

RK

FISHES OF THE NIOBRARA RIVER AT AGATE FOSSIL BEDS NATIONAL MONUMENT 1979 AND 1989

Dr. Richard H. Stasiak
Dept. of Biology, University of Nebraska at Omaha

INTRODUCTION

The two surveys in this report are part of a long-term effort to document the distribution and biology of Nebraska fishes. Probably due to its rather isolated location in extreme western Nebraska, the fishes of Agate Fossil Beds have been only poorly documented in the past. The only comprehensive distributional studies of Nebraska fishes have been inadequate so far. Johnson (1942) included fishes from the Niobrara headwaters in his study, but did not mention the area of the park in detail. Bliss and Schainost (1973) may have taken samples from the Niobrara River from the area of the monument (it is difficult to tell from their maps), but no detailed information about the fishes of the park itself is available. That entire survey is further complicated by the fact that numerous fishes were misidentified, and few specimens were preserved to verify the data.

This report summarizes two surveys conducted in the Niobrara River at Agate Fossil Beds National Mounment in 1979 and 1989.

MATERIAL AND METHODS

1979: Fishes were collected by Richard and Diane Stasiak from 2 locations (sites 1 & 2) in the monument, and also from the Niobrara River immediately west of Highway 29 on the property of Agate Springs Ranch (Fig. 1). A 12 foot long, 4 foot deep, 1/4 inch bar seine was used. Fish were counted and released, except that a small number of voucher specimens were preserved in formalin and cataloged into the collections at the Nebraska State Museum in Lincoln. Collection date was 3 July 1979.

1989: Fishes were collected by Richard Stasiak and Keith Malmos, a Biology Department graduate student at UNO. We were accompanied by personnel from the Park Service staff at the monument. Fishes were sampled from 6 locations (Fig. 1) in the monument using a 15 foot long, 4 foot deep, 1/4 inch bar mesh seine. Sites 1 and 2 were the same locations that were sampled in 1979. Fishes were counted and released, except that again voucher specimens were preserved and are available at the Nebraska State Museum in Lincoln. Specimen catalog numbers can be obtained from the headquarters staff at Agate Fossil Beds or Scotts Bluff National Mounment. Collection date was 13 June 1989.

RESULTS

The following is a composite list of the fishes collected at Agate Fossil Beds from the two collection dates, approximately 10 years apart:

- | | |
|----------------------------|---|
| 1. Family Salmonidae: | Brown Trout, <i>Salmo trutta</i> (introduced) |
| 2. Family Percidae: | Iowa Darter, <i>Etheostoma exile</i> |
| 3. Family Cyprinodontidae: | Plains Topminnow, <i>Fundulus sciadicus</i> |
| 4. Family Catostomidae: | White Sucker, <i>Catostomus commersoni</i> |
| 5. Family Cyprinidae: | Creek Chub, <i>Semotilus atromaculatus</i> |
| 6. | Central Stoneroller, <i>Campostoma anomalum</i> |
| 7. | Fathead Minnow, <i>Pimephales promelas</i> |
| 8. | Brassy Minnow, <i>Hybognathus hankinsoni</i> |
| 9. | Longnose dace, <i>Rhinichthys cataractae</i> |

When fishes were sampled in ponds fed by the Niobrara River at Agate Springs Ranch, two additional species were collected representing family Centrarchidae: largemouth bass (*Micropterus salmoides*) and bluegill (*Lepomis macrochirus*). Although these fishes were not collected from the monument itself, they could very likely spread to the river since they were located just upstream. These are not native fishes to the headwaters of the Niobrara River, but they are popular sport fishes, so it is also likely that they could be "stocked" by fishermen (and perhaps official agencies).

