Brazos River

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THE COMMERCIAL SEINING INDUSTRY IN NORTHWEST TEXAS

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Appendix 1

Please answer the following questions as detailed as possible.

1. Do you buy minnows from minnow seiners for retail sales to fishermen?

2. What approximate quantity (gallons or pounds) do you purchase annually from minnow seiners?

3. What approximate quantity (gallons or pounds) do you purchase annually from commercial minnow farmers?

4. What do you pay to the minnow seiners (per gallon or per pound) for small, medium, large and trotline size minnows?

5. What do you pay (per gallon or per pound) for small, medium, large and trotline size minnows purchased from commercial minnow farmers.

6. What do you charge (retail) for small, medium, large and trotline size minnows?

7. How important are minnow seiners to the successful operation of your business?

8. Do you seine minnows for you own dealership?

9. Do many of your customers request (prefer) "river minnows" for bait?

Summary of Questionnaire Sent to Licensed Bait Dealers

Twenty five out of 66 licensed dealers responded.

1. Nineteen out of twenty five dealers indicated they purchased minnows from commercial seiners (76%).
2. The average quantity of minnows purchased by 18 dealers from minnow seiners annually was 201 gallons (Total gallons purchased = 3,618). One gallon is approximately 1,800 minnows.
3. The average quantity of minnows purchased annually by 11 bait dealers from commercial minnow farmers was 236 gallons (Total gallons purchased = 2,596).
4. The average price paid to commercial minnow seiners per gallon was $22.58.
5. The average price paid to commercial minnow raisers per gallon of minnows was $27.88.
6. Average retail price charged for 1 dozen minnows was $1.63.
7. Four percent of the respondents indicated commercial minnow seiners were not important to business at all, 4% said slightly important, 48% indicated commercial seiners were very important to their business, 36% indicated they would go ~~of~~ out of business without the commercial seiners, and 8% did not respond to this question.
8. Forty percent of the respondents indicated they were active in commercial seining, 56% were not and 4% did not respond.
9. Four percent of the respondents indicated river minnows were not important to their customers, 40% said they were very important, and 56% said river minnows were the most important minnow to their customers.

Appendix 2

Economic Considerations

Total purchases of commercially seined minnows reported on the questionnaires = 3,618 gallons (cost = $81,694.44). Total purchases from commercial minnow raisers = 2,596 gallons (cost = $72,376.48). There are approximately 1,800 minnows per gallon thus, 11,185,200 minnows are purchased annually by the reporting bait dealers - over half came from commercial seiners. Total retail value is difficult to assess because no information was available to determine mortality at the dealerships or to determine what percentage of the minnows are made into stink bait (dead minnows are sold wholesale for considerably less than live minnows). If we assume 1/2 of the minnows survive to be sold at retail rates (average price reported = $1.63/dozen) then the annual retail value to those who responded to the questionnaire is approximately $282,450.00 (less than 1/2 of the dealerships we contacted responded).

Appendix 3

Select Life History Information

Two species, the Mississippi silvery minnow Hybognathus nuchalis and the plains minnow H. placitus, are both referred to as the "river minnow". They are very closely related and similar in appearance (Minckley, 1959). They are the primary species commercial minnow seiners target in northwest Texas for sale to bait dealers and are the species most often asked for by bait fishermen in this area.

These species are highly adaptive to the wide variety of temperature and salinity conditions found in the rivers and streams of northwest Texas. They rapidly repopulate watersheds following extended periods of drought, they can withstand severe flash flooding, and they are reported to be tolerant low dissolved oxygen levels (Cross, 1950). They become sexually mature at Age I, females produce up to 6,600 eggs, and they have a prolonged spawning season from May through August (Carlander, 1969). A closely related species, the eastern silvery minnow, Hybognathus regius, has been successfully cultured in small earthen ponds (Raney, 1941, Forney, 1957).

Two of the commmercial seiners contacted indicated that they or their families have been actively seining the Pease and Canadian Rivers and their tributaries for more than 40 years. Both of these parties claim "river minnows" are still as plentiful as they were in the 1950's when conditions for seining are suitable.

Appendix 4

Literature Cited

Carlander, K. D., 1969. Handbook of freshwater fishery biology. Volume one. The Iowa State University Press, Ames, Iowa.

