

**The Occurrence of the Pugnose Shiner,  
(Notropis anogenus) and Brassy Minnow  
(Hybognathus hankinsoni) in Illinois**

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## INTRODUCTION

The pugnose shiner (Notropis anogenus) is rare throughout most of its range (Bailey 1959). A 1988 survey (Seegert 1988) of Indiana failed to reveal its presence and only one reliable record is available for that state since 1943 (R. Bailey, personal communication). It is listed as a threatened species in Wisconsin. In Illinois, it has been reported from the following localities:

Fox R., McHenry County, 1885  
Fourth Lake, Lake County, 1892  
floodplain lake, Mason County, 1909  
Channel Lake, Lake County, 1965  
Loon Lake, Lake County, 1968  
Grass Lake, Lake County, 1968  
East Loon Lake, Lake County, 1984, 1985, 1990  
Deep Lake, Lake County, 1985  
Cross Lake, Lake County, 1986, 1990  
Elizabeth Lake, McHenry County, 1992

In 1997, I concentrated on lakes where it either had been collected before or on those that offer the clear water and abundant aquatic vegetation this species prefers.

A recent survey indicated that brassy minnow (Hybognathus hankinsoni) has declined significantly in abundance and distribution within Illinois and now appears to be rare (EA 1994). Locations where it was found in 1994 were re-sampled in 1997 along with several additional locations.

## METHODS

### Pugnose shiner

In 1997, 9 lakes were sampled using a 30 ft bag seine with 3/16" mesh (Table 1). Loon and E. Loon Lakes were also sampled by electrofishing (EA 1997). Lakes were selected based on the quality of their habitat (clear water, abundant submerged aquatic vegetation), previous occurrence of Notropis anogenus, and accessibility. The amount of time spent sampling each lake varied according to the fish community. Lakes which yielded only centrarchids and few, if any, associates of Notropis anogenus were typically sampled at only one location for about 0.5 hr. Lakes with good habitat and which yielded common associates of Notropis anogenus (e.g., N. heterodon, N. heterolepis, Etheostoma microperca) were sampled for up to two hours. Two to four voucher specimens of N. anogenus were retained at each location where it was encountered and will be deposited at Southern Illinois University.

### Brassy minnow

Pope Creek, the one historical stream I could not sample adequately in 1993, was sampled at four locations in October 1996 (Table 1). Two locations were sampled in each of four other

streams; Coon Creek, Sugar River, Plum River, and Rush Creek (Table 1); Deer Creek and Little Rush Creek were sampled at one location. Each location was sampled until no new species were collected and all likely habitat was explored.

## RESULTS

### Pugnose shiner and lake species

Pugnose shiners were collected from 3 of the 9 lakes sampled; Deep Lake, Cross Lake and Elizabeth Lake (Table 2). Fifteen specimens were found in Cross Lake in 1997, a number comparable to the numbers I collected there in 1986 and 1990. It appears that Cross Lake has a healthy, stable pugnose shiner population.

Two seine hauls along the south shore of Deep Lake yielded ~20 N. anogenus. Page et al. (1986) collected two specimens from Deep Lake in 1985. However, in 1990 I failed to collect any specimens from Deep Lake. It appears that the population of N. anogenus in Deep Lake is quite erratic.

I collected two N. anogenus along the SW shore of Elizabeth Lake ~200 m north of the IL/WI border. A single specimen was collected from Elizabeth Lake in 1992 (Mark Sabay, personal communication). The Wisconsin DNR also collected a specimen from this lake in the late 70's (Fago 1984). The Illinois end of the lake contains good habitat for N. anogenus and Elizabeth Lake appears to support a small but stable population of this species.

