23	31	12	128	19.51
M. congestum	17	5	1	13	0	36	5.49
Cyprinus carpio	0	0	0	12	4	16	2.44
N. crysoleucas	0	0	0	0	1	1	0.15
I. punctatus	4	9	14	4	6	37	5.64
I. natalis	0	0	1	6	1	8	1.22
P. olivaris	0	1	0	0	0	1	0.15
M. salmoides	0	1	0	0	12	13	1.99
C. gulosus	1	0	2	0	5	8	1.22
L. macrochirus	7	0	2	4	2	15	2.28
L. cyanellus	0	0	0	0	1	1	0.15
P. annularis	7	0	9	9	3	28	4.27
A. grunniens	0	1	0	0	0	1	0.16
Total	184	66	102	206	98	656	100.00

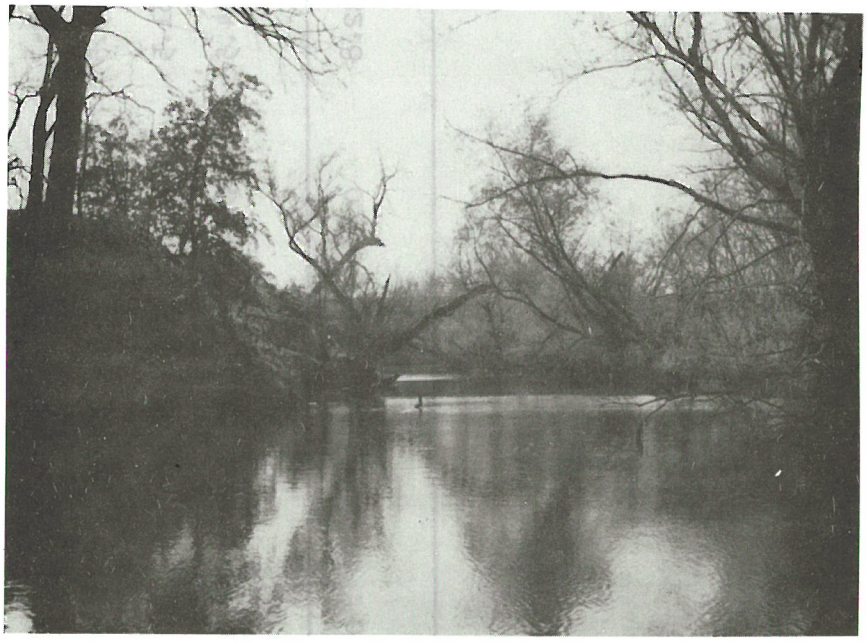
Table 4. Pounds of Each Fish Species Taken in Gill Nets from the San Saba River, May through December, 1956.

Fish Species	May	June	July	September	December	Total	Percent of Total
L. osseus	203.44	31.13	11.56	12.00	1.56	259.69	28.16
D. cepedianum	20.25	2.50	22.06	38.25	11.00	94.06	10.20
I. bubalus	31.06	49.94	19.13	1.25	0.44	101.82	11.04
Carpiodes carpio	82.88	40.44	55.38	64.00	19.81	262.51	28.46
M. congestum	37.00	6.94	2.50	28.31		74.75	8.10
Cyprinus carpio				3.31	2.81	6.12	0.67
N. crysoleucas					0.19	0.19	0.02
I. punctatus	12.56	10.75	41.06	6.25	11.44	82.06	8.89
I. natalis			0.56	1.31	0.31	2.18	0.24
P. olivaris		1.38				1.38	0.15
M. salmoides		0.75			14.75	15.50	1.68
C. gulosus	0.13		0.38		1.69	2.20	0.24
L. macrochirus	1.06		0.38	0.38	0.25	2.07	0.22
L. cyanellus					0.13	0.13	0.02
P. annularis	2.69		5.50	5.56	3.06	16.81	1.82
A. grunniens		0.88				0.88	0.10
Totals	391.07	144.71	158.51	160.62	67.44	922.35	100.00

