

## EXTENSIONS OF THE KNOWN RANGES OF *ERICYMBA BUCCATA* COPE AND *ETHEOSTOMA ZONALE* (COPE) IN THE SUSQUEHANNA RIVER DRAINAGE

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### ABSTRACT

Several populations of *Ericymba buccata* Cope, silverjaw minnow, and *Etheostoma zonale* (Cope), banded darter, are indicated by recent collections in the Susquehanna River drainage. These represent range extensions to three additional subdrainages for the silverjaw minnow and downstream movement of 400 kilometers for the banded darter. Specimens and deposition are recorded.

### INTRODUCTION

We have been involved in extensive collections of the Susquehanna River drainage since 1966. Recently two species of fishes; *Ericymba buccata* Cope, (Cyprinidae) silverjaw minnow, and *Etheostoma zonale* (Cope), (Percidae) banded darter; were taken at several localities that represent range extensions of considerable distance and/or occurrence into subdrainages not heretofore reported in the literature.

The purpose of this paper is to record numbers and locations of collections and the deposition of specimens. Most specimens or a subsample will be deposited at the University of Maryland, Center for Environmental Studies, Lavale, Maryland.

#### *Ericymba buccata* Cope, the Silverjaw Minnow

The silverjaw minnow has a disjunct distribution which includes three areas: the upper and eastern Mississippi drainage, tributaries of the northern Gulf of Mexico, and the Potomac - Rappahannock - lower Susquehanna (Wallace, 1973). It was not listed for the Susquehanna drainage in Fowler (1940) or Bielo (1963), the latest papers on fishes of that drainage. Wallace (1969, 1973) reported specimens from Conewago Creek, Adams County, Pa. and Denoncourt and Stambaugh (1975) reported a specimen from Codorus Creek, York County, Pa. An intensive review of the literature (Denoncourt and Cooper, manuscript: A review of the literature and checklist of fishes of the Susquehanna River drainage above Conowingo Dam, Proc. Pa. Acad. Sci., in review) revealed no other records. The following specimens are reported.

1. One specimen (35.3 mm fork length) reported by Denoncourt and Stambaugh (1975) will be deposited at Lavale, Maryland. It was taken on 24 July 1972 in Codorus Creek at Spring Grove, York County, Pa.
2. One specimen (47.2 mm FL) was taken in Conowingo Pond on the southeast shore of Sicily Island, Lancaster County, Pa. on 5 August 1971. It will be deposited at Lavale, Maryland. Additional specimens were taken in 1972 and will be retained for reference at Ichthyological Associates, Drumore, Pennsylvania. The above specimens but not associated data were in a checklist in Robbins and Mathur (1974a and 1974b) and U.S. Atomic Energy Commission (1974).
3. Eight specimens (33.4 to 48.8 mm FL) were taken on 17 October 1974 in Conodoguinet Creek, under the route 34 bridge north of Carlisle, Cumberland County. Specimens will be deposited at Lavale, Maryland.

4. Specimens are regularly collected by R. Fisher (pers. comm.) of Juniata College in Crooked Creek at Huntingdon, Huntingdon County, Pa. A series is to be deposited at Lavale, Maryland.

The occurrence of the silverjaw minnow in Codorus Creek, Conodoguinet Creek, the Juniata drainage, and the Susquehanna River may be the result of baitbucket transfers and/or the 1972 flood (hurricane Agnes). This species is a common associate of the bluntnose minnow, *Pimephales notatus* (Rafinesque) as described in Wallace (1972) and Hoyt (1970). The bluntnose minnow is a common baitfish.

