

## A NEW SPECIES OF *BAETISCA* FROM WEST VIRGINIA (Ephemeroptera: BAETISCIDAE)<sup>1</sup>

Donald C. Tarter<sup>2</sup>, Ralph F. Kirchner<sup>3</sup>

**ABSTRACT:** A new species of *Baetisca* is described from West Virginia. The type locality is Laurel Fork of Pigeon Creek, Mingo County, West Virginia. Other records include Logan and Nicholas Counties, West Virginia and Smyth and Washington Counties, Virginia.

Presently, there are eleven species in the mayfly genus *Baetisca* known from the United States, with a twelfth species found in eastern Canada (Edmunds et. al., 1976). Seven species of *Baetisca* are reported as occurring in the southeast. The authors are now presenting the description of another new southeastern species.

Prior to this investigation, the following species of *Baetisca* were recorded for West Virginia: *B. bajkovi* Neave, *B. callosa* Traver and *B. carolina* Traver (Needham et. al., 1935 and Faulkner and Tarter, 1977). Other investigators, including Berner (1940, 1955), Edmunds (1960), Lehmkuhl (1972), McDunnough (1932), Pescador and Peters (1974) and Schneider and Berner (1963), have reported information on the genus *Baetisca*.

Due to the lack of adult specimens, the authors are using the nymphs for their descriptions. The nymphal characteristics of *Baetisca* are so diverse that they are more suitable for differentiation of species.

### *Baetisca berneri*, new species

*Baetisca berneri* is closely related to *B. carolina*, a species described by (Traver, 1931) in Guilford County, North Carolina. The nymphs are significantly different and can be easily separated.

There are very distinct dark bands near the base of the caudal filaments of *B. berneri*, (Figure 1), while absent in *B. carolina*. *Baetisca berneri* is also characterized by intense pigmentation and broad banding on the legs (Figure 1) which is lacking in *B. carolina*. *Baetisca berneri* has a much darker and more solid brownish to black coloration on the ventral surface of the head, thorax, and abdomen than *B. carolina*. The ventral surface of *B. carolina* has more of an irregular or mottled appearance. *Baetisca carolina* is more densely spotted on the head and mesonotal shield, with the spots being larger than on *B. berneri*. The spots on the abdominal tergites of *B. carolina* are also larger and darker than those on *B. berneri*. In *B. berneri* the small antero-lateral extensions of the mesonotum are distinctly sharper and more pointed or spine-like than in *B. carolina*.

<sup>1</sup> Accepted for publication: September 11, 1978

<sup>2</sup> Dept. of Biological Sciences, Marshall University, Huntington, WV 25701

<sup>3</sup> Rt. 1, Box 412A, Barboursville, WV 25504

**HOLOTYPE:** Nymph (male). Body length excluding genal spines 9.2 mm; head width including eyes 2.7 mm; caudal filaments 2.3 mm.

**HEAD:** Yellowish-brown with dark reddish-brown granulations; genal spines well developed and upturned, distal 0.15 mm a dark brown; distance between distal points of the genal spines 1.91 mm; genae fringed with small fine hairs; frontal projections moderately developed. Eyes black; ocelli inconspicuous. Antennae mostly a brownish unicolor with only a slight darkening of distal segment.

**THORAX:** The mesonotal shield with well developed lateral spines; dorsal spines absent. Width of mesonotal shield from tip to tip of lateral spines 5.75 mm; length from anterior to posterior margin 5.65 mm. Mesonotal shield with dark reddish-brown spots arranged in rows and whorls; thoracic sterna an almost solid dark brown coloration.

**LEGS:** Legs with very distinct and intensely pigmented banded markings. A very broad blackish band nearly covers length of the femur; smaller bands on medial portion of tibia and tarsus. Protarsus 1.9 times length of tibia; mesotarsus 1.6 times length of tibia; metatarsus 1.7 times length of tibia. Numerous fine hairs along length of femur; hairs sparse on tibia and tarsus.

**ABDOMEN:** Postero-lateral margins of abdominal segments 6-9 weakly serrate. Abdominal segments 7-9 with brownish median spot on tergite. Sterna almost solid brownish-black coloration except segments 8 and 9 scattered and mottled.

**CAUDAL FILAMENTS:** Filaments marked with very distinct blackish banding at base; cerci and terminal filament equal in length, 2.3 mm, and fringed with long hairs; annulate markings appear their entire length.

**ALLOTYPIC:** Nymph (female). Same description as the holotype male except for the following descriptive measurements. Body length excluding genal spines 11.1 mm; head width including eyes 3.0 mm; caudal filaments 2.6 mm.