Cross, F. B., 1950. Effects of sewage and of headwater impoundment on the fishes of Stillwater Creek in Payne County, Oklahoma. The American Midland Naturalist, Vol. 43, No. 1, pp. 128-145.

Forney, J. L., 1957. Bait fish production in New York Ponds. New York Fish and Game Journal, Vol. 4, No. 2 (1957).

Minckley, W. L., 1959. Fishes of the Big Blue River Basin, Kansas. University of Kansas Publications. Museum of Natural History. Vol. 11, No. 7, pp. 401-442. University of Kansas, Lawrence.

Raney, E. C., 1941. Propagation of the silvery minnow (Hybognathus nuchalis regius Girard) in ponds. Transactions of the American Fisheries Society Vol. 71 (1941).

Appendix 5

Reservoirs Supplied with Bait by Commercial Minnow Seiners

Arrowhead

Baylor

Diversion

Ft. Phantom Hill

Graham

Greenbelt

Kemp

Kickapoo

Mackenzie

Meredith

Miller Creek

North Fork Buffalo Creek

Pauline

Possum Kingdom

Stamford

Texoma

White River

Wichita

Appendix 6

Summary of Seine Samples

Species	20' Seine (N=11) No.	20' Seine (N=11) No./drag	60' Seine (N=8) No.	60' Seine (N=8) No./drag
Gizzard shad	1	0.09		
Plains minnow	252	22.91	23,793	2,974.13
Mississippi silvery minnow	1,057	96.09		
Speckled chub	66	6.00	7,100	887.50
Emerald shiner	48	4.36		
Red River shiner	60	5.45	6,683	835.38
Arkansas River shiner	572	52.00		
Red shiner	639	58.09		
Silverband shiner	60	5.45	29	3.63
Sand shiner	733	66.64		
Suckermouth minnow	54	4.91		
Fathead minnow	9	0.82		
Bullhead minnow	9	0.82	1	0.12
Channel catfish	1	0.09	2	0.25
Red River pupfish	489	44.45	278	34.75
Plains killifish	890	80.91	1,871	233.88
Mosquitofish	64	5.82		
Green sunfish	1	0.09		
Bluegill	2	0.18		
Longear sunfish	1	0.09	119	14.88
Largemouth bass	10	0.91		
Logperch	1	0.09		
Freshwater drum	1	0.09	1	0.12
Total	5,020	$\bar{\chi}$ 456.36	39,877	$\bar{\chi}$ 4,984.63

Date: 7/12/90

Water Body: Pease River Between Crowell and Childress. Channel about 75 feet wide with low to moderate flow.

Total Number of Stations: 6

Average Time/Drag: 2 minutes with 20' seine, 5.14 minutes with 60' seine.

Average Catch/Drag With 60' Seine = 6,084 fish

Average Catch/Drag With 20' Seine = 180 fish

Total catch = 40,140 fish

Subsamples

Species	Number	Percent Of Total Sample
Plains minnow	178	59.7
Speckled chub	53	17.8
Red River Shiner	50	16.8
Red River Pupfish	2	0.7
Plains killifish	14	4.7
Longear sunfish	1	0.3
Total	298	

Date: 9\12\90

Water Body: Canadian River. Stream channel narrow and shallow, could not use 60' seine in low flow conditions.

Total Number of Seine Stations: 4

Average Time\Seine Drag: 3 minutes with 20' seine.

Average Catch\Drag with 60 ft. Seine = Not used.

Average Catch\Drag with 20 ft. Seine = 1,125 fish.

Total Catch = 2.5 gallons (4,500 minnows)

Subsamples

Species	Number	Percent of Total Sample
Mississippi silvery minnow	98	23.5
Emerald shiner	4	1.0
Arkansas River shiner	53	12.7
Red shiner	55	13.2
Sand shiner	68	16.3
Suckermouth minnow	5	1.2
Fathead minnow	1	0.2
Red River pupfish	45	10.8
Plains killifish	81	19.4
Mosquitofish	6	1.4
Largemouth bass	1	0.2
Total	417	

Date: 9/27/90

Water Body: Wichita River west of Lake Kemp. Water level high and current strong. Seining very difficult.