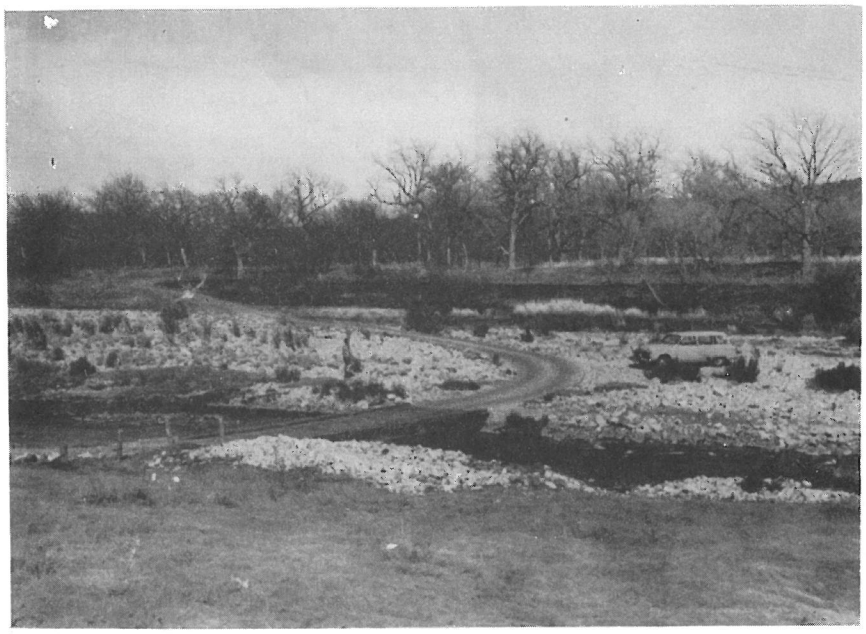
Table 5. Success of Gill Netting in Terms of Number and Pounds of Fish, May through December, 1956.

Month	Number Of Nets Set	Number Of Foot Net Set	Number Of Fish Caught	Number Lbs. Fish Caught	Average Number Fish/Net	Average No. Fish/ Ft. Of Net	Average No. Lbs. Fish/Net	Average No. Lbs. Fish Per Ft. of Net
May	4	500	184	391.07	46.0	0.36	97.77	0.78
June	4	500	66	144.71	16.5	0.13	36.18	0.29
July	4	500	102	158.51	25.5	0.20	39.63	0.32
September	4	500	206	160.62	51.5	0.41	26.66	0.32
December	4	500	98	67.44	24.5	0.19	16.86	0.13
Totals	20	2,500	656	922.35	32.8	0.26	46.12	0.37

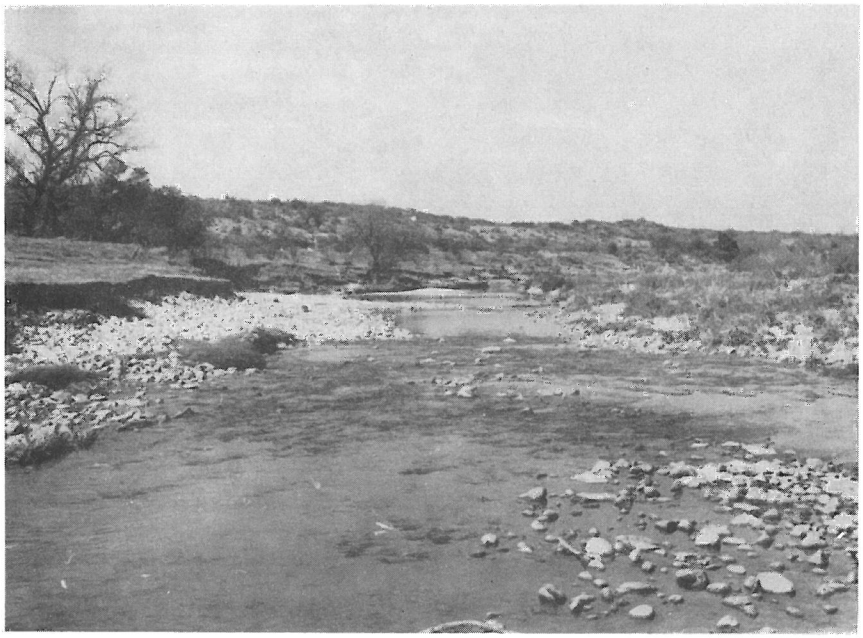
Picture 1. Typical riffle area of San Saba River, Menard County near Schleicher County line.



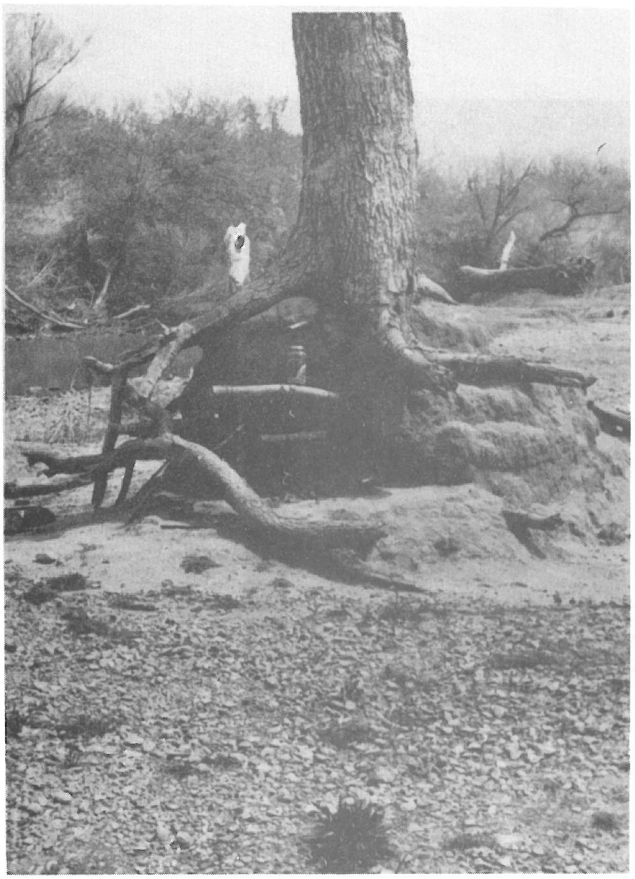
Picture 2. Pool on Saba San River, four miles West of Menard, Menard County.



