# FINAL REPORT

# SECTION 6

# ENDANGERED SPECIES ACT


# FEDERAL AID PROJECT E-8

STATUS OF THREATENED AND ENDANGERED FISHES IN OKLAHOMA
JOB 2
STATUS OF THE NEOSHO MADTOM IN OKLAHOMA

MAY 1, 1991 - AUGUST 31, 1991

FINAL REPORT

STATE: OKLAHOMA PROJECT NUMBER: E-8

TITLE: Status of Threatened and Endangered Fishes in Oklahoma.

STUDY TITLE: Status of the Neosho madtom in Oklahoma.

PERIOD COVERED: 1 May 1991 through 31 August 1991.

OBJECTIVE NUMBER: 2 JOB NUMBER: 2


## ABSTRACT

In July and August of 1991, we surveyed the status of the Neosho madtom in the Neosho and Spring rivers, in Ottawa and Craig counties, Oklahoma. A total of 24 sites were examined. Fourteen specimens of Neosho madtoms were encountered on six of nine mainstream riffles sampled in the Neosho River, four of which were new locality records. No Neosho madtoms were encountered outside of the Neosho River mainstream. A paucity of suitable riffle habitat appears to limit the distribution and abundance of this species in Oklahoma.

## REPORT CONTENT

### I. Objective:

Determine the current status of the Neosho madtom (Noturus placidus Taylor) in Oklahoma by surveying the Neosho (Grand) River and several tributaries in Ottawa and Craig counties.

### II. Introduction:

The Neosho madtom is a small member of the catfish family that rarely exceeds 75 mm in total length (USFWS 1990). The presence of dark pigment on the adipose fin, which does not extend to the margin, and a dark, crescent-shaped bar across the middle of the tail fin distinguish the species from its congeners. Taylor (1969) provided a detailed account of morphological characteristics and systematic relationships of the Neosho madtom.

Originally, the Neosho madtom probably ranged throughout the major Neosho (Grand) River tributaries and at least the lower portion of the Illinois River in Oklahoma (Moss 1981, Wagner 1984, and USFWS 1990). This species was extirpated from the Illinois River and is now largely restricted to mainstream riffles in the Neosho, Cottonwood, and Spring rivers of the Neosho (Grand) River drainage. There is a single record of the species from outside the mainstream of these rivers: a locality in Lightning Creek, a Neosho River tributary in Cherokee County, Kansas (Ernsting et al. 1989). The Neosho River in Kansas constitutes the majority of its known range (Rohde 1980).

Smaller populations are extant in the Spring River of Missouri and Kansas, and the Neosho River in Oklahoma. No extant populations are known downstream from Grand Lake in Ottawa County, Oklahoma (Moss 1981).

In response to significant range reductions and threats to existing habitat, the U.S. Fish and Wildlife Service (USFWS) officially listed the Neosho madtom as a threatened species effective 21 June 1990. Several factors have been cited as contributing to the decline of the species: inundation of riffle habitat by impoundments, drought, removal of gravel and pebbles for construction purposes, and pollution (USFWS 1990). The Neosho madtom was assigned a recovery priority of 11C, meaning that threats to it are moderate and not fully known or understood.

We intensively sampled the Neosho River and its principal tributaries, including Spring River, in Ottawa and Craig Counties of Oklahoma during a period of low discharge in July and August of 1991. Our purpose was to document the present status of the Neosho madtom in this region of Oklahoma and to assess possible threats to the species.

## III. Methods:

Collections were made by "kick-seining" during daylight hours, in the Neosho and Spring rivers (Figure 1). Seining consisted of positioning a heavily-leaded 4.6-m (4.8 mm mesh) seine perpendiclular to the current in the lower end of a riffle.

Two persons held the seine in place while two additional people (kickers) moved with the current toward the seine, disrupting the substrate by shuffling their feet deeply into the gravel. When the kickers reached the seine, all four persons grasped the seine and quickly lifted it from the water. Mark Eberle (Natural Science Research Associates; personal communication) indicated that use of the "kick-seining" technique during daylight hours is comparable in effectiveness to nocturnal electroshocking for assessment of Neosho madtom populations. Additional seine hauls with the 4.6-m seine and a 12-m (4.8 mm mesh) bag-seine were made at several of the sites to assess fish community assemblages present in pools adjacent to the riffle areas sampled.

