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GENERAL NOTES

An Unusual *Hybognathus* (Osteichthyes, Cyprinidae) from Lower White River, Arkansas

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The cyprinid genus, *Hybognathus*, is currently treated as containing seven species (Schmidt, 1994) of which three have been documented to occur in Arkansas, namely, *Hybognathus nuchalis* (Mississippi silvery minnow), *H. placitus* (Plains minnow), and *H. hayi* (cypress minnow) (Robison and Buchanan, 1988). A fourth species, *Hybognathus argyritis* (western silvery minnow), known from neighboring Missouri, but not heretofore collected from Arkansas, is the focus of this paper.

*Hybognathus nuchalis*, *H. argyritis*, and *H. placitus* constitute a close-knit group having recent distributional relationships that seem to reflect their distributions in preglacial times (Pflieger, 1971). *H. nuchalis* is widespread in the central Mississippi Valley whereas *H. argyritis* has its distributional center in the upper Missouri River system, and *H. placitus* is widespread in the central and plains states. Pflieger (1971) resurrected the name *Hybognathus argyritis* Girard for the form in the Missouri River system, and he restricted the name *H. nuchalis* Agassiz to the form in the central Mississippi Valley.

On 17 October 2003 a University of Tennessee Regional Faunas class collected and preserved 45 *Hybognathus* specimens from river miles 14-15, lower White River, Desha/Arkansas county line, Arkansas. One of these (39 mm SL) has a basioccipital process characteristic of *H. argyritis*, a species not known from Arkansas (Robison and Buchanan, 1988). It was entered into the University of Tennessee Research Collection of Fishes (UT) as *H. argyritis* (UT 44.10001). Etnier noted at the time that its eye did not seem appreciably smaller than that of a 41 mm SL specimen of *H. nuchalis* from the same collection (UT 44.10002, 44 specimens, 41-75 mm SL). A more careful examination of the “*H. argyritis*” specimen indicated that its eye was even larger (3.2 mm) than that of the 41 mm SL *H. nuchalis* from UT 44.10002 (3.0 mm). Comparison with a 40 mm SL *H. argyritis* (UT 44.7179) from Missouri River Mile 16.4 made it clear (eye diameter 2.1 mm) that we did not have a typical specimen of *H. argyritis*.

Two characters serve to best separate *H. nuchalis* from *H. argyritis* - the shape of the basioccipital process and the size of the eye. Pflieger (1971) stated that the only truly diagnostic character for separating *H. nuchalis* and *H. argyritis* is the shape of the basioccipital process. In *H. nuchalis*, the basioccipital is greatly expanded posteriorly, and the posterior margin is deeply emarginate (Niazi and Moore, 1962; Fig. 21). The process in *H. argyritis* is less expanded posteriorly, and the posterior margin is truncate or only shallowly emarginate (Etnier and Starne, 1993; Fig. 82). In *H. placitus* the basioccipital process is narrow and peg-like with the muscles nearly touching at the point of attachment to the process whereas the process itself is broad and blade-like with muscles well-separated at the point of attachment to the basioccipital process in *H. nuchalis* and *H. argyritis* (Pflieger, 1997).

Eye length is greater in *H. nuchalis* than in *H. argyritis*. In *H. nuchalis* the eye diameter is greater than the width of the mouth opening whereas in *H. argyritis* the eye diameter is less than the mouth opening. In *H. argyritis* the head length is 4.4-4.8 times the eye diameter whereas in *H. nuchalis* the eye is slightly larger, and head length is only 3.6-4.2 times the eye diameter.

Possible identifications of this lower White River specimen are (1) a southern “race” of *H. argyritis* with a large eye; (2) a hybrid between *H. placitus* and *H. nuchalis*; (3) a hybrid between *H. nuchalis* and some other cyprinid; (4) a misidentification of a non-*Hybognathus* minnow; (5) a riverine waif of *H. hayi*, a species associated with cypress swamps; (6) mere within population variation in basioccipital shape in *H. nuchalis*; or (7) an unknown species of *Hybognathus*. Possibility (2) seems unlikely, as *H. placitus* is known from only extreme western Arkansas and has an extremely small eye; (3) and (4) seem unlikely as the coiled gut, black peritoneum, and pharyngeal tooth count and shape are typical for *Hybognathus*, and the specimen is definitely not *Notropis nubilus*; (5) a 39 mm SL *H. hayi* from the Hatchie River system, TN, has a much more terminal mouth and more broad basioccipital process (1.1 mm vs. 0.6 mm); and (6) we examined the basioccipital process of all 44 specimens in UT 44.10002 and from hundreds of additional *Hybognathus* collected in the lower Mississippi River and have not noted visible variation. The most likely possibilities are thus a large-eyed southern race of *H. argyritis* or an unknown species. Since a dam is already
under construction at White River mile 0.5, efforts should be made to secure additional specimens in the lower White and Arkansas rivers and adjacent Mississippi River.

Literature Cited