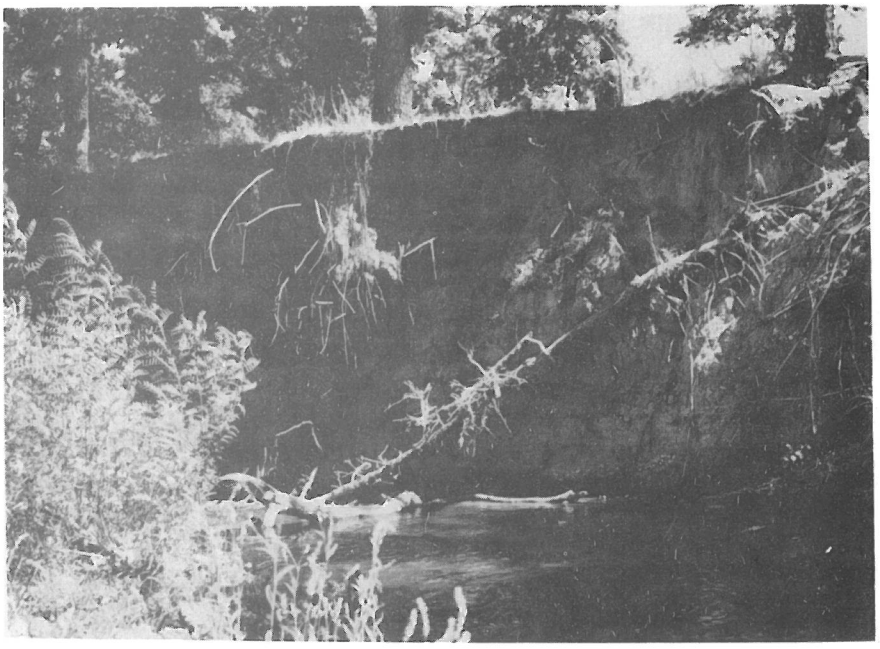
Picture 3. San Saba River, Kings Crossing, 14 miles southwest of San Saba, San Saba County.