Total Number of Seine Stations: 2

Average Time\Seine Drag: 5.5 minutes with 60' seine, 2.0 with 20' seine.

Catch With 60' Seine: 53 fish

Catch With 20' Seine: 11 fish

Total Catch = 64 fish

Samples

Species	Number	Percent of TotalSample
Speckled chub	20	
Silverband shiner	38	
Bullhead minnow	1	
Plains killifish	1	
Channel catfish	2	
Bluegill	1	
Freshwater drum	1	
Total	64	

Date: 9/27/90

Water Body: Wichita River East of Lake Diversion. Channel narrow and shallow, could not use 60' seine.

Total Number of Seine Stations: 1

Time\Seine Drag: 2 minutes

Catch With 60' Seine: N/A

Catch With 20' Seine: 55

Total Catch = 55

Samples

Species	Number	Percent of TotalSample
Speckled chub	1	
Silverband shiner	10	
Red shiner	33	
Bullhead minnow	9	
Mosquitofish	1	
Logperch	1	
Total	55	

Date: 9/27/90

Water Body: Brazos River at Seymour. Water level high and current strong, seining very difficult.

Total Number of Seine Stations: 2

Average Time\Seine Drag: 1 minute 20'seine, 2.5 minutes 60' seine

Catch With 60' Seine: 44

Catch With 20' Seine: 39

Total Catch = 83

Samples

Species	Number	Percent of TotalSample
Plains minnow	79	
Emerald shiner	3	
Green sunfish	1	
Total	83	

Date: 9/27/90

Water Body: Pease River at Vernon. Water level very low and river narrow. Could not use 60' seine.