The following represents data for individual collections:

SITE	DATE	LOCATION
#1	3 July 1979	Niobrara River east of highway 29; Sioux County NE T28N, R55W, Sec 6 & 7
SPECIES	NO. COLLECTED	
1. <i>Hybognathus hankinsoni</i>	15	
2. <i>Semotilus atromaculatus</i>	14	
3. <i>Pimephales promelas</i>	7	
4. <i>Campostoma anomalum</i>	5	
5. <i>Catostomus commersoni</i>	14	
6. <i>Etheostoma exile</i>	1	
7. <i>Salmo trutta</i>	2	

=====

SITE	DATE	LOCATION
#2	3 July 1979	Niobrara River at fishing access, Sioux County NE T28N, R55W, Sec 8
SPECIES	NO. COLLECTED	
1. <i>Hybognathous hankinsoni</i>	29	
2. <i>Semotilus atromaculatus</i>	17	
3. <i>Pimephales promelas</i>	3	
4. <i>Campostoma anomalum</i>	1	
5. <i>Catostomus commersoni</i>	5	

=====

SITE	DATE	LOCATION
#1	13 June 1989	Niobrara River east of highway 29; Sioux County NE T28N, R55W, Sec 6 & 7
SPECIES	NO. COLLECTED	
1. <i>Hybognathus hankinsoni</i>	4	
2. <i>Semotilus atromaculatus</i>	5	
3. <i>Pimephales promelas</i>	36	
4. <i>Campostoma anomalum</i>	5	
5. <i>Catostomus commersoni</i>	43	
6. <i>Rhinichthys cataractae</i>	4	
7. <i>Salmo trutta</i>	4	

=====

SITE #2	DATE 13 June 1989	LOCATION Niobrara River at fishing access, Sioux County NE T28N, R55W, Sec 8	NO. COLLECTED
SPECIES			
1. <i>Hybognathous hankinsoni</i>			2
2. <i>Semotilus atromaculatus</i>			70
3. <i>Pimephales promelas</i>			12
4. <i>Campostoma anomalum</i>			6
5. <i>Catostomus commersoni</i>			36

=====

SITE #3	DATE 13 June 1989	LOCATION Niobrara River at "Lonetree", Sioux County NE T28N, R55W, Sec 9	NO. COLLECTED
SPECIES			
1. <i>Hybognathous hankinsoni</i>			6
2. <i>Semotilus atromaculatus</i>			72
3. <i>Pimephales promelas</i>			12
4. <i>Campostoma anomalum</i>			1
5. <i>Catostomus commersoni</i>			72

=====

SITE #4	DATE 13 June 1989	LOCATION Niobrara River near bridge to superintendent's house, Sioux Co. T28N, R55W, Sec 9	NO. COLLECTED
SPECIES			
1. <i>Hybognathous hankinsoni</i>			1
2. <i>Semotilus atromaculatus</i>			27
3. <i>Pimephales promelas</i>			14
4. <i>Campostoma anomalum</i>			3

=====

SITE #5	DATE 13 June 1989	LOCATION Niobrara River below visitor's center, Sioux Co. NE T28N, R55W, Sec 3	NO. COLLECTED
SPECIES			
1. <i>Hybognathous hankinsoni</i>			2
2. <i>Semotilus atromaculatus</i>			21
3. <i>Pimephales promelas</i>			18
4. <i>Campostoma anomalum</i>			10

Fossil Data Manual
 Property of

SITE	DATE	LOCATION
#6	13 June 1989	Slough off of Niobrara River below visitor's center, Sioux Co. NE, T28N, R55W, Sec 3

SPECIES	NO. COLLECTED
1. <i>Hybognathous hankinsoni</i>	14
2. <i>Semotilus atromaculatus</i>	8
3. <i>Pimephales promelas</i>	36
4. <i>Catostomus commersoni</i>	2
5. <i>Fundulus sciadicus</i>	3

=====

TOTAL FISHES, AGATE FOSSIL BEDS, 13 JUNE 1989

=====

SPECIES	NO. COLLECTED	% of SAMPLE
1. <i>Semotilus atromaculatus</i>	273	44.2
2. <i>Catostomus commersoni</i>	153	24.8
3. <i>Pimephales promelas</i>	128	20.7
4. <i>Hybognathus hankinsoni</i>	29	4.8
5. <i>Campostoma anomalum</i>	25	4.0
6. <i>Rhinichthys cataractae</i>	4	0.6
7. <i>Salmo trutta</i>	4	0.6
8. <i>Fundulus sciadicus</i>	3	0.4

