

An Unexpected Visitor:

A possible specimen of the Slenderhead Darter (*Percina phoxocephala*) in the Root River (Root River Parkway, Franklin, WI – Approximately 48.84750°N, 87.97350°W)

Michael J. Pauers, Ph.D.

Adjunct Curator of Fishes, Milwaukee Public Museum

University of Wisconsin-Milwaukee at Waukesha

Summary/Background

On Friday, 21 July 2023, during the surveys of the fish community of the Root River for the Waukesha Water Diversion project, an unusual-looking darter was captured and preserved for identification in the lab. It was captured in a shallow riffle alongside several specimens of Johnny Darter (*Etheostoma nigrum*) and Blackside Darter (*Percina maculata*), and two species of cyprinid/leuciscid minnows (Bluntnose Minnow, *Pimephales notatus*, and Sand Shiner, *Notropis stramineus*). While superficially similar to the Blackside Darters with which it was caught, the bright orange submarginal band on the spinous dorsal fin, along with a prominent black spot at the posterior end of the spinous dorsal, made the specimen distinct from the other darters.



This picture was taken a few hours after the fish was captured and placed in 10% formalin. Note the bright orange submarginal band and the posterior black spot on the spinous dorsal.



Here is a close-up view of the dorsal fin characteristics.

Morphological and Meristic Characteristics and Comparisons

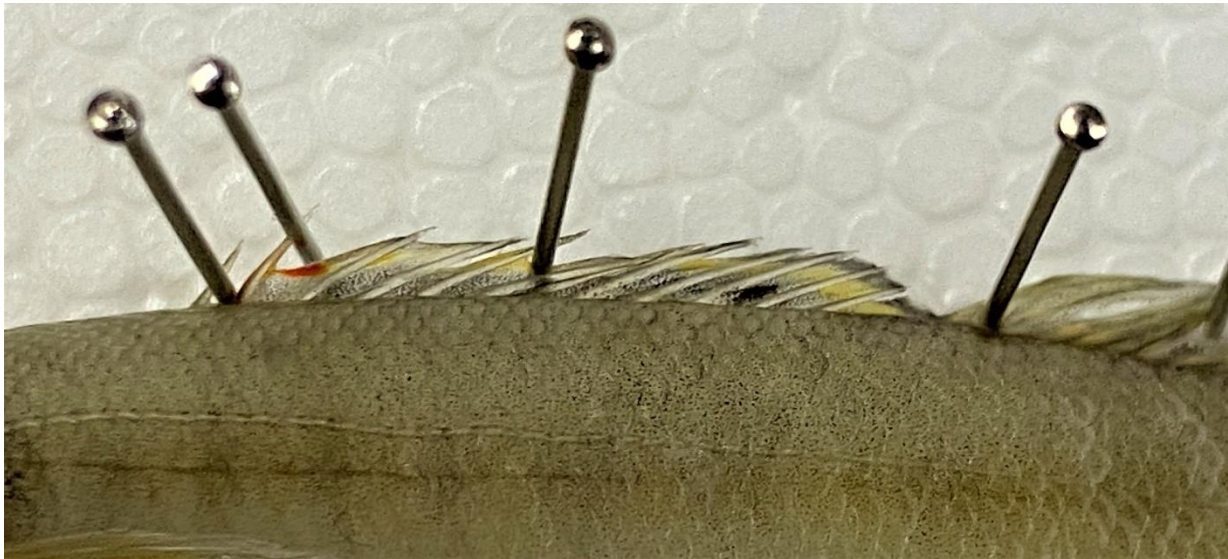
The standard length of the specimen is 61.45 mm, and the total length is 71.67, which is close to Becker's (1983) proposed TL/SL ratio of 1.18 for the Slenderhead Darter. The body depth is 10.25 mm, and the SL/BD ratio is 6.00, which is also within Becker's (1983) proposed range for Slenderhead Darter. The head length is 15.02 mm, and the SL/HL ratio is 3.7, which also agrees with Becker's (1983) proposed range for Slenderhead Darter. The spinous dorsal fin is 18.19 mm, and the rayed dorsal fin is 11.75 mm, yielding SL/Fin Length ratios of 3.38 and 5.23, respectively, both of which are in the ranges proposed by Becker (1983) for the Slenderhead Darter.

The specimen has 70 lateral line scales, and there are 24 scales around the caudal peduncle, both of which are characteristic of Slenderhead Darter. The spinous dorsal fin contains 12 spines, and the rayed dorsal fin contains 12 rays; these counts are within the ranges indicated by Becker (1983) for the Slenderhead Darter. Unusually, the anal fin has a single spine (unless the second spine is atypically soft and flexible) and 10 rays, which also agrees with Becker's (1983) ranges for these characteristics in *P. phoxocephalus*. There are single, enlarged, shield-like scales at the bases of the pectoral and pelvic fins, though the rest of the belly is naked, indicating that this specimen is a female.