Total Number of Seine Stations: 1

Time\Seine Drag: 3 minutes

Catch With 60' Seine: N/A

Catch With 20' Seine: 58

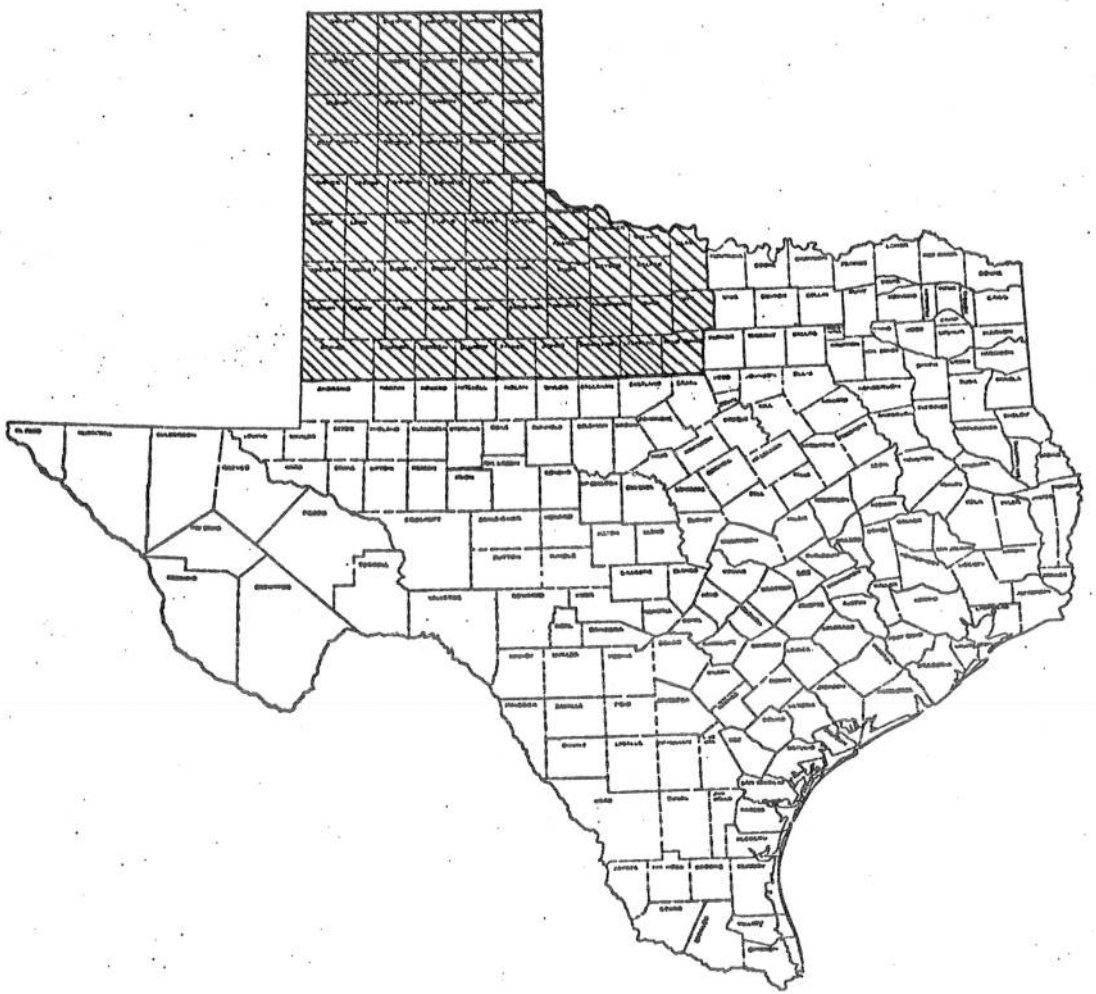
Total Catch = 58

Samples

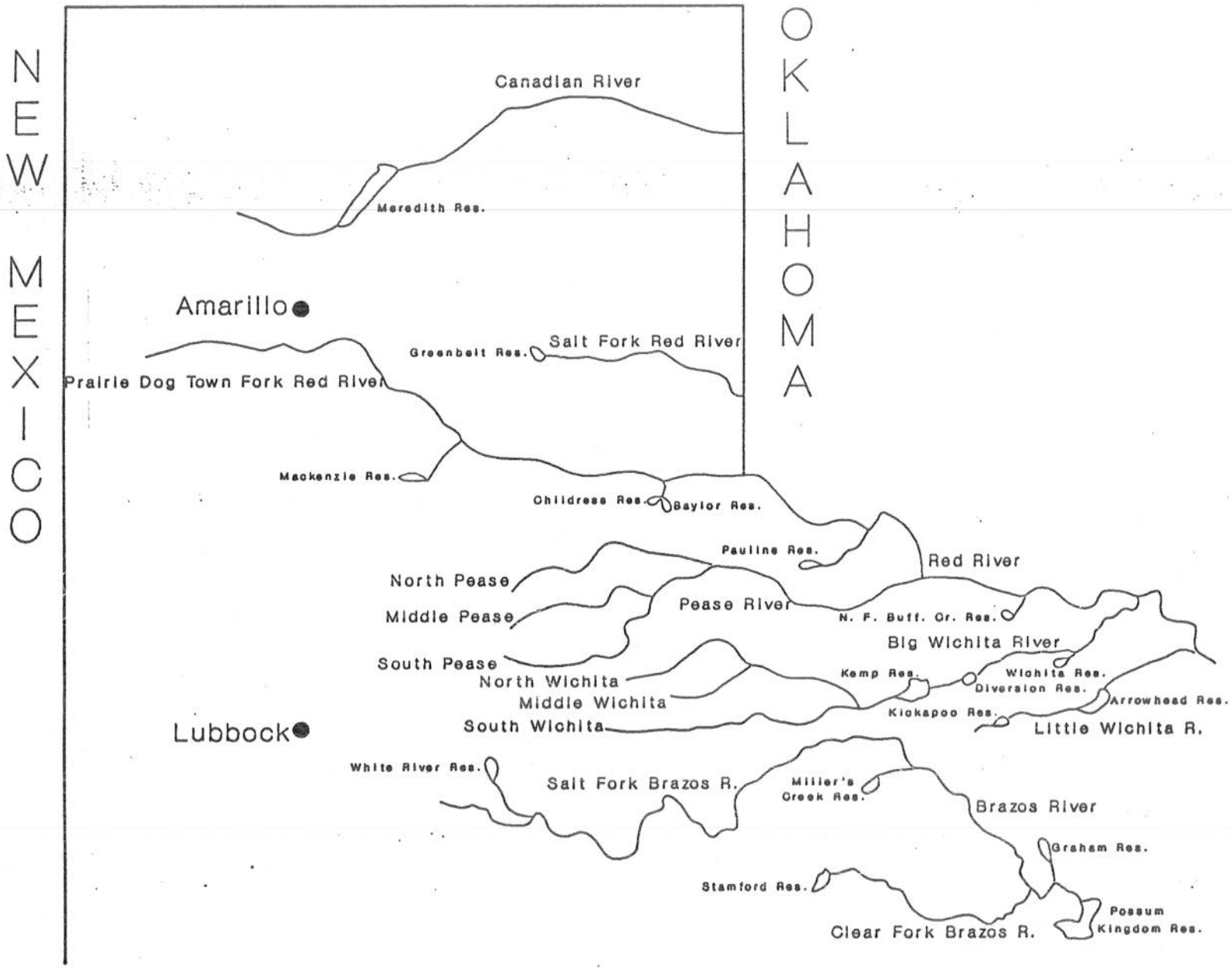
Species	Number	Percent of TotalSample
Plains minnow	2	
Red shiner	12	
Silverband shiner	41	
Gizzard shad	1	
Bluegill	1	
Largemouth bass	1	
Total	58	

