

Distribution and Life History Notes on the Taillight Shiner *Notropis maculatus* in Kentucky

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ABSTRACT

Notropis maculatus is present in Ohio River oxbows in Ballard and McCracken counties, Kentucky. Populations in these oxbows are the northernmost known of the species, and life history characteristics are compared to those of a central Florida population.

Citing 3 localities, Sisk (1973) recorded the presence of *Notropis maculatus* in extreme southwestern Kentucky, and expressed the opinion that these localities represented the northernmost limit in range of the species. In fact, however, *N. maculatus* also occurs, sometimes commonly, in the series of oxbow lakes lining the southern edge of the Ohio River in Ballard and McCracken counties in western Kentucky (Fig. 1). These oxbows are deep, have cypress swamp margins, and at least some of them are contiguous with the Ohio River during periods of flood.

In the Ohio River oxbows, *N. maculatus* was found mainly in marginal vegetation and in accumulations of sticks and debris in shallow water. Specimens collected have been deposited in the Illinois Natural History Survey (the number of specimens is given in parentheses): KENTUCKY, Ballard Co.: Mitchell Lake, 2 km NW Oscar, 29 August 1970 (6); 27 September 1973 (1); Butler Lake, 5 km NW Oscar, 14 August 1969 (3); Fish Lake, 5 km W Barlow, 10 September 1968 (2); Prairie Lake, 5 km W Gum Corners, 30 August 1970 (20); slough, 5 km W Gum Corners, 31 August 1970 (43). McCracken Co.: Crawford Lake, 3 km N Ragland, 14 August 1969 (4); Metropolis Lake, 5 km N Grahamville, 9 September 1967 (5); 10 September 1969 (10); 28 May 1972 (83); 26 April 1975 (5). Other fishes collected with *N. maculatus* in those lakes were *Polyodon spathula*, *Lepistosteus osseus*, *Amia calva*, *Dorosoma cepedianum*, *Esox niger*, *Hybognathus hayi*, *H. nuchalis*, *Notemigonus crysoleucas*, *Notropis emiliae*, *N. spilopterus*, *Noturus gyrinus*,

Fundulus notatus, *F. olivaceus*, *Gambusia affinis*, *Labidesthes sicculus*, *Aphredoderus sayanus*, *Lepomis cyanellus*, *L. gulosus*, *L. humilis*, *L. macrochirus*, *L. megalotis*, *L. microlophus*, *L. punctatus*, *Micropterus salmoides*, *Pomoxis annularis*, *P. nigromaculatus*, *Etheostoma asprigene*, *E. chlorosomum*, *E. gracile*, *E. proeliare*, and *Percina caprodes*.

The new localities (Fig. 1) apparently represent the northernmost limit in range of *N. maculatus*. A large amount of unsuccessful effort has been expended in searching for the species on the Illinois side of the Ohio River. Pflieger (1971, 1974) discussed the probable extirpation of the species from Missouri where it has not been found in more than 30 years. The general range of *N. maculatus* is described by Cowell and Barnett (1974).

The hiatus between the Ohio River oxbow records and the Mississippi River backwater pond records in southwestern Kentucky (Fig. 1) may be due to a lack of adequate collecting; however, an examination of topographic maps for the region of the hiatus reveals an apparent lack of suitable habitat for *N. maculatus* (i.e., few oxbows, sloughs, or backwater ponds) in this region and the species may actually be absent.

Collections of *N. maculatus* in the Ohio River oxbows have been made in April (5 specimens), May (83), August (77), and September (21), and some comparisons with life history characteristics of the species in central Florida as described by Cowell and Barnett (1974) can be made.