At selected sites, six to eight 6-$m^2$ quadrats were "kick-seined" to estimate the density of Neosho madtoms and quantify habitat conditions. Two types of density estimates were made. Species-specific density was calculated by dividing the number of Neosho madtoms taken at a site by the area of the quadrats where they occurred (were sampled). Overall density was determined by dividing the total number of Neosho madtoms collected by the total area of the riffle sampled. When they were encountered, Neosho madtoms were counted, measured, and released. A maximum of two individuals per site were retained as museum voucher specimens (Endangered Species Subpermit PRT-676811).

Mainstream collection efforts on the Neosho River extended from the Kansas-Oklahoma state line downstream 31.5 km to the City Park in Miami, Oklahoma. Collection efforts on Spring River

extended from the Kansas-Oklahoma state line downstream 18.5 km to the State Highway 10 bridge east of Miami. We floated the mainstream of both rivers by boat, sampling each riffle that was encountered. Mainstream sampling efforts ceased when downstream reconnaissance revealed no additional riffle habitat. Tributary streams were sampled at their nearest access point upstream from the confluence with the Neosho River or the Spring River. Physical barriers to seining, such as deep water, lack of water, deeply incised mud banks, and numerous logs and obstructions, precluded sampling of several tributaries in close proximity to their confluence with the Neosho River. However, in the majority of cases adjacent riffle areas in the mainstream were sampled.

All voucher specimens of Neosho madtoms, and other fish species were preserved in 10% formalin in the field and later transferred to 40% isopropyl alcohol for permanent storage in the collection of fishes in the Department of Zoology at Oklahoma State University.

## IV. Results.

Locations and descriptions of all sample sites are provided in Appendix A. A total of 18 sites were examined in the Neosho River drainage, nine sites in the mainstream, and seven sites in tributaries (Figure 1). Sites 12 and 18 were dry. Site 1 was sampled but no specimens were retained. Five sites were sampled in the Spring River mainstream. Sampling at sites 19 and 20 included adjacent areas in the mouths of two tributary streams.

Sycamore Creek, a tributary downstream from the confluence of the Spring and Neosho rivers, was sampled at one location (Figure 1).

Museum voucher collections were made for 21 of the 24 sites we examined (Appendices A and B). Forty-six species (4,829 specimens; 13 families) were recorded from the Neosho River and its tributaries, 38 species (2,912 specimens; 13 families) were recorded from the Spring River and its tributaries. Sixteen species (131 specimens; six families) were recorded from Sycamore Creek (Figure 1, site 24).

A total of 14 Neosho madtoms were encountered (six specimens were released) at six of nine mainstream sites sampled on the Neosho River (Figure 1, and Appendices A and B). Four sites (Figure 1, sites 7, 8, 10, and 14) are new collection localities for the species. Neosho madtoms were not encountered in the Neosho River tributaries, nor at any sites in the Spring River basin.

Neosho madtoms were encountered on riffles at depths ranging from 8.7 to 54.0 cm. The maximum species-specific density (Table 1) occurred at site 11 (Figure 1), at depths of 17 to 20 cm, over loosely-packed gravel to pebble-sized substrate particles, in currents ranging from 0.37 to 0.43 m/sec. Microhabitat conditions were similar at site 16 (Figure 1). Prior to this survey, sites 11 and 16 were the only known collection localities for this species in the Neosho River of Oklahoma. Substrate particle size was similar at sites 7, 8, 10, and 14, but the substrate was more compacted. The bottom was

principally cobble and bedrock at sites 2, 3, and 6, where we encountered no Neosho madtoms.

V. Discussion:

Prior to this survey, extant populations of Neosho madtoms were known only from two sites in Oklahoma: Stepps Ford (site 11, Figure 1); and (site 16, Figure 1), about 8 km downstream from site 11 (USFWS 1990, and Wenke et al. unpublished manuscript). Our survey revealed four additional sites and extended the distribution in Oklahoma about 5.8 km upstream from Stepps Ford. The total number of madtoms that we encountered was quite low (14 specimens on six riffles). Most collections of the species from Oklahoma have produced small numbers (1 to 11) of specimens (USFWS 1990, Wenke et al. unpublished manuscript). The one exception is a collection of 85 specimens from Stepps Ford by R.E. Moss in 1976 (USFWS 1990). Despite Moss's collection (all of which were released), we tentatively conclude that population densities in Oklahoma are low.