**HEAD:** Distance between distal points of the genal spines 2.15 mm; distal 0.17 mm a dark brown. The eyes of the female much smaller and more triangular in shape than the male.

**THORAX:** Width of the mesonotal shield from tip to tip of lateral spines 7.35 mm; length 6.75 mm.

**LEGS:** Protarsus and mesotarsus 1.80 times the length of tibia; metatarsus 1.75 times the length of tibia.

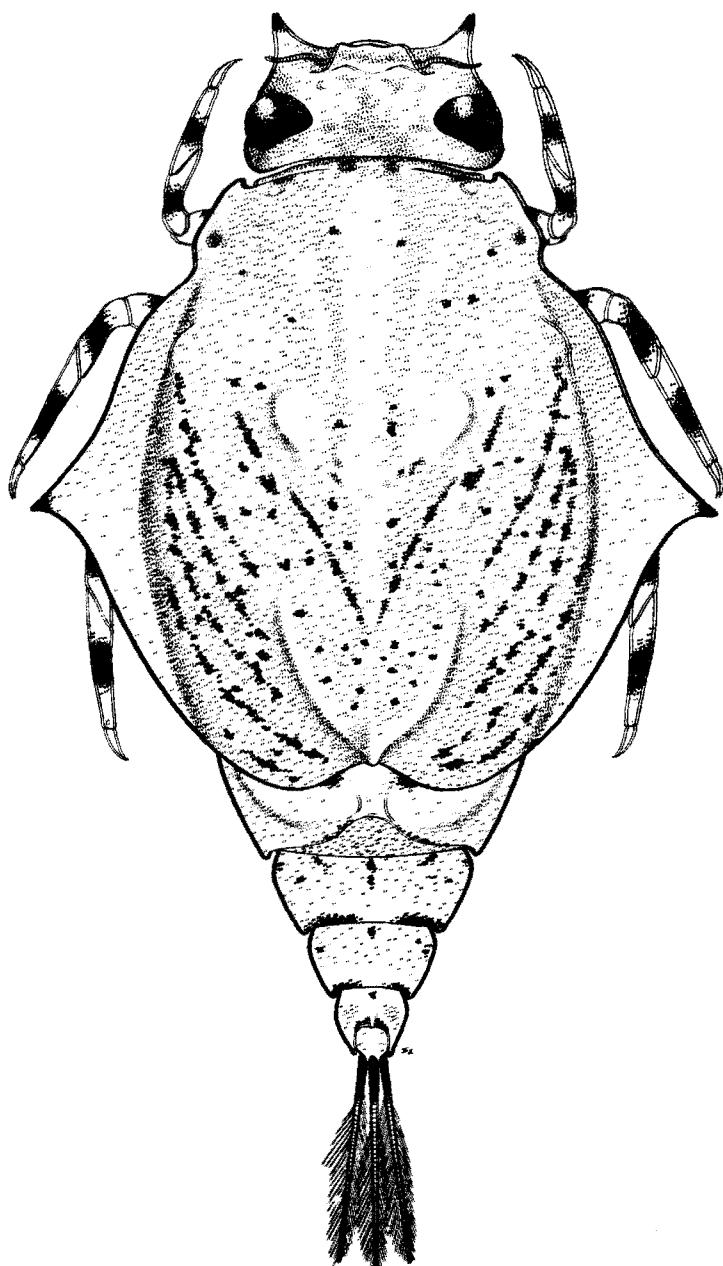
**HOLOTYPE:** Male nymph, preserved in alcohol. West Virginia, Mingo County, Laurel Fork, 13 April 1974. In laboratory of Aquatic Entomology, Florida A & M University, Tallahassee, Florida.

**ALLOTYPIC:** Female nymph, preserved in alcohol. Same station and collection data as male holotype. In laboratory of Aquatic Entomology, Florida A & M University, Tallahassee, Florida.

**PARATYPES:** Size range measurements differed somewhat between the male and female nymphs (Table 1). Nine male and eleven female nymphs preserved in alcohol. Same station and collection data as holotype and allotype. Male and female paratypes were deposited in the collections of the University of Florida, Cornell University, and Illinois Museum of Natural History. The remaining specimens are stored in the West

---

Figure 1. Dorsal view of a mature female nymph of *Baetisca berneri*, new species.



Virginia Benthological Survey at Marshall University.