TOTAL:	619	100
---------------	------------	------------

=====

DISCUSSION

The recent survey (1989) discovered one species that was not found in the 1979 collection, *Fundulus sciadicus* the plains topminnow. This species is most likely to occur in sloughs and quiet pools with heavy vegetation, and would never be common in the main channel. The single specimen of the Iowa darter that was collected in 1979 represents the only species that was found in 1979 but not in the 1989 collection. That fish is difficult to collect with a seine, so darters may still be present, but in relatively low numbers. Basically, the fish community has remained very stable over the past 10 years.

A few species of fish were probably native to this section of the Niobrara River, but are most likely extirpated at present, or are extremely uncommon at best (Stasiak, 1976; Madsen 1985; Hrabik, 1989). This list would include the following minnows: Finescale dace (*Phoxinus neogaeus*), Northern redbelly dace (*Phoxinus eos*), Blacknose shiner (*Notropis heterolepis*), Common shiner (*Notropis cornutus*), and Pearl dace (*Semotilus margarita*). All of these can be found presently in spring-fed tributaries to the Niobrara River downstream. The introduction of the trout to the Niobrara headwaters could easily have contributed to the demise of these species.

An Index of Biological Integrity (IBI) was calculated according to the modifications of Stallwood (1988) for Nebraska. Since almost all of the sites were extremely similar to each other, and since the IBI may not be significant without data from several other western Nebraska streams for comparison, a single value of 38 was obtained by combining all the samples. It may be interesting to note that the score was higher than for any of the eastern Nebraska sites scored by Stallwood. This tends to confirm the contention that at present the Niobrara River in Agate Fossil Beds National Monument supports a fairly high quality fish community. Probably the greatest threat to the native fish species would come from additional stocking of non-native fishes.

LITERATURE CITED

- Bliss, Quentin, and Steven Schainost. 1973. Nebraska stream inventory report. Report to Nebraska Game and Parks Commission, Aquatic Wildlife Division.
- Hrabik, Robert A. Fishes. p. 143-154 *IN*: An Atlas of the Sand Hills. Resource Atlas No. 5, Conservation and Survey Division, Institute of Agriculture and Natural Resources, University of Nebraska-Lincoln. Ann Bleed and Charles Flowerday, *Editors*.
- Johnson, Raymond 1942. The distribution of Nebraska fishes. Ph.D. dissertation, University of Michigan 132pp.
- Madsen, Teresa Inez. 1985. The status and distribution of the uncommon fishes of Nebraska. M.A. thesis, Univeristy of Nebraska at Omaha. 97pp.
- Stallwood, Del. 1988. An index of biological integrity based on the fishes of the Missouri Tributaries Basin, Nebraska. M.A. Thesis, University of Nebraska at Omaha. 73p.
- Stasiak, R.H. 1976. Updated distributional records for some Nebraska Fishes. Proceedings of the Nebraska Academy of Sciences, 86th Annual Meeting. p. 27.