Appendix 7

AREA OF TEXAS WHERE MOST COMMERCIAL MINNOW SEINING AND SALES OCCUR



RIVER SYSTEMS AND IMPOUNDMENTS AFFECTED BY COMMERCIAL SEINING OPERATIONS



Appendix 8

Checklist of species from River Surveys 1954 to 1980

Species	Scientific Name	Canadian River 1954-55	Canadian River 1983	Little Wichita River 1955-56	Pease River 1956-57
Shovelnose sturgeon	Scaphirhynchus platorynchus			X	
Longnose gar	Lepisosteus osseus			X	
Shortnose gar	L. platostomus			X	
Gizzard shad	Dorosoma cepedianum		X	X	X
Goldeye	Hiodon alosoides			X	
Common carp	Cyprinus carpio		X	X	X
Silvery minnow	Hybognathus nuchalis			X	X
Plains minnow	H. placitus	X	X		
Speckled chub	Hybopsis aestivalis	X	X	X	X
Flathead chub	H. gracilis	X			
Silver chub	H. storeriana			X	
Golden shiner	Notemigonus crysoleucas	X		X	
Emerald shiner	Notropis atherinoides			X	X
Red River shiner	Notropis bairdi			X	X
Ghost shiner	N. buchanani			X	X
Arkansas River shiner	N. girardi	X	X		
Red shiner	N. lutrensis	X	X	X	X
Chub shiner	N. potteri			X	X
Silverband shiner	N. shumardi				X
Sand shiner	N. stramineous	X			
Mimic shiner	N. volucellus				
Suckermouth minnow	Phenacobius mirabilis			X	
Fathead minnow	Pimephales promelas	X		X	X
Bullhead minnow	P. vigilax		X	X	X
River carpsucker	Carpoides carpio		X	X	X
Smallmouth buffalo	Ictiobus bubalus			X	
Bigmouth buffalo	I. cyprinellus			X	
Black bullhead	Ictalurus melas	X		X	X
Yellow bullhead	I. natalis			X	
Channel catfish	I. punctatus	X	X	X	X
Tadpole madtom	Noturus gyrinus			X	
Flathead catfish	Pylodictis olivaris			X	
Red River pupfish	Cyprinodon rubrofluviatilis				X
Plains killifish	Fundulus kansae	X	X		X
Mosquitofish	Gambusia affinis	X	X	X	X
White bass	Morone chrysops			X	
Green sunfish	Lepomis cyanellus	X	X	X	X
Warmouth	L. gulosus	X		X	
Orangespotted sunfish	L. humilis			X	X
Bluegill	L. macrochirus	X	X	X	X
Longear sunfish	L. megalotus	X		X	X
Redear sunfish	L. microlophus	X			
Largemouth bass	Micropterus salmoides	X		X	X
White crappie	Pomoxis annularis		X	X	
Logperch	Percina caprodes			X	
Freshwater drum	Aplodinotus grunniens			X	