LOCALITY RECORDS: Mingo County, West Virginia, Laurel Fork of Pigeon Creek, 13 April 1974. Holotype, allotype, and paratypes (Donald C. Tarter, Ralph Kirchner, Gerald Faulkner, and Tom Mayberry). Smyth County, Virginia, Big Laurel Creek, 20 February 1975 (Ralph Kirchner). Nicholas County, West Virginia, Panther Creek, 25 July 1975 (Dwight Chaffee and Jack Humphrey). Logan County, West Virginia, Copperas Mine Fork of Island Creek, 10 February 1976 (Ralph Kirchner and Tom Mayberry). Washington County, Virginia, Straight Creek of Big Laurel Creek, 19 March 1976 (Ralph Kirchner).

TYPE LOCALITY: Laurel Fork of Pigeon Creek, near Lenore, Mingo County, West Virginia. Collection site 3.2 km (2 mi) upstream from the head of Laurel Lake, elevation 273.6 m (903 ft). Stream width approximately 4.6 m (15 ft) with the water depth ranging from shallow riffles to 74 cm (2 ft). The substrate consists of rock with gravel and sand occurring in places. This is a mountain type stream draining steep densely forested slopes.

HABITAT PREFERENCE: The nymphs seemed to prefer slow to medium water speeds, with depths ranging from 15 to 46 cm, and a substrate mixture of sand, gravel, and small stones. They were found clinging to gravel and small stones, and were also observed resting in the sand with the outer edge of their carapace covered (Morris, 1976).

This new *Baetisca* species is named in honor of Dr. Lewis Berner, University of Florida, in recognition of his contributions to the genus *Baetisca* and the order Ephemeroptera.

#### ACKNOWLEDGEMENTS

We express our appreciation to Dr. Manuel L. Pescador, Florida Agricultural and Mechanical University; and Mr. Dwight L. Chaffee, a graduate student in the Depart-

Table 1. Size Range Measurements (millimeters) of Male and Female Paratypes of *Baetisca berneri*

Measurements	Male	Female
Body length	5.35 – 9.10	6.95 – 11.00
Head width	1.68 – 2.69	1.95 – 2.99
Mesonotal length	3.15 – 5.60	4.16 – 6.94
Mesonotal width	3.43 – 5.75	4.69 – 7.45
Caudal filaments	1.48 – 2.31	1.91 – 2.62
Distance between the genal spine tips	1.47 – 1.85	1.49 – 2.29

Table 1. Size Range Measurements (millimeters) of male (9) and female (11) paratypes of *Baetisca berneri*.

ment of Biological Sciences at Marshall University for their help in the preparation of this manuscript. Also, we thank Steve Lawton for illustrating the nymph and Vickie Crager for typing the manuscript.

## REFERENCES

- Berner, L. 1940. *Baetisca rogersi*, a new mayfly from northern Florida, Canad. Entomol. 62:156-160.  
\_\_\_\_\_. 1955. The southeastern species of *Baetisca* (Ephemeroptera: Baetiscidae). Quart. J. Fla. Acad. Sci. 18:1-19.  
Edmunds, G.F. 1960. The mayfly genus *Baetisca* in western North America. Pan-Pacific Entomol. 36:102-104.  
\_\_\_\_\_. S.L. Jensen, and L. Berner. 1976. The mayflies of North and Central America. University of Minnesota Press, Minneapolis, Minn. 330 pp.  
Faulkner, G.M. and D.C. Tarter. 1977. Mayflies, or Ephemeroptera, of West Virginia with emphasis on the nymphal stage. Ent. News 88:202-206.  
Lehmkuhl, D.M. 1972. *Baetisca* (Ephemeroptera: Baetiscidae) from the western interior of Canada with notes on the life cycle. Canad. J. Zool. 50:1015-1017.  
Morris, W.R. 1976. Ecological life history of *Baetisca* n.sp., Laurel Fork, Mingo County, West Virginia (Ephemeroptera: Baetiscidae). Unpub. Masters Thesis, Marshall University, Huntington, West Virginia 44 pp.  
McDunnough, J. 1932. New species of North American Ephemeroptera II. Canad. Entomol. 64:209-215.  
Needham, J.G., J.R. Traver, and Y. Hsu. 1935. The Biology of Mayflies. Comstock Publishing Co., Inc. Ithaca, N.Y. 759 pp.  
Pescador, M.L. and W.L. Peters. 1974. The life history and ecology of *Baetisca rogersi* Berner (Ephemeroptera: Baetiscidae). Bull. Fla. State Mus. Biol. Sci. 17:151-209.  
Schneider, R.F. and L. Berner. 1963. A new southeastern species of *Baetisca* (Ephemeroptera: Baetiscidae). Fla. Entomol. 46:183-187.  
Traver, J.R. 1931. The ephemerid genus *Baetisca*. J.N.Y. Entomol. Soc. 39:45-66.