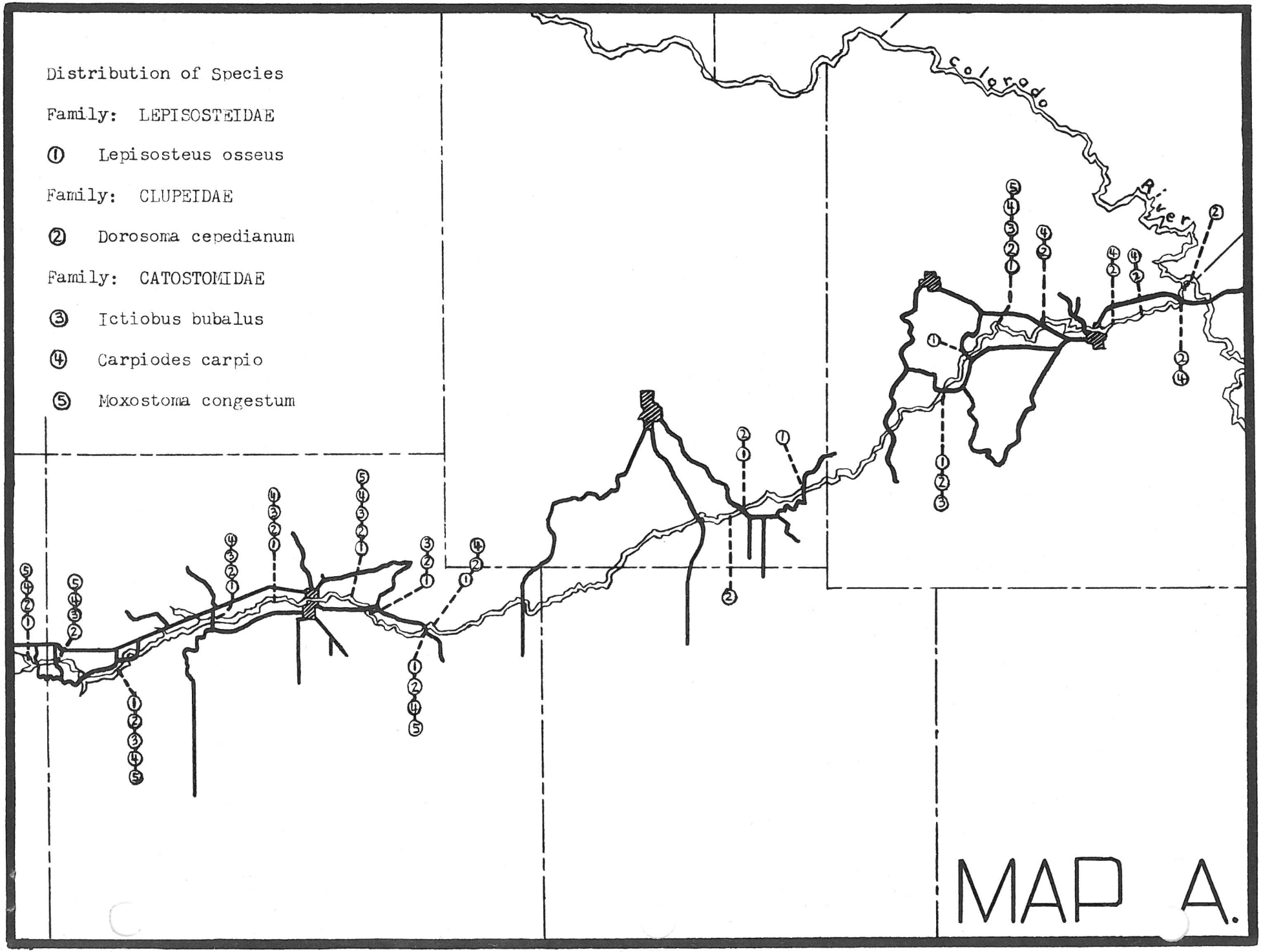
Picture 4. San Saba River, Kings Crossing.

