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A Preliminary Checklist of the Fishes of the Illinois River, Arkansas

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ABSTRACT

A survey of the fishes of the mainstream of the Illinois River in northwestern Arkansas produced 51 species representing 11 families. Four of these species, *Ictiobus bubalus*, smallmouth buffalo; *Moxostoma carinatum*, river herring; *Lepomis gulosus*, warmouth; and *Percina phoxocephala*, slenderhead darter, have not been recorded previously from the Arkansas part of the Illinois. Eleven additional species have been reported previously that were not collected during this survey, for a total of 62 species known in the Illinois River.

INTRODUCTION

Recently the Illinois River has become the focus of attention because of the development of a Northwest Arkansas Regional Water Quality Management Plan (Mitchell, 1974) calling for the addition of secondarily treated effluent from both Washington and Benton Counties into the mainstream of the Illinois. The Oklahoma part of the Illinois River is being studied for possible inclusion in the National Scenic Rivers System and is now a component of the Oklahoma Scenic Rivers System. The addition of large amounts of sewage effluent to the river may cause environmental degradation and loss of aesthetic values to both the Arkansas and Oklahoma portions. This checklist serves as a preliminary survey of the fishes of the Illinois River so that possible effects of future sewage effluents can be assessed objectively.

The first reported collections of fishes from the Illinois River were made by S. E. Meek during 1891 at Prairie Grove and Ladd's Mill, Arkansas. Because Ladd's Mill itself was on Clear Creek at Savoy, about one-half mile upstream from the confluence of Clear Creek and the Illinois, it is difficult to determine whether Meek was collecting in Clear Creek or the Illinois. Nevertheless, Meek (1894) reported 31 species in a list and 32 species in a table. Black (1940) recorded 32 species from the mainstream of the Illinois. Buchanan (1973) summarized all previous distribution records for the fishes of Arkansas, presented distribution maps for all species and denoted 58 species as present in the mainstream of the Illinois River.

MATERIALS AND METHODS

The Illinois River is in a rather mountainous area of western Arkansas and eastern Oklahoma and is a principal tributary of the Arkansas River downstream from the Grand River. The Illinois River originates in the Boston Mountains and flows through this physiographic region for about 10 mi. The rest of the Illinois in Arkansas flows through the Springfield Plateau physiographic region. The bottom is predominantly coarse chert gravel with exposed bedrock in places. The river probably derives a significant part of its flow from the large number of springs in the drainage area.

Fishes were collected from 12 sites on the mainstream of the Arkansas part of the Illinois River. Eight collecting trips were made from February through October 1974. A variety of habitats was sampled at each site, including pools, fast runs and riffles.

Most specimens were collected by electroshocking and seining, and a few were collected by hook-and-line and gill

nets. Most specimens were identified in the field and returned to the river. Individuals of uncertain classification were preserved in 10% formalin and identified in the laboratory.

CHECKLIST

Fifty-one fish species representing 11 families were collected. Eleven additional species have been reported previously that were not collected during this survey, for a total of 62 species known to be present in the Illinois River. The common and scientific names are those listed by Bailey et al. (1970).

Family Petromyzontidae (lampreys)

- * 1. *Ichthyomyzon castaneus* Girard chestnut lamprey

Family Lepisosteidae (gars)

2. *Lepisosteus osseus* (Linnaeus) longnose gar

Family Clupeidae (herrings)

3. *Dorosoma cepedianum* (Lesueur) gizzard shad

Family Cyprinidae (minnows and carps)

4. *Camptostoma anomalum* (Rafinesque) stoneroller
* 5. *Carassius auratus* (Linnaeus) goldfish
6. *Cyprinus carpio* Linnaeus carp
7. *Dionda nubila* (Forbes) Ozark minnow
* 8. *Hybopsis amblops* (Rafinesque) bigeye chub
9. *Hybopsis x-punctata* Hubbs and Crowe gravel chub
10. *Nocomis asper* Lachner and Jenkins redspot chub
11. *Notemigonus crysoleucas* (Mitchill) golden shiner
* 12. *Notropis atherinoides* Rafinesque emerald shiner
13. *Notropis boops* Gilbert bigeye shiner
* 14. *Notropis camurus* (Jordan and Meek) bluntface shiner
15. *Notropis chrysocephalus* (Rafinesque) striped shiner
16. *Notropis pilsbryi* Fowler dusky stripe shiner
17. *Notropis rubellus* (Agassiz) rosyface shiner
* 18. *Notropis spilopterus* (Cope) spotfin shiner
19. *Notropis umbratilis* (Girard) redfin shiner
20. *Phoxinus erythrogaster* (Rafinesque) southern
redbelly dace
21. *Pimephales notatus* (Rafinesque) bluntnose minnow
* 22. *Pimephales promelas* Rafinesque fathead minnow
* 23. *Semotilus atromaculatus* (Mitchill) creek chub

Family **Catostomidae** (suckers)