Microhabitat conditions where we encountered Neosho madtoms closely paralleled those reported by Moss (1981), Wagner et al. (1984), and USFWS (1990). The species was most abundant over loose gravel-pebble substrate in current of 0.37 to 0.56 m/sec. We observed loose, dry gravel bars adjacent to inundated areas where small numbers of Neosho madtoms were taken at sites 7, 8, 10, and 14. When inundated by high flows these gravel bars could provide suitable habitat.

None of the Neosho River tributaries that we examined (Figure 1), possessed the riffle habitats or substrates associated with the presence of Neosho madtoms. Two sites were dry, and the remaining tributary sites consisted of shallow standing pools. Based on the microhabitat preferences of this species (Moss 1981, 1983), it is doubtful that Neosho madtoms could persist in these tributaries for any significant period of time. The Neosho madtom has never been recorded from the Spring River in Oklahoma, presumably due to limited collection efforts (USFWS 1990), and we encountered none in our survey. One Spring River riffle (Figure 1, site 23) possessed the loose gravel substrate commonly associated with the presence of Neosho madtoms in the Neosho River. The substrate at the four additional riffle sites examined (sites 19-22) was primarily rubble and bedrock.

Existing Environmental Threats

Neosho madtom populations in Kansas declined during a prolonged drought in the 1950's (Deacon 1961), indicating that low flows are detrimental to this species. We observed a number of dry gravel bars in the Neosho River (within one vertical meter of the water level) that appeared to be of sufficient quality to suppport Neosho madtoms had they been inundated with flowing water. Such conditions were especially evident at sites 7, 8, 10, and 14. The Neosho River at Chetopa, Kansas has ceased to flow during summer drought conditions on at least two occasions in the last 10 years (personal observation). We believe that

successive years of prolonged drought could seriously deplete or extirpate populations of this species from the Neosho River of Oklahoma.

Population declines attributable to cattle feedlot run-off have occurred in the upper Neosho River basin of Kansas (Cross and Braasch 1968). Many of the Neosho River tributaries that we sampled appeared to be eutrophic, likely due cattle operations in close proximity to or directly in these streams. Increased nutrient input could adversely affect the quality of Neosho madtom habitat. Adverse effects might occur through changes in chemistry and turbidity of the water, or through more indirect means such as increased algal growth. Decomposition of large amounts of algae could change the physical quality (e.g., degree of compaction) of the gravel riffles preferred by the species.

Habitat inundation of the lower Illinois River in Oklahoma by Tenkiller Ferry Reservoir contributed to the extirpation of the Neosho madtom from this stream (Moss 1981), and impoundment of the lower Grand River has eliminated about one-third of the former range of this species in Oklahoma. A population of Neosho madtoms persists at site 16 (Figure 1), which is periodically inundated by backwaters from Grand Lake. The effects of this inundation are not known, and are in need of further study.

Commercial removal of gravel from the streambed has been cited as a potential problem for the species (Moss 1981 and US FWS 1990). We detected no evidence of gravel removal during our survey of the Neosho River in Oklahoma.

## VI. Conclusions and Recommendations

The Neosho madtom is not in imminent danger of extirpation in the Neosho River of Oklahoma. The total number of specimens of Neosho madtoms we encountered was small, and may have been an artifact of sampling methods or of prevailing environmental conditions. However, we were able to locate Neosho madtoms at both previously recorded sites in the Neosho River and at four additional sites. Future monitoring is needed to determine if the additional four sites represent localized populations or waifs from elsewhere in the system.

Availability of riffle habitat seems to be a major limiting factor to the abundance and distribution of Neosho madtom populations in Oklahoma. Our observations suggest that these populations might benefit from increased summertime flows from John Redmond Reservoir in Kansas. Instream flow requirements optimal for the species may not be attainable during prolonged drought conditions due to the limited storage capacity of reservoirs in the upper Neosho River basin (USFWS 1990). However, it may be possible to achieve a degree of regulation that would increase the availability of riffle habitat during a significant portion of the year.

Additional surface or alluvial withdrawals of water from the Neosho River should be closely monitored or prohibited. Similar attention should also be directed towards increases in activities such as gravel removal from the streambed, increased numbers of cattle feedlots, and other practices that could adversely affect

habitat quality for the Neosho madtom.

The dearth of knowledge on the life history of the Neosho madtom is a serious impediment to implementation and success of management efforts. Its restricted range and specific microhabitat requirements accentuate the need for an in-depth study of its life history.