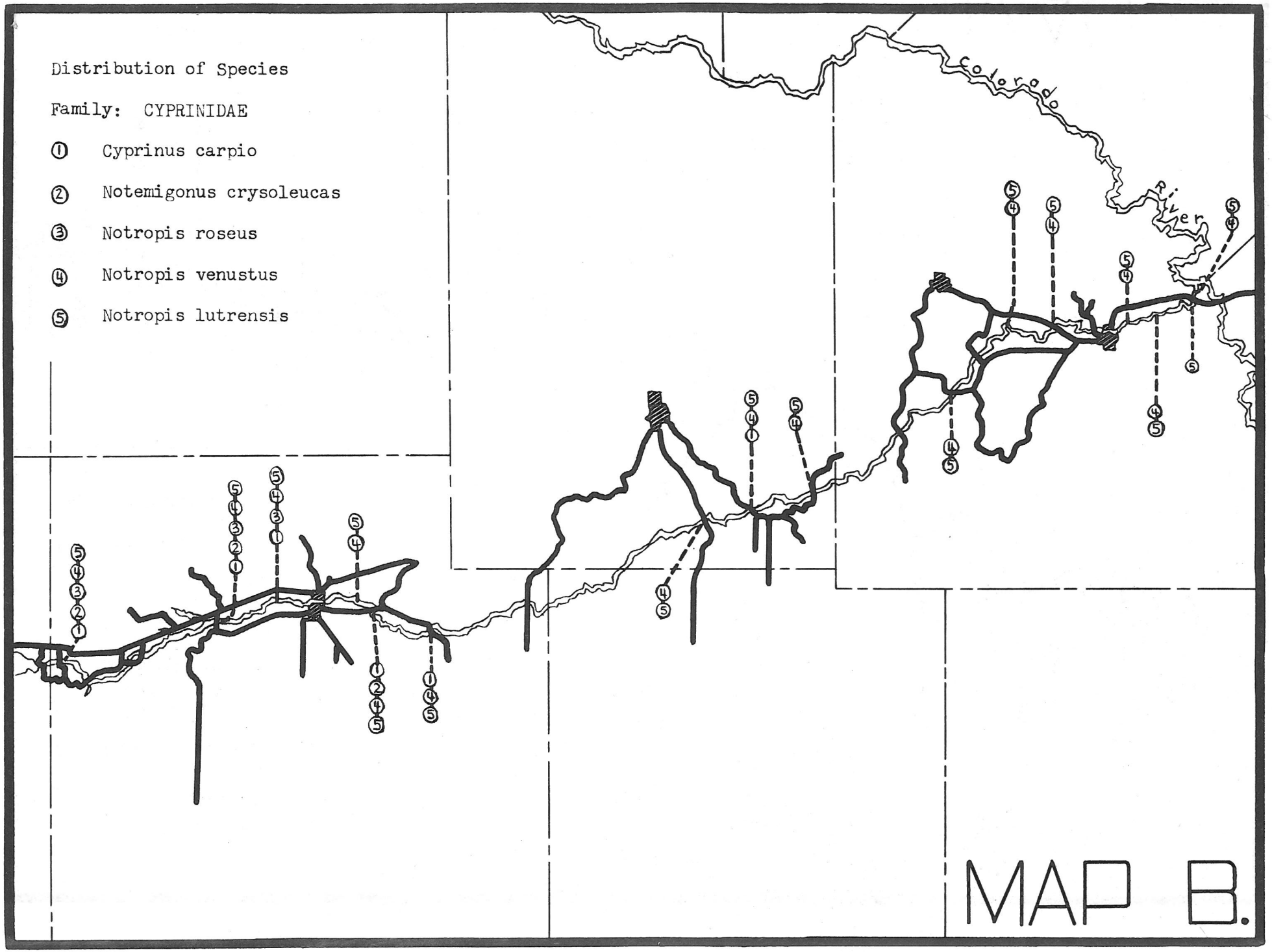


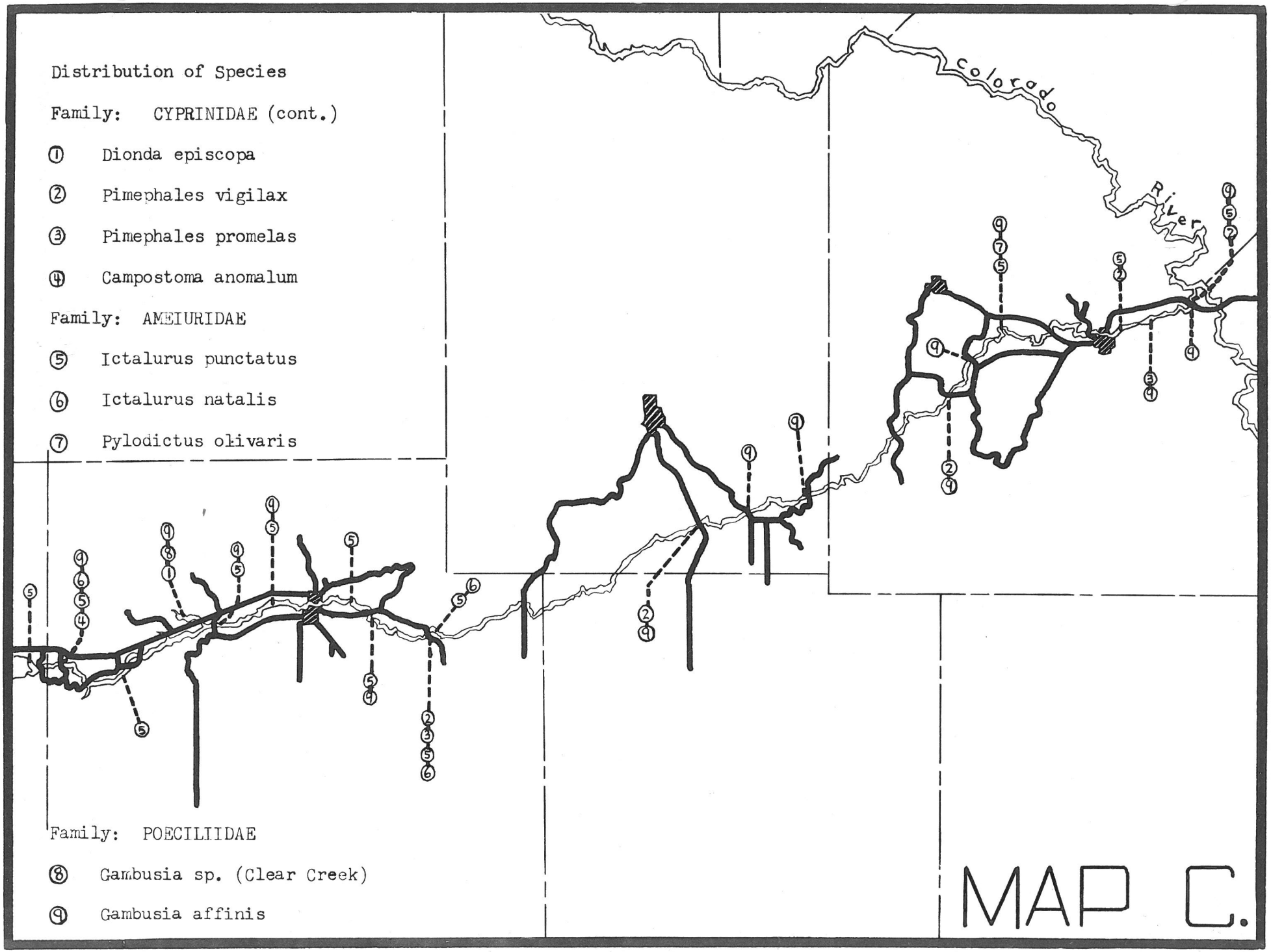
Picture 5. Erosion due to periodic flooding. This tree is standing approximately eight feet above normal river level. San Saba River near San Saba, Texas