In Metropolis Lake, McCracken County, on 28 May 1972, a school of *N. maculatus*

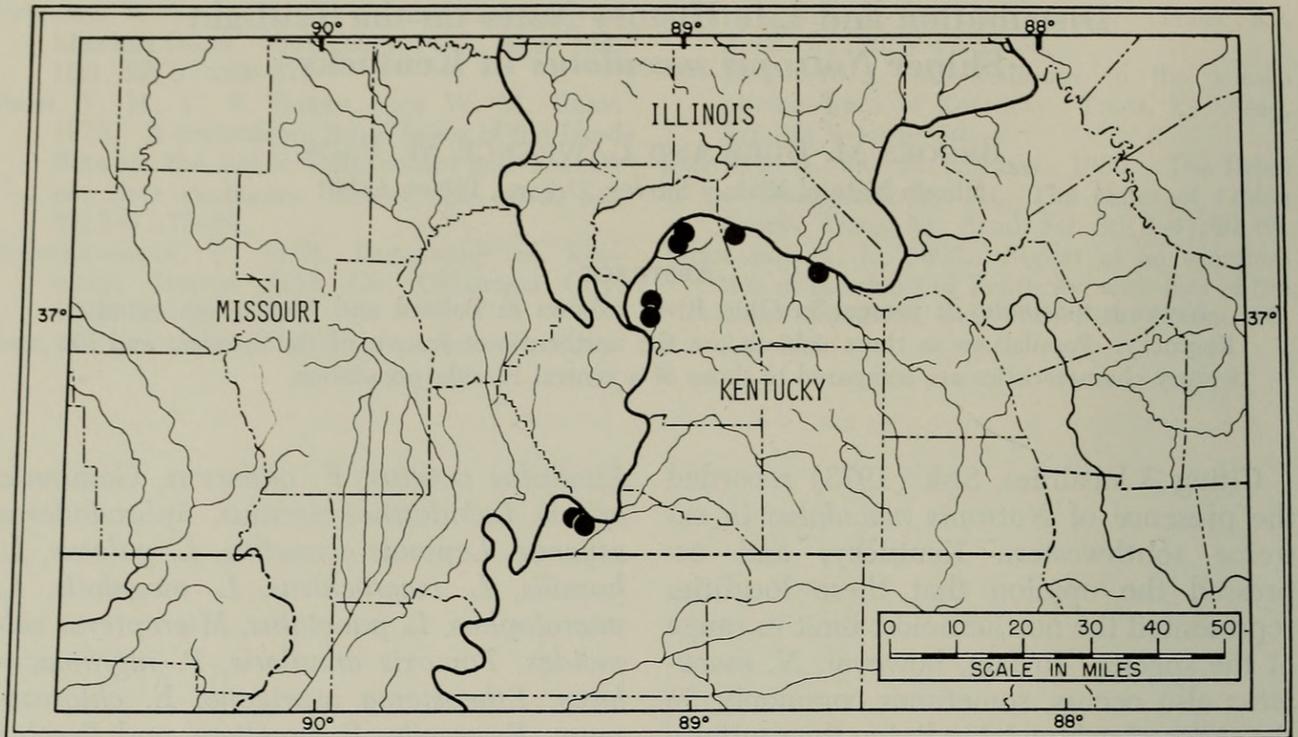


FIG. 1. Known localities from which *Notropis maculatus* has been collected in Kentucky. The southwestern records are those reported by Sisk (1973). The Ohio River oxbow localities are based on specimens reported in this paper.

was discovered spawning beneath or adjacent to a large log in water 15 to 30 cm deep. The breeding males were extremely brightly colored, with a suffusion of red over much of the body and head, in the iris of the eye, and distally on the dorsal, pelvic, anal, and caudal fins. The basicaudal black spot, the subdistal anterior black dorsal fin blotch, and the black midlateral band were all prominent (Fig. 2). Except for occasional gravid females with pale red snouts, females lacked red pigment. Small, white tubercles were variously present on the lateral snout, lower head, chin, and dorsally along the anterior rays of the pectoral fins. Breeding females were without tubercles. Florida breeding males were described as having red on the dorsal and pelvic fins and tubercles on the snout. Douglas' (1974) description of breeding males in Louisiana, "with much red on the head and body (especially the tips and edges of all fins)," is much more in agreement with the pigmentation of the Kentucky specimens.