I visited Dunns Lake in the Fox Lake chain on the basis of an article several years ago in the media in which the author claimed that N. anogenus was present in Dunns Lake. I did not find N. anogenus or any of its common associates. However, I found pugnose minnow Opsopoeodus emiliae to be common in Dunns Lake. On the day I visited Dunns Lake, aquatic vegetation was fairly abundant but the submergent community was dominated by Mryiophyllum. Also, the water was quite turbid. Given the marginal habitat and the lack of any of its typical associates, I hypothesize that the previous reports of N. anogenus from Dunns Lake were, in fact, based on the morphologically similar Q. emiliae.

The absence of N. anogenus in E. Loon Lake in 1996 and 1997 is troubling. Page et al. (1985) collected specimens there in 1984 and 1985, and I collected two from E. Loon Lake in 1990. In 1990, Notropis heterodon and N. heterolepis were abundant in E. Loon Lake (Seegert 1990). In 1996, both species were still present but were uncommon (EA 1996). In 1997, I collected only one specimen of N. heterodon and no N. heterolepis. It appears that all three of these glacial relict shiners are declining in abundance in E. Loon Lake.

### Other Species of Interest

N. heterodon and N. heterolepis were common to abundant in Cedar, Deep, Cross, Elizabeth, and Wooster Lakes, and the aforementioned single specimen of N. heterodon was collected from E. Loon Lake (Table 2). Etheostoma exile was present in small numbers (1-5

specimens) in Deep, E. Loon, Cross, Elizabeth, and Wooster Lakes. E. microperca was present in Deep, E. Loon, and Wooster Lakes. Fundulus diaphanus was found in Deep and Cross Lakes. E. dispar was present in Cross, Dunns, and Elizabeth Lakes, and common in E. Loon Lake. I also found it to be abundant in Loon Lake in 1996 (EA 1996).

### Hybognathus hankinsoni

Brassy minnow was collected at two locations. A small population continues to be present in the South Branch of Coon Creek (Table 1). I collected two there in 1993 and two more in September 1997. The fact that none were collected in upper or middle Coon Creek suggests that it may be restricted to the South Branch. Five brassy minnows were collected from Rush Creek at E. Leibert Rd. However, none were collected from Rush Creek at E. Skene Rd. where I collected one specimen in 1993 and none were collected from Little Rush Creek. No brassy minnows were collected from the Plum River at the Elmoville Road location where I collected two in 1993, or at a nearby location. Similarly, brassy minnows were absent at both locations I sampled on the Sugar River and in Deer Creek.

## DISCUSSION

No new pugnose shiner localities were found during my survey but it appears to be holding its own in those localities where it has been reported in the past, except for E. Loon Lake. Its status as an endangered species in Illinois is certainly warranted. In 1993, I found brassy at only 3 of 16 historical localities and it was rare at each of the three localities (EA 1994). In 1997, small populations continue to persist in two of the three streams at which it occurred in 1993. However, in the Plum River it has either been extirpated or exists in very low numbers. Given the facts that (1) none were found in Pope Creek, (2) no new localities were found, (3) it may be extirpated from one of the 1993 localities, and (4) it is rare to uncommon even in those stream where it still persists, I recommend that this species be added to the state's endangered species list.

## REFERENCES

- Bailey, R. 1959. Distribution of the American cyprinid fish Notropis anogenus. Copeia. 1959. 119-123.
- EA Engineering, Science and Technology. 1994. Status of Notropis nubilus, Hybognathus hankinsoni, Rhinichthys cataractae, and Campostoma oligolepis in Illinois. EA. Deerfield, IL.
- \_\_\_\_\_. 1996. Fish survey of East and West Loon Lakes. EA. Deerfield, IL.
- Fago, D. 1984. Distribution and relative abundance of fishes in Wisconsin. IV. Root, Milwaukee, Des Plaines, and Fox River basins. Wisconsin DNR Tech. Bull. No. 147
- Page, L. 1985. Illinois Natural History Survey Reports No. 246.

Seegert, G. 1988. The status of the pugnose shiner, Notropis anogenus in NE Indiana. Rpt. to Indiana Non-Game Office.