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VIII. Date: October 1991

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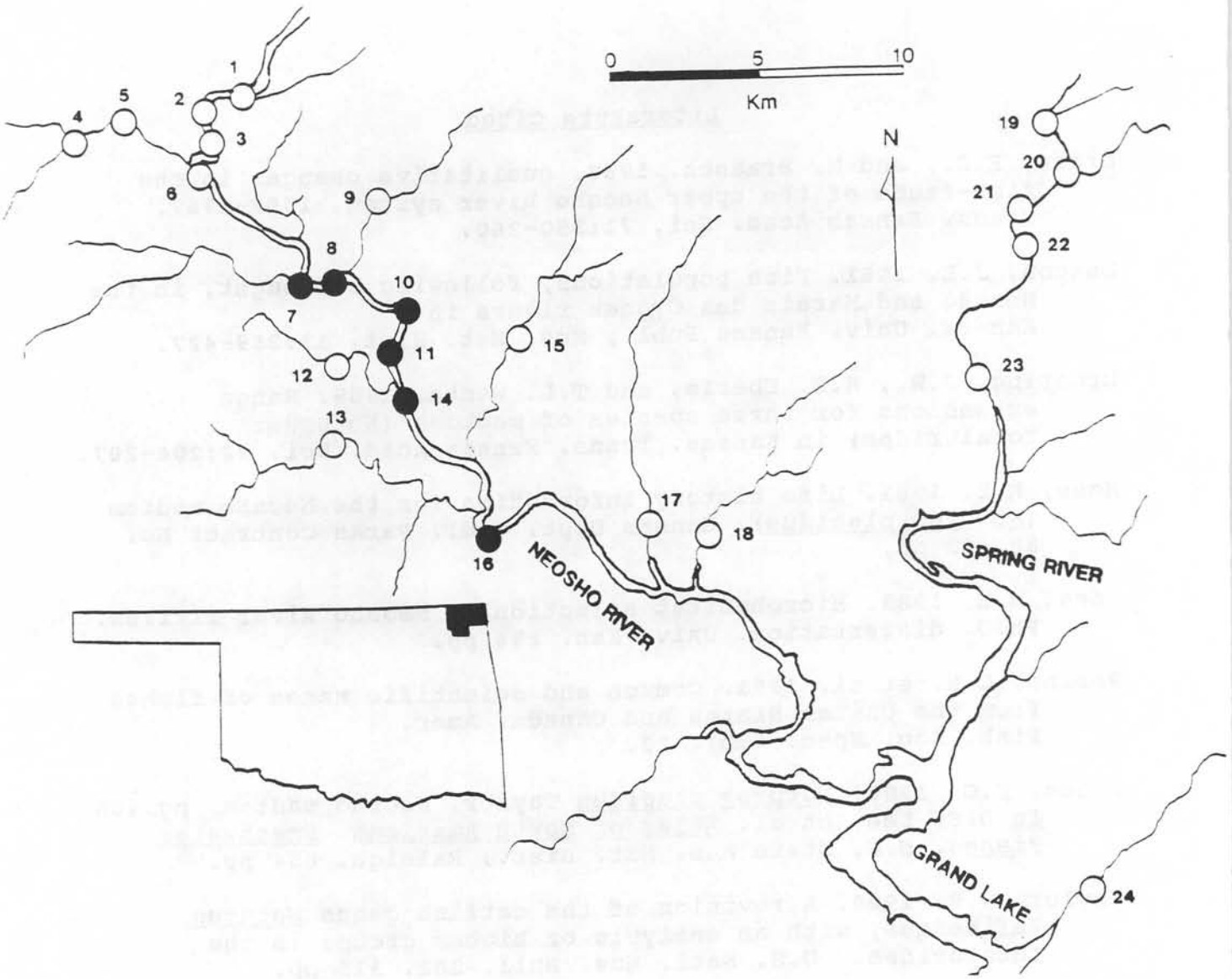


**Figure 1. Sites sampled in Ottawa and Craig counties, Oklahoma, July and August of 1991. Solid circles denote sample sites where Neosho madtoms were encountered. Open circles denote sample sites where Neosho madtoms were not encountered.**

Table 1. Collection sites, number of specimens, total lengths, area sampled, and estimated densities of Neosho madtoms encountered in the Neosho River mainstream during July and August 1991. Site numbers correspond to those in Figure 1 and Appendix A.