Cowell and Barnett (1974) stated that in Florida, nonreproductive males larger than

30 mm total length could be distinguished from females by the presence in males of a "band of dusky spots along the anterior margin of the dorsal fin." This band was rarely evident on Kentucky specimens, being clearly developed only on a few males collected in August.

Although in Florida the species breeds from March to early October, with mature females and ripe males taken in every collection during these months, there is no indication of such a protracted spawning period in Kentucky. Young of the year were collected in April, and spawning individuals in May, indicating a spawning period extending at least from March to May; however, none of the individuals collected in August and September were in breeding condition.

In Florida, the number of mature ova (those over 0.8 mm in diameter) in 47 females ranged from 72 to 408 and averaged 163. In Kentucky, the number ranged from 25 to 431 and averaged 246 in 21 females collected on 28 May 1972. As in the Florida population, the largest females produced

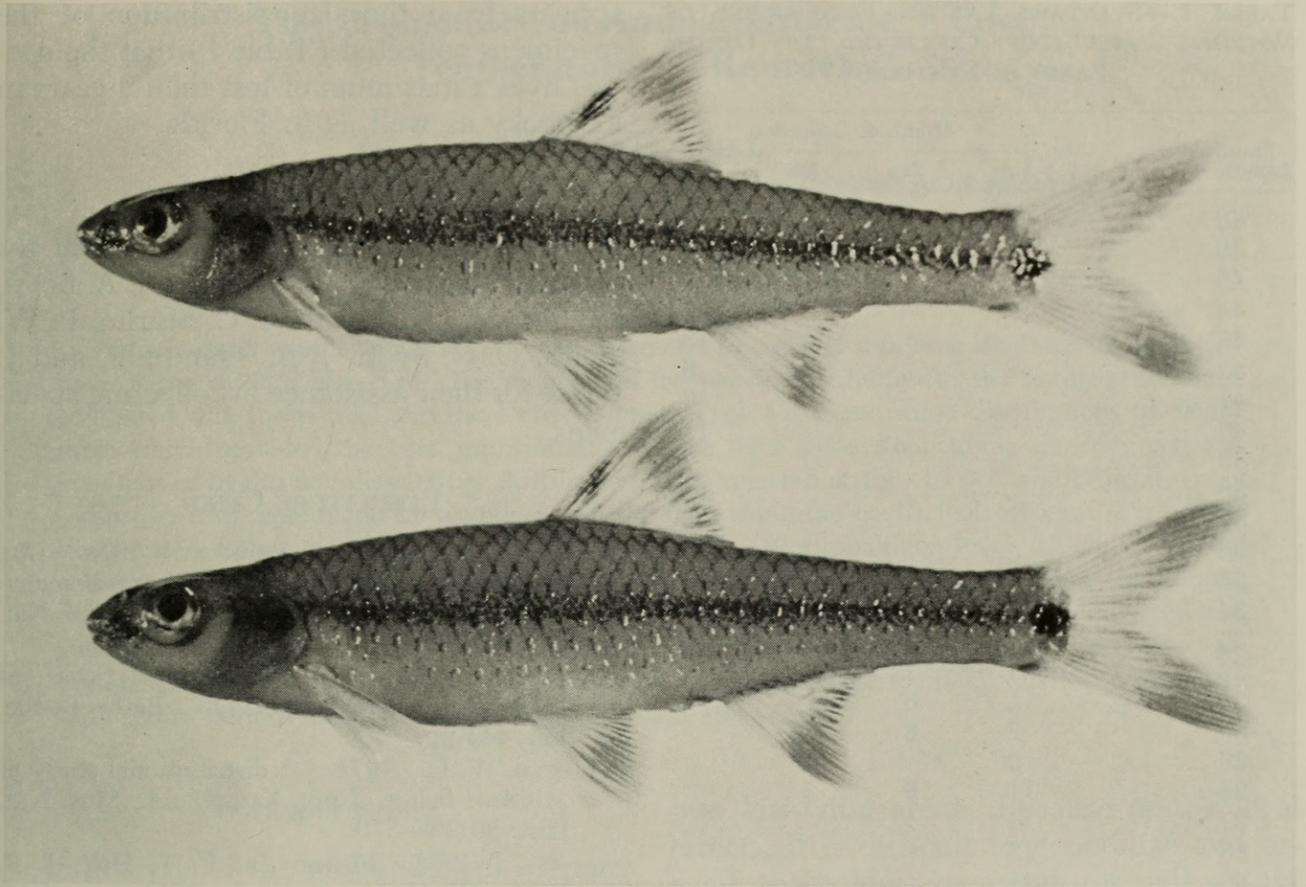


FIG. 2. *Notropis maculatus* tuberculate breeding males collected in Kentucky (Metropolis Lake, 5 km N Grahamville, McCracken Co., 28 May 1972).

the most eggs; the higher average number of eggs found for the Kentucky specimens probably was primarily a result of larger females being examined (11 of the 21 females were over 53 mm total length). The relationship between the number of mature ova (F) and the standard length (L) was $\log F = -5.808 + 5.013 \log L$, with $r = 0.53$, and between the number of mature ova and the total length (T) was $\log F = -5.105 + 4.319 \log T$, with $r = 0.47$.

The sex ratio of the 190 *N. maculatus* examined from Kentucky was 0.8 females to 1 male ($\chi^2 = 2.10$, n.s.), of the 106 specimens from Metropolis Lake was 0.5 females to 1 male ($\chi^2 = 9.66$, $p < .005$), and of the 83 specimens collected in Metropolis Lake on 28 May 1972 (the spawning school) was 0.4 females to 1 male ($\chi^2 = 18.32$, $p < .005$). Although females were found to outnumber males in Florida, males were relatively more common along the shoreline; all of our specimens were captured near shore.