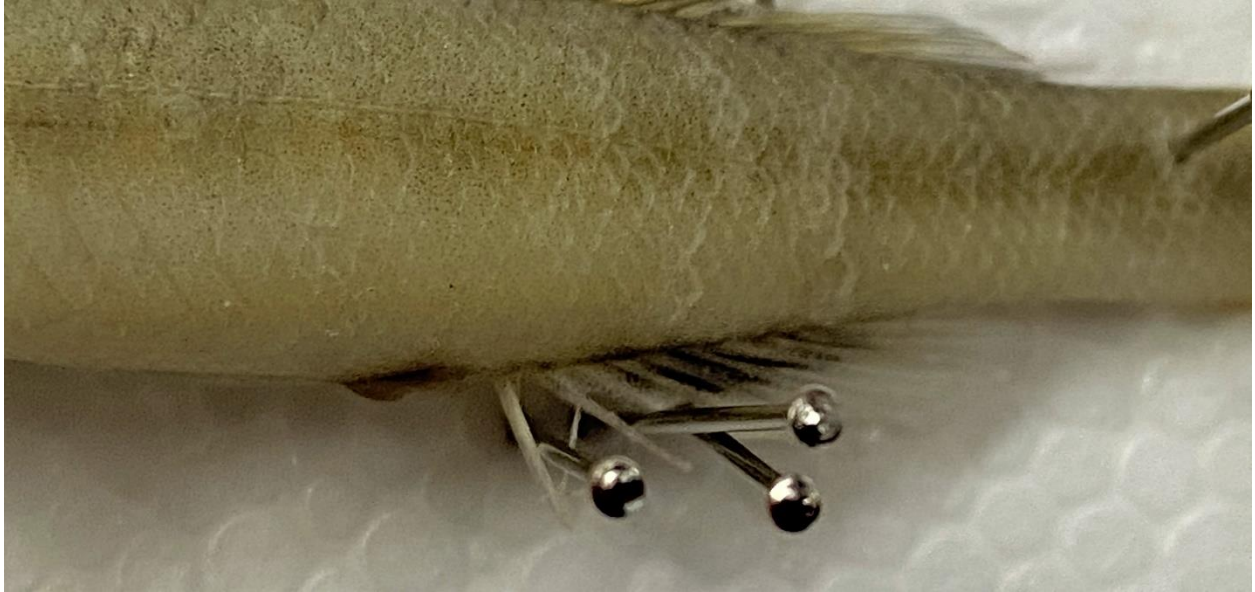
What follows are additional photos of various aspects of the specimen after 5 days in formalin.



ABOVE: The specimen pinned for easier fin spine/ray counting.



ABOVE: A close view of the dorsal fin. Although the color has faded somewhat, the orange submarginal band is still evident, as is the black spot on the posterior end of the fin.



ABOVE: A close view of the anal fin. Note that only the first support element appears to be a spine. The posterior elements all appear to be cartilaginous rays.



ABOVE: A close view of the head.

Finally, here is a comparison of morphometric measurements and meristic counts for Wisconsin specimens of Slenderhead Darter, Blackside Darter, and the unusual specimen. According to the characteristics listed in Becker (1983), the unusual specimen is a Slenderhead Darter.

<u>Characteristic</u>	<u>Slenderhead</u>	<u>Unknown</u>	<u>Blackside</u>
Standard Length (avg)	64 mm	61.45 mm	71 mm
SL/Body Depth	4.5-6.0	6.0	4.7-5.5
SL/Head Length	3.5-3.7	3.7	3.5-3.8
SL/Spinous Dorsal	3.3-3.5	3.38	3.3-3.5
SL/Rayed Dorsal	5-5.5	5.23	5.0-6.0
Lateral Line Scales	65-71	70	56-68
Caudal Peduncle Scales	23-25	24	20-23
Dorsal Fin Spines	12-13	12	12-15
Dorsal Fin Rays	12-14	12	13-15
Anal Fin Spines	2	1	2
Anal Fin Rays	9-10	10	10-11
Orange Submarginal Band on Spinous Dorsal?	Yes	Yes	No
Spinous Dorsal Black Throughout Fin?	No	No	Yes
Black Spot Present in Posterior Spinous Dorsal?	Yes	Yes	No

BELOW: A comparison of Slenderhead Darter (top), the unknown darter (middle), and a Blackside Darter (bottom). The Slenderhead and Blackside Darter specimens were obtained from the collection of the Milwaukee Public Museum.



I also note that I used three keys, Becker (1983), Kuehn and Barbour (1983), and Page (1983) to identify the unknown darter. Using the characteristics I have described in this document, all three keys identified the unknown as a Slenderhead Darter.

Conclusion

Although it seems highly likely that the unusual specimen is a Slenderhead Darter, it is appropriate to be skeptical of this identification at this time. The Slenderhead Darter is not known from the Root River, nor is it known from Milwaukee or Racine Counties (Becker 1983; Fago 1984; Fago 1992). The closest major riverine watershed known to host the Slenderhead Darter is the Des Plaines/DuPage watershed in northeastern Illinois, which does extend into southeastern Wisconsin, although how this species could move from that watershed to the Root River is completely unknown.

Given that only a single specimen was recovered, it is necessary to explore this site of the Root River much further, with the hopes of finding additional specimens.