| Site # | # of Specimens | Total length (mm) | Depth of Capture (cm) | Area Sampled ($m^2$) | Estimated Densities (per 100 $m^2$) Overall | Species-specific |
|---|---|---|---|---|---|---|
| 7 | 1 | 28 | -- | -- | -- | -- |
| 8 | 2 | 23-25 | -- | -- | -- | -- |
| 10 | 1 | 28 | 54 | 42 | 2.4 | 16.7 |
| 11 | 7 | 28-72 | 17-20 | 36 | 19.4 | 58.3 |
| 14 | 1 | 37 | 9 | 36 | 2.8 | 16.7 |
| 16 | 2 | 24-28 | 15-20 | 48 | 4.2 | 16.7 |

Mean Overall Density = 7.2 / 100 $m^2$

14 specimens / 162 $m^2$

Mean Species-specific Density = 27.1 / 100 $m^2$

14 specimens / 36 $m^2$

## APPENDIX A

Location, description, sampling methods, and dates for sites sampled in Ottawa and Craig Counties of Oklahoma. Numeric site designations at the left correspond with Appendix B and Figure 1.

1. Fly Creek: Neosho River, Ottawa/Craig Co., OK; T29N, R21E, S16. Upstream 50 m from confluence with the Neosho River. Shallow mud-bottomed turbid stream with deeply incised mud banks. Sampled with 4.6-m seine. No voucher collection was retained for this site. 22 July 1991.

2. Neosho River, Ottawa/Craig Co., OK; T29N, R21E, S16. First riffle downstream from the confluence of Fly Creek. Short riffle with cobble and bedrock bottom. Sampled with 4.6-m and 12-m seines, six 6-$m^2$ quadrats were kick-seined. 22 July 1991.

3. Neosho River, Ottawa/Craig Co., OK; T29N, R21E, S21. Just upstream from the confluence of Russell Creek. Riffle, primarily bedrock bottom. Sampled with 4.6-m and 12-m seines, six 6-$m^2$ quadrats were kick-seined. 22 July 1991.

4. Russell Creek: Neosho River, Craig Co., OK; T29N, R21E, S19. Upstream 5 km from confluence with the Neosho River. Isolated bedrock bottomed pools. Sampled with 4.6-m seine. 7 August 1991.

5. Russell Creek: Neosho River, Craig Co., OK; T29N, R21E, S17. Upstream 3.1 km from confluence with the Neosho River. Isolated pools with sand, sparse gravel, and mud bottom. Sampled with 4.6-m seine. 17 August 1991.

6. Neosho River, Ottawa/Craig Co., OK; T29N, R21E, S21. Immediately downstream from confluence with Russell Creek. Riffle, with primarily bedrock bottom. Sampled with 4.6- m and 12-m seines, six 6-$m^2$ quadrats were kick-seined, additional kick-sets were made, the additional area sampled was not measured. 22 July 1991.

7. Neosho River, Ottawa Co., OK; T28N, R22E, S1. Near confluence of the first Mud Creek south of the Kansas-Oklahoma state line. Riffle, with primarily cobble bottom. Several kick-sets were made with a 4.6-m seine. The area sampled was not measured. 22 July 1991.

8. Neosho River, Ottawa Co., OK; T28N, R22E, S1. Immediately upstream from the confluence of Four Mile Creek. Riffle, with cobble, and gravel bottom. Several kick-sets were made with a 4.6-m seine, the area sampled was not measured. 22 July 1991.

9. Four Mile Creek: Neosho River, Ottawa Co., OK; T29N, R22E, S30. Upstream 3.7 km from confluence with the Neosho River. Isolated pools, with sand and mud bottom. Sampled with 4.6-m seine. 26 July 1991.

10. Neosho River, Ottawa Co., OK; T28N, R22E, S5. East of Commerce, in first bend upstream from Stepps Ford bridge. Riffle, with gravel and cobble bottom. Sampled with 4.6-m and 12-m seines, seven 6-$m^2$ quadrats were kick-seined, additional kicksets were made across an area that was not measured. 22 July 1991.

11. Neosho River, Ottawa Co., OK; T28N, R22E, S8. East of Commerce, just downstream from Stepps Ford bridge. Riffle, with loose river-gravel bottom. Sampled with 4.6-m and 12-m seines, six 6-$m^2$ quadrats were kick-seined. 23 July 1991.