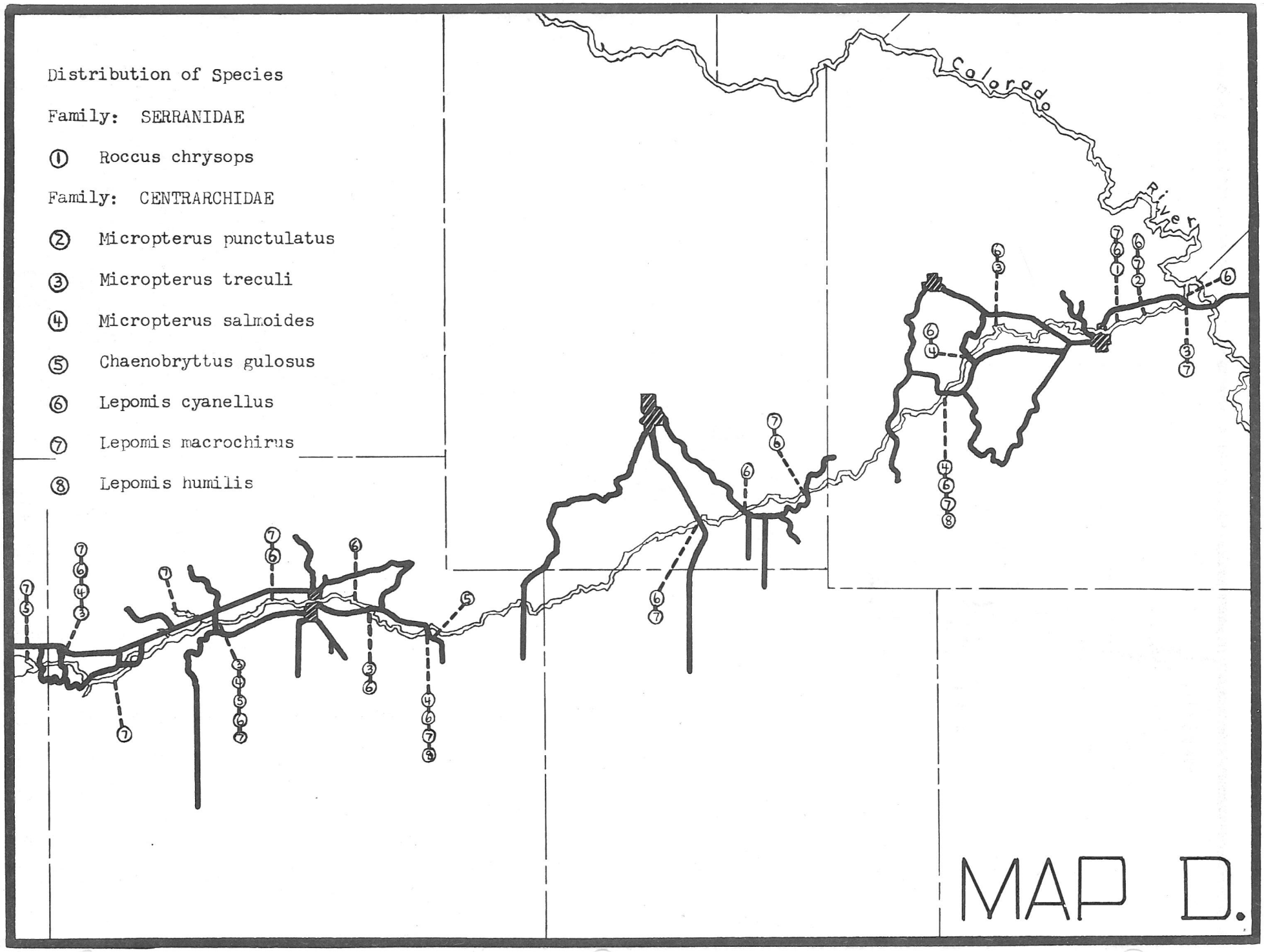


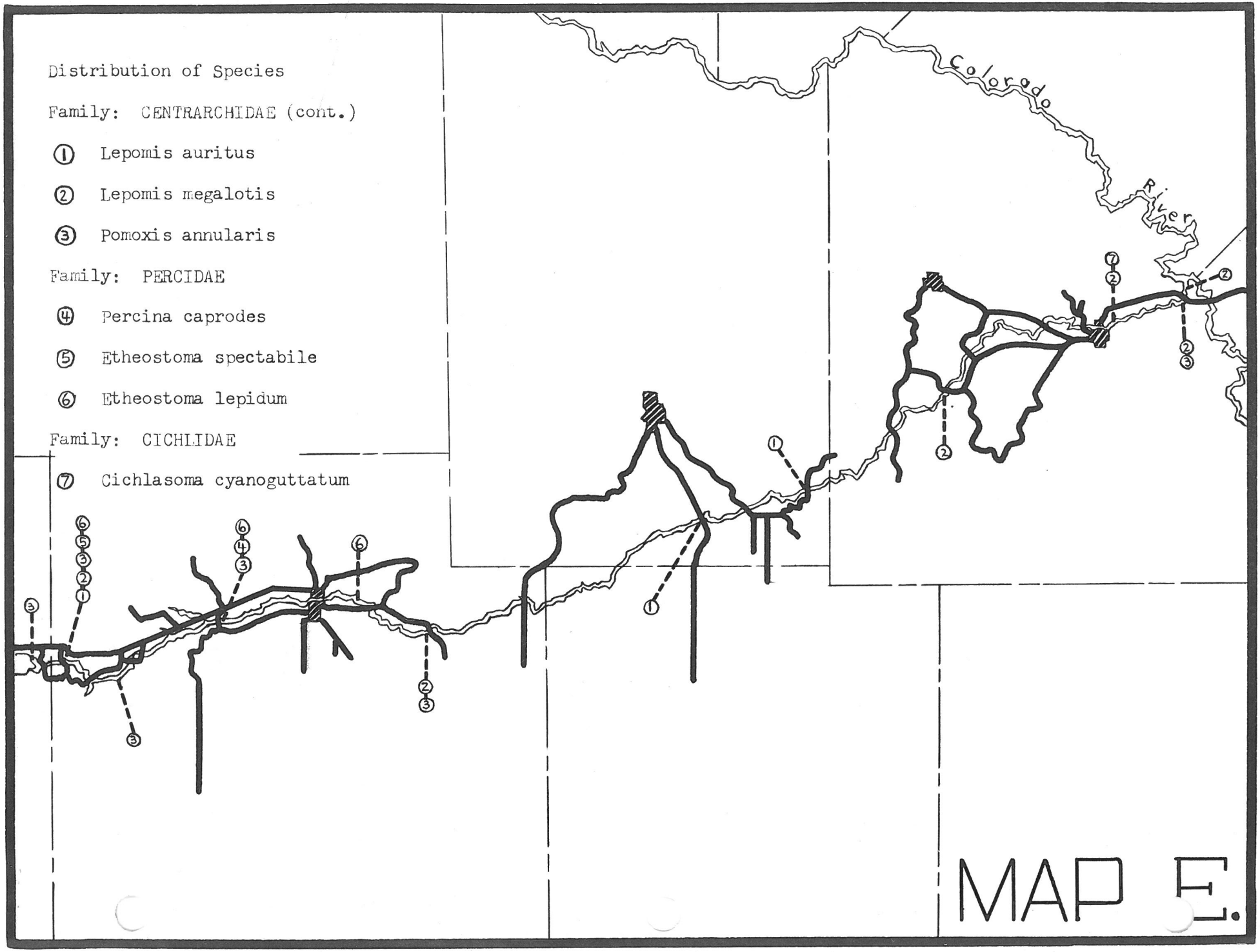
Picture 6. Cut banks on San Saba River five miles west of Menard, Menard County.