\_\_\_\_\_. 1990. The status of the pugnose shiner (Notropis anogenus) in Lake County, Illinois. Rpt. to Illinois DNR, Endangered Species Office.

Smith, P. 1979. The fishes of Illinois. U. of Illinois Press. Urbana.

Table 1. Fish sampling locations.

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N. anogenus

1. Cedar L; S shore
2. Deep L; S shore
3. E. Loon L; E shore
4. Cross L; W shore
5. Elizabeth L; SW, SE, and W shores
6. Dunns L; W & E shores
7. Grassy L @ Chain of Lakes State Park boat ramp
8. Wooster L; N shore
9. Loon L; W shore (seine); entire perimeter (shock):  
E. Loon L; entire perimeter (shock)

H. hankinsoni

10. Pope Cr, Knox Co @ Rd 200E, 3 mi SSW of Alpha
11. Pope Cr, Knox Co @ US 150, 3 mi S of Alpha
12. Pope Cr, Knox Co @ Rd 100E, 3.5 mi SW of Alpha
13. Pope Cr, Mercer Co @ Rd 2700E, 3.5 mi SW of Viola
14. Coon Cr, Kane Co @ Walker Rd, 2 mi NW of Hampshire
15. S. Br. Coon Cr, DeKalb Co @ New Lebanon Rd, 4.5 mi E of Genoa
16. Sugar R, Winnebago Co @ Colored Sands Forest Preserve
17. Sugar R, Winnebago Co @ Sugar R. Forest Preserve
18. Deer Cr, Dekalb Co @ Freeport Rd, 2 mi NW of Genoa
19. Plum R, Jo Daviess Co. @ Elmoville Rd, 1 mi SE of Elmoville
20. Plum R, Jo Daviess Co., 1 mi NE of Elmoville
21. Rush Cr, Jo Daviess Co @ E Skene Rd, 5 mi SE of Elizabeth
22. Rush Cr, Jo Daviess Co @ E Leibert Rd, 6 mi SE of Elizabeth
23. Little Rush Cr, Jo Daviess Co @ Derinda Rd, 4 mi SE of Elizabeth

Table 2. Summary of fishes collected from lakes in Lake County, Illinois, 1997.

Species	1	2	3	4	5	6	7	8	9*
<i>Esox americanus</i>	1			1					
<i>Esox lucius</i>		1							
<i>Cyprinella spiloptera</i>						2			
<i>Notemigonus crysoleucas</i>	2						2		
<i>Notropis anogenus</i>		20		15	2				
<i>Notropis atherinoides</i>						5			
<i>Notropis heterodon</i>	50	150	1	50	10			50	
<i>Notropis heterolepis</i>	500 <sup>+</sup>	50		50	100			200	
<i>Notropis stramineus</i>		2			50				
<i>Notropis volucellus</i>	100				12				
<i>Opsopoeodus emiliae</i>						30			
<i>Pimephales notatus</i>	200	200	5	50	100	100 <sup>+</sup>			
<i>Pimephales promelas</i>							3		
<i>Pimephales vigilax</i>						5			
<i>Erimyzon sucetta</i>					1			2	
<i>Fundulus diaphanus</i>		1		3					
<i>Fundulus dispar</i>			50		1	1		1	
<i>Fundulus notatus</i>				1					
<i>Labidesthes sicculus</i>	300	75			50	200			
<i>Lepomis cyanellus</i>						1			
<i>Lepomis gibbosus</i>		8	5					10	
<i>Lepomis gulosus</i>			3					1	
<i>Lepomis humilis</i>						2			
<i>Lepomis macrochirus</i>	30	50	100 <sup>+</sup>	100 <sup>+</sup>	100 <sup>+</sup>	100 <sup>+</sup>	500 <sup>+</sup>	100	
<i>Micropterus salmoides</i>	5	15	5	5	20	10			
<i>Pomoxis nigromaculatus</i>					3	5	5		
<i>Etheostoma exile</i>		2	5	2	1			2	
<i>Etheostoma microperca</i>		2	4					4	
<i>Etheostoma nigrum</i>					2				
<i>Perca flavescens</i>	20	5		25					
<i>Percina caprodes</i>					100 <sup>+</sup>				

TOTAL SPECIES

\* Data provided on appended table.