12. Mud Creek: Neosho River, Ottawa Co., OK; T29N, R22E, S7&8. Upstream 3.5 km from confluence with the Neosho River. Dry site. 26 July 1991.

13. Cow Creek: Neosho River, Ottawa Co., OK; T28N, R22E, S19. Upstream 8.4 km from confluence with the Neosho River. Isolated pools, sand and mud bottom. Sampled with 4.6-m seine. 26 July 1991.

14. Neosho River, Ottawa Co., OK; T28N, R22E, S17. Pipeline crossing downstream from Stepps Ford bridge. Riffle, with cobble and gravel bottom. Sampled with 4.6-m and 12-m seines, six 6-$m^2$ quadrats were kick-seined. 23 July 1991.

15. Elm Creek: Neosho River, Ottawa Co., OK; T28N, R22E, S11. West of Commerce, upstream 6 km from confluence with the Neosho River. Isolated pools, with gravel, sand and bedrock bottom. Sampled with 4.6-m seine. 26 July 1991.

16. Neosho River, Ottawa Co., OK; T28N, R22E, S27. Immediately downstream from the confluence with Cow Creek. Riffle, with loose river-gravel bottom. Sampled with 4.6-m and 12-m seines, eight 6-$m^2$ quadrats were kick-seined. 23 July 1991.

17. Tar Creek: Neosho River, Ottawa Co., OK; T28N, R23E, S30. East edge of Miami, upstream 2.4 km from confluence with the Neosho River. Little flow, shallow pools with cobble and bedrock bottom. Sampled with 4.6-m seine. 26 July 1991.

18. Little Elm Creek: Neosho River, Ottawa Co., OK; T28N, R23E, S28. East of Miami, upstream 2.1 km from confluence with the Neosho River. Dry site. 26 July 1991.

19. Spring River, Ottawa Co., OK; T29N, R24E, S16. Immediately downstream from the Kansas-Oklahoma state line. Riffle, with cobble and gravel bottom. Sampled with 4.6-m and 12-m seines, six 6-$m^2$ quadrats were kick-seined. A small, spring-fed tributary was sampled with a 4.6-m seine just above its confluence with Spring River. 24 July 1991.

20. Spring River, Ottawa Co., OK; T29N, R24E, S22. Near the confluence of Five Mile Creek. Riffle, with cobble and bedrock bottom. Sampled with 4.6-m and 12-m seines, eight 6-$m^2$ quadrats were kick-seined. Five Mile creek was sampled with a 4.6-m seine, just above its confluence. 24 July 1991.

21. Spring River, Ottawa Co., OK; T29N, R24E, S29. Riffle, with cobble, and gravel bottom. Sampled with 4.6-m and 12-m seines, eight 6-$m^2$ quadrats were kicked. 25 July 1991.

22. Spring River, Ottawa Co., OK; T29N, R24E, S28. East of Quapaw, at Bicentennial Park. Riffle, with gravel bottom. Sampled with 4.6-m and 12-m seines, six 6-$m^2$ quadrats were kick-seined. 25 July 1991.

23. Spring River, Ottawa Co., OK; T28N, R24E, S16. Immediately downstream from Interstate-44 bridges. Riffle, with loose limestone gravel bottom. Sampled with 4.6-m and 12-m seines, six 6-$m^2$ quadrats were kick-seined. 25 July 1991.

24. Sycamore Creek: Grand River, Ottawa Co., OK; T26N, R24E, S2. Upstream 3.1 km from confluence with Grand River. Gravel bottomed riffles, and mud bottomed pools. Sampled with 4.6-m seine. 17 August 1991.

## APPENDIX B

Fish species encountered at 21 sample sites in the Neosho and Spring River drainages in July and August of 1991. No samples were obtained from sites 1, 12, and 18. Common names follow Robins et al. (1991). Site numbers correspond with Appendix A, Table 1, and Figure 1.