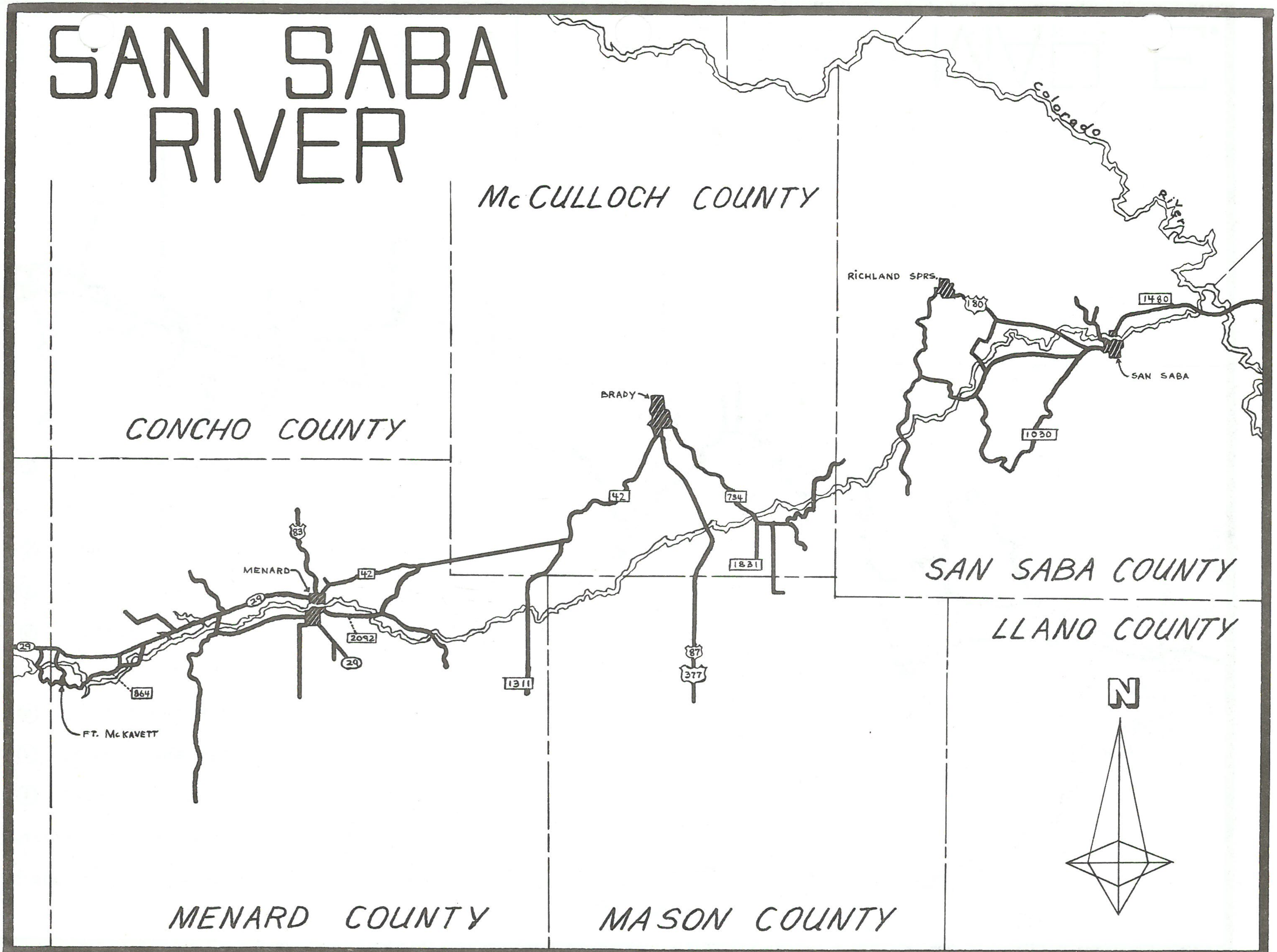

Distribution of Species
Family: LEPISOSTEIDAE
① Lepisosteus osseus
Family: CLUPEIDAE
② Dorosoma cepedianum
Family: CATOSTOMIDAE
③ Ictiobus bubalus
④ Carpiodes carpio
⑤ Moxostoma congestum
Colorado River
MAP A.


Distribution of Species
Family: CYPRINIDAE
① Cyprinus carpio
② Notemigonus crysoleucas
③ Notropis roseus
④ Notropis venustus
⑤ Notropis lutrensis
Colorado
River
MAP B.


Distribution of Species
Family: CYPRINIDAE (cont.)
① Dionda episcopa
② Pimephales vigilax
③ Pimephales promelas
④ Campostoma anomalum
Family: AMEIURIDAE
⑤ Ictalurus punctatus
⑥ Ictalurus natalis
⑦ Pylodictus olivaris
Family: POECILIIDAE
⑧ Gambusia sp. (Clear Creek)
⑨ Gambusia affinis
Colorado
River
MAP C.


Distribution of Species
Family: SERRANIDAE
① Roccus chrysops
Family: CENTRARCHIDAE
② Micropterus punctulatus
③ Micropterus treculi
④ Micropterus salmoides
⑤ Chaenobryttus gulosus
⑥ Lepomis cyanellus
⑦ Lepomis macrochirus
⑧ Lepomis humilis
Colorado
River
MAP D.


Distribution of Species
Family: CENTRARCHIDAE (cont.)
① Lepomis auritus
② Lepomis megalotis
③ Pomoxis annularis
Family: PERCIDAE
④ Percina caprodes
⑤ Etheostoma spectabile
⑥ Etheostoma lepidum
Family: CICHLIDAE
⑦ Cichlasoma cyanoguttatum
Colorado River
MAP E.


SAN SABA RIVER
McCULLOCH COUNTY
CONCHO COUNTY
MENARD COUNTY
MASON COUNTY
SAN SABA COUNTY
LLANO COUNTY
Colorado River
RICHLAND SPRS.
SAN SABA
BRADY
MENARD
FT. McKAVETT
N
29
864
83
42
2092
1311
87
377
734
1831
180
1030
1480