#### *Etheostoma zonale* (Cope), the banded darter

The banded darter has a wide distribution in the Mississippi drainage from Kansas and Tennessee north to Minnesota and New York. It was not mentioned for the Susquehanna drainage by Fowler (1940) or Bielo (1963), nor in extensive taxonomic and distributional studies by Tsai (1966) and Tsai and Raney (1974). Kneib (1972) reported a population of the banded darter in Little Pine Creek, a tributary of Pine Creek in Lycoming County. Pine Creek flows into the West Branch of the Susquehanna River. E.L. Cooper (pers. comm.) has extensively collected Pine Creek and Little Pine since 1962. He did not find the banded darter in any of 19 collections made in this watershed during the period 1962 to 1965. However, a survey of Pine Creek in 1971 (before the record flood of the hurricane "Agnes") revealed the banded darter throughout much of Pine Creek. Specimens and deposition are reported here for series from Pine Creek and the lower Susquehanna.

1. Twenty-three specimens (44 to 64 mm FL) were taken in Stony Creek, Dauphin County from the first riffle above the mouth and below the dam in Dauphin on 13 October 1974. The specimens will be deposited at Lavale, Maryland.
2. One specimen (40 mm FL) was taken near Three-Mile Island in the Susquehanna River, Dauphin County. The specimen was listed, but not described, in Potter (1973), and will be used for reference by Ichthyological Associates at Goldsborough, Pennsylvania.
3. Six specimens were taken in Conowingo Pond, Lancaster County. One (44 mm FL) was collected in 1973 and five (29.4 to 35.1 mm FL) in 1974. Presence was listed in Robbins and Mathur (1975). Specimens will be used for reference by Ichthyological Associates, Drumore, Pennsylvania.
4. A total of 88 specimens (26 to 70 mm FL) were collected on 12 July 1971 in Pine Creek, 5 miles above the mouth, Lycoming County. A subsample of 25 will be deposited at Lavale, Maryland and the remainder at Pennsylvania State University Museum, State College, Pennsylvania.
5. A total of 81 specimens (26 to 61 mm FL) were collected on 22 July 1971 in Pine Creek one mile below Cammal, Lycoming County. A subsample of 25 will be deposited at Lavale, Maryland and the remainder at Pennsylvania State University.

The collection of the banded darter in Dauphin and Lancaster Counties represents a movement of approximately 400 kilometers in three years. The five small specimens from Conowingo Pond indicate successful reproduction of the species in Conowingo Pond or its tributaries. The original population of the banded darter in Little Pine Creek may have been a baitbucket transfer. The downstream movement of the species may have been aided by hurricane Agnes in 1972. In either case, a population is now well established in the lower Susquehanna drainage.

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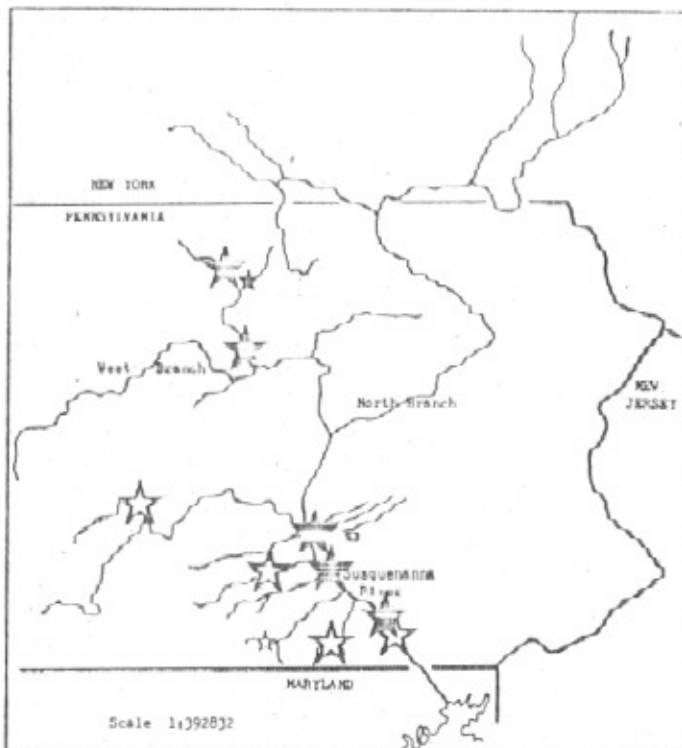


FIGURE 1. Locations for the silverjaw minnow and banded darter in the Susquehanna River drainage. Populations reported in this paper are indicated by large stars, silverjaw minnow reported in Wallace (1973) by a small open star and banded darter reported in Kneib (1972) a small solid star.