- *24. *Catostomus commersoni* (Lacepede) white sucker
- 25. *Hypentelium nigricans* (Lesueur) . northern hog sucker
- **26. *Ictiobus bubalus* (Rafinesque) smallmouth buffalo
- 27. *Minytrema melanops* (Rafinesque) spotted sucker
- **28. *Moxostoma carinatum* (Cope) river redhorse
- 29. *Moxostoma duquesnei* (Lesueur) black redhorse
- 30. *Moxostoma erythrurum* (Rafinesque) . golden redhorse
- 31. *Moxostoma macrolepidotum* (Lesueur) shorthead redhorse

Family **Ictaluridae** (freshwater catfishes)

- 32. *Ictalurus melas* (Rafinesque) black bullhead
- 33. *Ictalurus natalis* (Lesueur) yellow bullhead
- 34. *Ictalurus punctatus* (Rafinesque) channel catfish
- 35. *Noturus exilis* Nelson slender madtom
- 36. *Pylodictis olivaris* (Rafinesque) flathead catfish

Family **Cyprinodontidae** (killifishes)

- *37. *Fundulus catenatus* (Storer) northern studfish
- 38. *Fundulus olivaceus* (Storer) . . blackspotted topminnow

Family **Poeciliidae** (livebearers)

- 39. *Gambusia affinis* (Baird and Girard) mosquitofish

Family **Atherinidae** (silversides)

- 40. *Labidesthes sicculus* (Cope) brook silverside

Family **Centrarchidae** (sunfishes)

- 41. *Ambloplites rupestris* (Rafinesque) rock bass
- 42. *Lepomis cyanellus* Rafinesque green sunfish
- **43. *Lepomis gulosus* (Cuvier) warmouth
- 44. *Lepomis humilis* (Girard) orangespotted sunfish
- 45. *Lepomis macrochirus* Rafinesque bluegill
- 46. *Lepomis megalotis* (Rafinesque) longear sunfish
- 47. *Lepomis microlophus* (Gunther) reardear sunfish
- 48. *Micropterus dolomieu* Lacepede smallmouth bass
- 49. *Micropterus punctulatus* (Rafinesque) spotted bass
- 50. *Micropterus salmoides* (Lacepede) largemouth bass
- 51. *Pomoxis annularis* Rafinesque white crappie

Family **Percidae** (perches)

- 52. *Etheostoma blennioides* Rafinesque . . greenside darter
- 53. *Etheostoma flabellare* Rafinesque fantail darter
- *54. *Etheostoma microperca* Jordan and Gilbert least darter
- 55. *Etheostoma punctulatum* (Agassiz) stippled darter
- 56. *Etheostoma spectabile* (Agassiz) orangethroat darter
- 57. *Etheostoma stigmaeum* (Jordan) speckled darter
- 58. *Etheostoma whipplei* (Girard) redfin darter
- 59. *Etheostoma zonale* (Cope) banded darter
- 60. *Percina caprodes* (Rafinesque) logperch
- **61. *Percina phoxocephala* (Nelson) slenderhead darter

Family **Cottidae** (sculpins)

- 62. *Cottus carolinae* (Gill) banded sculpin

*Not collected during this study.

**New records for the Arkansas part of the Illinois River.

DISCUSSION

The number of species now known from the Arkansas part of the Illinois River (62) is comparable with the number obtained from other studies on Arkansas rivers, e.g. 65 species from the Mulberry River (Olmsted et al., 1972), 62 species from the Cossatot River (Cloutman and Olmsted, 1974) and 95 species from the Strawberry River (Robison and Beadles, 1974).

Many of the 11 species previously recorded from the Illinois River, but not collected during this study, can be considered rare or possibly endangered in Arkansas. *Notropis camurus*, *N. spilopterus* and *Etheostoma microperca* are considered rare (Buchanan, 1974; Robison, 1974). *Catostomus commersoni* may have declined in abundance, and is rare in Arkansas because of its restricted habitat (Buchanan, 1974). Robison et al. (1974) state that *Hybopsis amblops* never is collected in great numbers in Oklahoma and should be regarded as rare. Because this fish is regarded as rare in the Oklahoma part of the Illinois River, it is probably uncommon in the Arkansas part as well. Buchanan (1974) states that *Ichthyomyzon castaneus* may have declined in abundance in Arkansas and possibly is endangered. *Notropis atherinoides* has not been collected from the Illinois River since before 1960 (Buchanan, 1973). The single record of the goldfish, *Carrasius auratus*, from the Illinois (Buchanan, 1973) may have resulted from the release of bait fish or aquarium inhabitants. This exotic species is probably rare throughout the river. Miller and Robison (1973) note that *Pimephales promelas* is most common in small streams in Oklahoma, and many records of this species may have resulted from bait fish release. The writers have collected two of the 11 rare species, *Semotilus atromaculatus* and *Fundulus catenatus*, from tributaries of the Illinois River, but not from the mainstream. Miller and Robison (1973) state that *S. atromaculatus* prefers smaller creeks, at least in Oklahoma. The writers found *F. catenatus* to be abundant in tributaries of the Illinois, but not in the mainstream.

New records for four species, *Ictiobus bubalus*, *Moxostoma carinatum*, *Lepomis gulosus* and *Percina phoxocephala*, were established as a result of this study. The collection of *P. phoxocephala* from two sites in Benton County represents the second valid record of this species in Arkansas. The only other valid record is from Blue Mountain Lake in Logan County (Thomas Buchanan, pers. comm.).

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