TABLE 2.

EAST AND WEST LOOM LAKES  
NUMBER AND RELATIVE ABUNDANCE OF FISH COLLECTED

SPECIES	EAST LOOM LK		WEST LOOM LK					
	EFBOAT		EFBOAT		SEINE		COMBINED	
	#	%	#	%	#	%	#	%
LONGNOSE GAR	--	--	3	0.1	--	--	3	0.1
BOWFIN	1	0.0	--	--	--	--	1	0.0
CENTRAL MUDMINNOW	60	2.8	--	--	--	--	60	1.3
NORTHERN PIKE	7	0.3	--	--	--	--	8	0.2
MUSKELLUNGE	2	0.1	2	0.1	--	--	4	0.1
UNID. ESOX SP.	--	--	--	--	1	0.4	1	0.4
COMMON CARP	2	0.1	2	0.1	--	--	4	0.1
GOLDEN SHINER	47	2.2	--	--	1	0.4	48	1.1
EMERALD SHINER	--	--	1	0.0	--	--	1	0.0
BLACKCHIN SHINER	13	0.6	2	0.1	2	0.8	17	0.4
BLACKNOSE SHINER	26	1.2	--	--	1	0.4	27	0.6
SPOTFIN SHINER	10	0.5	2	0.1	2	0.8	14	0.3
*SAND SHINER	5	0.2	1	0.0	200	78.7	206	4.5
BLUNTNOSE MINNOW	31	1.4	4	0.2	--	--	35	0.8
LAKE CHUBSUCKER	23	1.1	11	0.5	--	--	34	0.7
BLACK BULLHEAD	--	--	3	0.1	--	--	3	0.1
YELLOW BULLHEAD	2	0.1	--	--	--	--	2	0.0
BROWN BULLHEAD	7	0.3	2	0.1	--	--	9	0.2
CHANNEL CATFISH	1	0.0	--	--	--	--	1	0.0
BANDED KILLIFISH	4	0.2	--	--	5	2.0	9	0.2
STARHEAD TOPMINNOW	--	--	--	--	36	14.2	36	0.8
BROOK SILVERSIDE	62	2.9	63	3.0	--	--	125	2.8
YELLOW BASS	1	0.0	35	1.6	--	--	36	0.8
ROCK BASS	--	--	1	0.0	--	--	1	0.0
PUMPKINSEED	46	2.1	39	1.8	--	--	85	1.9
WARMOUTH	11	0.5	4	0.2	--	--	15	0.3
**BLUEGILL	1639	76.3	1677	78.6	--	--	3316	73.1
REDEAR SUNFISH	8	0.4	10	0.5	--	--	18	0.4
HYBRID SUNFISH	--	--	4	0.2	--	--	4	0.1
LARGEMOUTH BASS	94	4.4	219	10.3	--	--	313	6.9
BLACK CRAPPIE	15	0.7	21	1.0	--	--	36	0.8
LEAST DARTER	--	--	--	--	6	2.4	6	0.1
YELLOW PERCH	29	1.3	21	1.0	--	--	50	1.1
WALLEYE	3	0.1	7	0.3	--	--	10	0.2
TOTAL FISH	2149	100.0	2134	100.0	254	100.0	4537	100.0
TOTAL SPECIES	26		22		8		32	

\* = The total sand shiner seine catch was estimated due to large numbers encountered.

\*\* = A portion of the total bluegill catch (mostly juveniles and small individuals) was estimated due to large numbers encountered.