As in Florida, females averaged significantly larger than males. The average total length of 22 females collected in Metropolis Lake on 28 May 1972 (range = 42.1 to 60.6 mm) was 52.7 mm, that of 61 males (range = 40.9 to 60.3 mm) was 48.6 mm ($t = 4.16$, $p < .005$). All were mature individuals and apparently about 1 year old. Although these averages are larger than those given for mature *N. maculatus* in Florida (mean total length for females = 44.4 mm, for males = 41.6 mm), younger fish may have been included in the Florida sample. The average standard length of the Kentucky females was 42.0 mm (range = 33.7 to 48.1 mm), of males was 39.6 mm (range = 32.6 to 47.8 mm). The largest specimen examined from Kentucky was a 48.1-mm SL, 60.6-mm TL female.

No annulus formation was discernible in Florida. In Kentucky, a weak annulus was visible on some individuals but aging by this method was not feasible. However, it

TABLE 1.—STANDARD LENGTH FREQUENCIES OF *NOTROPIS MACULATUS* COLLECTED IN OXBOW LAKES IN KENTUCKY

Standard Length, mm	Month of Collection			
	Aug	Sep	Apr	May
48				2
46				3
45				3
44				5
43				3
42				8
41				7
40				11
39			1	7
38				14
37				6
36			1	7
35				4
34		2		2
33		1		1
32	1	1		
31	1	6		
30	2	8		
29	2		1	
28	11	5	1	
27	4	1		
26	13			
25	21			
24	10			
23	4			
22	3			
21	2	1	1	
20	1			
19	1	1		

appears from the size distribution of the specimens collected (Table 1) that the species lives a maximum of less than 2 years in Kentucky as well as in Florida.

ACKNOWLEDGMENTS

We wish to thank Philip W. Smith for critically reading the manuscript, J. A. Boyd, E. Christian, E. L. List, J. C. Marlin, P. W. Smith, C. C. Swift, J. A. Tranquilli, and J. Weise for their assistance in collecting specimens.

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Burr, Brooks M. and Page, Lawrence M. 1975. "Distribution and Life History Notes on the Taillight Shiner *Notropis maculatus* in Kentucky." *Transactions of the Kentucky Academy of Science* 36(3-4), 71-74.

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