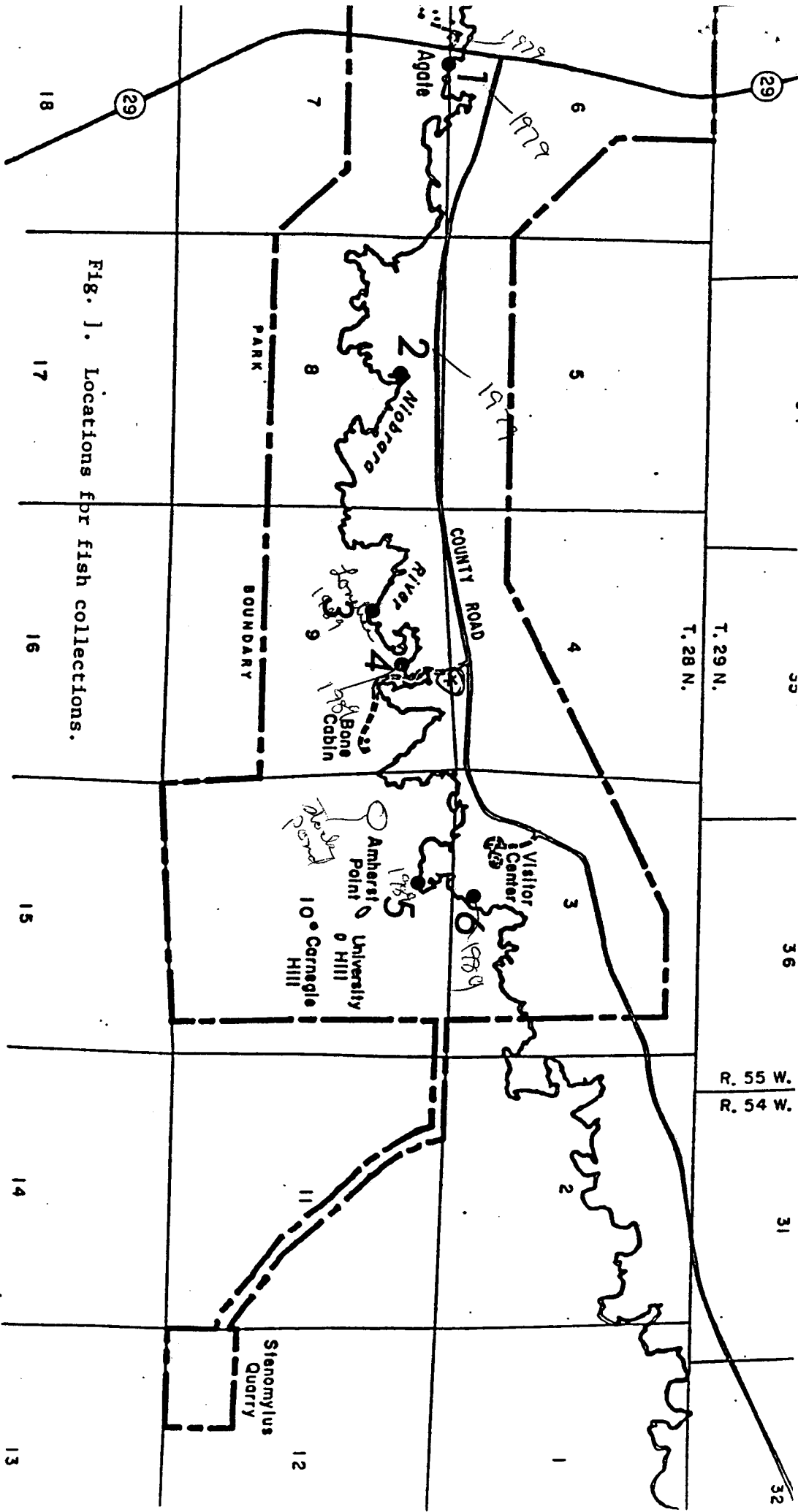
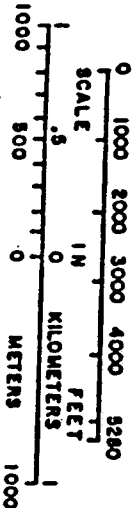


Fig. 1. Locations for fish collections.

* U.S.G.N.



AGATE FOSSIL BEDS
NATIONAL MONUMENT
SIOUX COUNTY, NEBRASKA

ABSTRACT

Fishes were seined from the Niobrara River at Agate Fossil Beds National Monument in 1979 and again in 1989. A total of 9 species, representing 5 families were collected. One species (Iowa darter, *Etheostoma exile*) was taken in 1979 but not in 1989; another species (Plains topminnow, *Fundulus sciadicus*) was surveyed in 1989 but not in 1979. The species found in this reach of the Niobrara River tend to indicate that the community has been stable over the past decade and will probably remain that way without disturbance events.

Property of
Agate Fossil Beds National Monument

Anne —

Here is a copy of
the fish survey, in
case you somehow
did not get one
earlier!

Rick Stank

received 8/23/8