| | SITE | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| SPECIES | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| Longnose gar | | | | | 1 | | | | | |
| Gizzard shad | 3 | 6 | | 2 | 6 | 1 | 2 | | 4 | |
| Central stoneroller | | 1 | 22 | 5 | 2 | | 3 | | | 2 |
| Bluntface shiner | | | | | | | | | | |
| Red shiner | 21 | 893 | 52 | 5 | 244 | 115 | 407 | | 187 | 217 |
| Gravel chub | | 3 | | | | | | | | 3 |
| Cardinal shiner | | | | | | | | | | |
| Redfin shiner | | | 29 | | | | | | | |
| Redspot chub | | | | | | | | | | |
| Golden shiner | | | | | | | | | | |
| Emerald shiner | | 5 | | 2 | 6 | 3 | 5 | | 50 | 18 |
| Bigeye shiner | | | | | | | | | | |
| Ghost shiner | 20 | 1 | | | 3 | | 3 | | | 5 |
| Ozark minnow | | | | | | | | | | |
| Rosyface shiner | | | | | | | | | | |
| Mimic shiner | | | | | | | | | | |
| Suckermouth minnow | | | | 1 | | | 3 | | | 1 |
| Southern redbelly dace | | | | | | | | | | |
| Bluntnose minnow | 12 | 13 | 24 | 35 | 6 | 3 | 15 | 4 | 1 | 3 |
| Slim minnow | 4 | | | | | | | | | |
| Bullhead minnow | 15 | 25 | | 26 | 8 | 10 | 6 | 1 | 2 | 19 |
| Blue sucker | | 2 | | | | | | | 1 | 1 |
| Northern hog sucker | | | | | | | | | | |
| Smallmouth buffalo | | | | | | 3 | | | | |
| Spotted sucker | | | 4 | 1 | | | | | | |
| Golden redhorse | | | 6 | 3 | | | | | | |
| Shorthead redhorse | | | | | | | | | 1 | |
| Black bullhead | | | | | | | | | | |
| Yellow bullhead | | | 3 | | | | | | | |
| Channel catfish | 12 | 4 | | | 3 | 15 | 27 | | 27 | 21 |

| SPECIES | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|
| Slender madtom | | | | | | | | | | |
| Stonecat | | 2 | | | 3 | | 2 | | | |
| Freckled madtom | 1 | 1 | | | | | | | | |
| Neosho madtom | | | | | | 1 | 2 | | 1 | 7 |
| Flathead catfish | 1 | | | | 1 | 2 | | | | 1 |
| Blackstripe topminnow | | | 70 | 10 | | | | 27 | | |
| Western mosquitofish | | 15 | 149 | 39 | | | | 24 | | |
| Brook silverside | | | 36 | 10 | | | | 3 | | |
| Banded sculpin | | | | | | | | | | |
| White bass | 3 | 22 | | | 7 | 2 | 7 | | 9 | 7 |
| Rock bass | | | | | | | | | | |
| Green sunfish | | | 7 | 2 | | | | | | |
| Warmouth | | | | 8 | | | | 1 | | |
| Orangespotted sunfish | 19 | 12 | 6 | 98 | 11 | 1 | | 1 | | 2 |
| Bluegill | | | 3 | 98 | | | | 54 | | |
| Longear sunfish | | | 26 | 20 | | | | | | |
| Redear sunfish | | | | | | | | | | |
| Smallmouth bass | | | | | | | | | | |
| Spotted bass | | 1 | | | | | | | | |
| Largemouth bass | | | 8 | 2 | | | | 4 | | |
| White crappie | | | | 2 | | | | | | |
| Black crappie | | | | | | | | | | |
| Bluntnose darter | | | | | | | | 2 | | |
| Fantail darter | | | | | | | | | | |
| Slough darter | | | | | | | | | | |
| Orangethroat darter | | | 21 | 1 | 1 | | | 1 | | |
| Logperch | | | | 1 | | | | | | |
| Slenderhead darter | 11 | 2 | | | 5 | 9 | 2 | | | 4 |
| River darter | 4 | | | | | 2 | | | | 1 |
| Walleye | | | | | | | | | | |
| Freshwater drum | 2 | 2 | | | | | | | 1 | 4 |
| Totals | 128 | 1010 | 466 | 371 | 307 | 167 | 484 | 122 | 284 | 316 |