### CONCLUSIONS

1. The distribution of the silverjaw minnow is extended to four subdrainages of the Susquehanna River.
2. The distribution of the banded darter is extended to five locations in the Susquehanna River Drainage, one of which represents downstream movement of 400 km, successful reproduction, and thus, the establishment of a population.
3. Deposition and availability of specimens is reported for other scientists.

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### LITERATURE CITED

- Biclo, R.J. 1963. A fishery investigation of the Susquehanna River in Pennsylvania. Master's Thesis, Univ. Delaware, Norfolk, Del.
- Denoncourt, R.F. and J.W. Stambaugh, Jr. 1974. An ichthyofaunal survey and discussion of fish species diversity as an indicator of water quality, Codorus Creek drainage, York County, Pennsylvania. Proc. Pa. Acad. Sci. 48:71-78.
- Fowler, H.W. 1940. A list of the fishes recorded from Pennsylvania. Pa. Bd. Fish Comm., Bull. 7, p. 1-25.
- Hoyt, R.D. 1970. Food habits of the silverjaw minnow, *Ericymba buccata* Cope, in an intermittent stream in Kentucky. Amer. Midl. Natur. 84(1):226-236.
- Kneib, Ronald T. 1972. The effects of man's activity on the distribution of five stream fishes in Little Pine Creek, Pennsylvania. Proc. Pa. Acad. Sci. 46:49-51.
- Potter, W.A. et al. 1975. An ecological study of the Susquehanna River in the vicinity of the Three Mile Island Nuclear Station. Ichthyological Associates, Ithaca, New York. 468 p.
- Robbins, T.W. and D. Mathur. 1974a. Peach Bottom Atomic Power Station preoperational report on the ecology of Conowingo Pond for Unit No. 1. Ichthyological Associates, Inc., Drumore, Pa. 142 p.
- Robbins, T.W. and D. Mathur. 1974b. Peach Bottom Atomic Power Station preoperational report on the ecology of Conowingo Pond for Units No. 2 and 3. Ichthyological Associates, Inc., Drumore, Pa. 349 p.
- Robbins, T.W. and D. Mathur. 1975. Peach Bottom Atomic Power Station preoperational report on the ecology of Conowingo Pond for Unit No. 2. Ichthyological Associates, Inc., Drumore, Pa. 192 p.
- Tsai, C. 1966. A study of the systematics of *Etheostoma zonale* (Cope) and its relatives, and the phylogeny of subgenus *Etheostoma* Rafinesque (Percidae, teleostei). Ph.D. Dissertation, Cornell University, Ithaca, New York.
- Tsai, C. and E. C. Raney. 1974. Systematics of the banded darter, *Etheostoma zonale* (Pisces: Percidae). Copeia (1):1-24.
- U.S. Atomic Energy Commission. Draft Environmental Statement related to the proposed Fulton Generating Station units 1 and 2. Docket Nos. 50-463 and 50-464, May 1974.
- Wallace, D.C. 1969. A study of the ecology and life history of the silverjaw minnow, *Ericymba buccata* Cope (Pisces, Cyprinidae). Ph.D. Dissertation, Cornell University, Ithaca, N.Y.
- Wallace, D.C. 1972. The ecology of the silverjaw minnow, *Ericymba buccata* Cope. Amer. Midl. Natur. 87(1):172-190.
- Wallace, D.C. 1973. The distribution and dispersal of the silverjaw minnow, *Ericymba buccata* Cope. Amer. Midl. Natur. 89(1):145-155.