| | SITE | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SPECIES | 13 | 14 | 15 | 16 | 17 | 19 | 20 | 21 | 22 | 23 | 24 |
| Longnose gar | | | | | | | 5 | | | | |
| Gizzard shad | | | | 62 | | | 2 | 1 | 16 | 1 | |
| Central stoneroller | | | | 1 | | 12 | 38 | 2 | | 1 | 11 |
| Bluntface shiner | | | | | | | 1 | 5 | 3 | 2 | |
| Red shiner | | 356 | | 77 | | 3 | | 4 | | 13 | |
| Gravel chub | | 1 | | 2 | | | | | | | |
| Cardinal shiner | | | | | | 1 | 57 | | 17 | | 48 |
| Redfin shiner | 1 | | | | | | | | | | |
| Redspot chub | | | | | | | | | | | 9 |
| Golden shiner | 58 | | 19 | | | | | | | | |
| Emerald shiner | | 8 | | 38 | | 5 | | 10 | 13 | 51 | |
| Bigeye shiner | | | | | | 1 | | | | 1 | |
| Ghost shiner | | 6 | | 17 | | | | | | | |
| Ozark minnow | | | | | | | 2 | | | | 10 |
| Rosyface shiner | | | | | | 3 | 140 | 230 | 11 | 339 | 1 |
| Mimic shiner | | | | | | 1 | | 1 | 6 | 12 | |
| Suckermouth minnow | | 1 | | 3 | | | | | | | |
| Southern redbelly dace | | | | | | 1 | | | | | |
| Bluntnose minnow | | 127 | | | | 1 | | | 4 | | |
| Slim minnow | | | | 1 | | | | | 10 | | |
| Bullhead minnow | | 117 | | 1 | | | | | | 7 | 7 |
| Blue sucker | | | | | | | | | | | |
| Northern hog sucker | | | | | | | | | 1 | | 1 |
| Smallmouth buffalo | | 1 | | | | | | | | 3 | |
| Spotted sucker | | | 5 | | | | | | | | |
| Golden redhorse | | | | | | | | | | | |
| Shorthead redhorse | | | | | | | | | | | |
| Black bullhead | | | 7 | | | | | | | | |
| Yellow bullhead | | | | | | | | | | | |
| Channel catfish | | 15 | | 10 | | 1 | 2 | 1 | 2 | | |

| SPECIES | 13 | 14 | 15 | 16 | 17 | 19 | 20 | 21 | 22 | 23 | 24 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Slender madtom | | | | | | | | | | | 1 |
| Stonecat | | | | | | | | 1 | | 1 | |
| Freckled madtom | | | | 1 | | | | | | | |
| Neosho madtom | | 1 | | 2 | | | | | | | |
| Flathead catfish | | | | 1 | | | | | | | |
| Blackstripe topminnow | | 1 | 7 | | | 2 | 1 | | 8 | 14 | 19 |
| Western mosquitofish | | 57 | 12 | | 21 | 11 | 1 | | | 2 | 1 |
| Brook silverside | | 1 | | | | 13 | 7 | 8 | 94 | 1501 | |
| Banded sculpin | | | | | | 6 | 3 | | | | |
| White bass | | 16 | | | | 6 | 12 | | | 24 | 1 |
| Rock bass | | | | | | | | | | | 4 |
| Green sunfish | | | | | 1 | | | | 1 | 5 | |
| Warmouth | | | 2 | | | | | | | | 1 |
| Orangespotted sunfish | | 20 | | | | | | | | | |
| Bluegill | 2 | | 21 | | 5 | 6 | | 2 | 3 | 2 | |
| Longear sunfish | | | 21 | | | 6 | 4 | 1 | 6 | 5 | 1 |
| Redear sunfish | | | 1 | | | | | | | | |
| Smallmouth bass | | | | | | | 12 | 3 | | 1 | 7 |
| Spotted bass | | | | | | 1 | | 6 | 7 | 6 | |
| Largemouth bass | | | 4 | | | | | | | | |
| White crappie | | | 2 | 2 | | | | | 1 | | |
| Black crappie | | | 1 | | | | | | | | |
| Bluntnose darter | | | 1 | | | | | | | | |
| Fantail darter | | | | | | | 1 | | | | 5 |
| Slough darter | 1 | | | | | | | | | | |
| Orangethroat darter | | | | | | 5 | 5 | | | | 2 |
| Logperch | | | | | | | | | 1 | 2 | |
| Slenderhead darter | | 1 | | 4 | | | | | 1 | | |
| River darter | | 1 | | 7 | | | 1 | 3 | 1 | 2 | |
| Walleye | | | | | | | | | 1 | | |
| Freshwater drum | 1 | | | | 1 | 23 | 1 | 2 | 18 | | |
| Totals | 119 | 686 | 91 | 251 | 27 | 86 | 317 | 280 | 214 | 2015 | 131 |