Banisteria 18: 35-37

Nemotaulius hostilis (Trichoptera: Limnephilidae), a Boreal Caddisfly New to the Virginia Fauna

Steven M. Roble

Virginia Department of Conservation and Recreation
Division of Natural Heritage
217 Governor Street
Richmond, Virginia 23219

Oliver S. Flint, Jr.

Section of Entomology
National Museum of Natural History
Smithsonian Institution
Washington, DC 20560

The biota of Virginia includes numerous boreal species, some of which range southward along the highest peaks of the Blue Ridge and Alleghany Mountains to North Carolina and Tennessee, whereas others reach their southern range limits in Virginia (Hoffman, 1969; Woodward & Hoffman, 1991).

Nemotaulius hostilis (Hagen) is the lone Nearctic representative of a small Holarctic genus of limnephilid caddisflies (Wiggins, 1977, 1996). Wiggins (1977) cited the known range of *N. hostilis* as transcontinental from British Columbia and Oregon to Newfoundland, and south to New England and Michigan. The species was subsequently reported from Pennsylvania (Masteller & Flint, 1979, 1992) and West Virginia, including five sites (Fig. 1) in Pocahontas, Randolph, and Tucker counties (Hill & Tarter, 1978; Tarter & Hill, 1980; Stout & Stout, 1989; Tarter, 1990; Griffith & Perry, 1992). The southernmost known locality for *N. hostilis* is Arbovale, Pocahontas, County, West Virginia (Hill & Tarter, 1978). This species was not recorded at the Cranberry Glades farther south in Pocahontas County, West Virginia (Tarter & Hill, 1979), nor has it been reported from Kentucky (Resh, 1975; Philippi & Schuster, 1987; Floyd & Schuster, 1990), Tennessee (Etnier et al., 1998) or Virginia (Parker & Voshell, 1981). In the updated edition of his book, Wiggins (1996) listed Pennsylvania as the southern range limit.

The larvae of *N. hostilis* are restricted to permanent ponds (Berté & Pritchard, 1986), especially small ponds containing a dense growth of aquatic plants (Wiggins, 1996). The larvae are typically associated with the emergent macrophyte genus *Sparganium* (Berté & Pritchard, 1986; Stout & Stout, 1989).

Hoffman (1987) regarded the Laurel Fork region of the George Washington National Forest in extreme northwestern Highland County near the West Virginia border as one of the most interesting biological areas in Virginia because of the presence of various boreal plants and animals. These include such species as red spruce (*Picea rubens*), northern flying squirrel (*Glaucomys sabrinus*), water shrew (*Sorex palustris*), and Saw-whet Owl (*Aegolius acadicus*) (Bailey & Ware, 1990; Pagels et al., 1990, 1998; Pagels & Baker, 1997). A series of beaver ponds at the headwaters of Buck Run, a tributary of Laurel Fork, near the Locust Spring picnic area (38°35' N 79°38' W) are at or near the southern range limit of various aquatic insect species, including several dragonflies and damselflies (Carle, 1982; Roble, 1994; Roble et al., in prep.), a water beetle (Michael & Matta, 1977), and a water strider (Hoffman, 1996). The elevation in this area is approximately 1115 m (3657 ft).

Nemotaulius hostilis can now be added to the list of boreal insects recorded from this unique area. A population of *N. hostilis* was first discovered at the Buck Run ponds by OSF on 6 September 1976, when larvae were abundant in several ponds and 13 specimens were collected (USNM). This record has remained unpublished for a quarter century. It was not reported by Parker & Voshell (1981) because their list of Virginia caddisflies was limited to specimens in the

VPI&SU collection. More recently, two adult females (VMNH) of *N. hostilis* were captured by SMR at UV light on 5 August 1999 at the Buck Run ponds. These ponds are approximately 22 km northeast of Arbovale, West Virginia (Fig. 1), the southernmost documented locality for this species.

The beaver ponds in the Buck Run drainage appeared to be old in July 1971 when OSF first visited the area, and have persisted as a complex of ponds to the present. However, aerial photographs taken in 1937 reveal that beaver ponds were absent from all of the drainages in the Laurel Fork area at that time (Fleming & Moorhead, 1996). Beavers were extirpated from Virginia by 1911 (and from present day West Virginia by 1825) due to overtrapping, then reintroduced at eight widely scattered sites (the Big Levels area of Augusta County being the nearest site to Highland County) between 1932 and 1938, with surplus animals from these sites being translocated to still other sites beginning in 1943 (Handley, 1979). Beavers are now common to abundant and widely distributed in Virginia. Stout & Stout (1989) reported that larvae of *N. hostilis* were present at 7-year old ponds created by beavers and log skidders in Randolph County, West Virginia, indicating that this species had colonized the ponds within a short period of their construction.

Fig. 1. Distribution of *Nemotaulius hostilis* (diamonds) in Virginia and West Virginia.

ACKNOWLEDGMENTS

Richard L. Hoffman identified the *N. hostilis* adults and reviewed the manuscript.

LITERATURE CITED

Berté, S. B., & G. Pritchard. 1986. The life histories of *Limnephilus externus* Hagen, *Anabolia bimaculata* (Walker), and *Nemotaulius hostilis* (Hagen) (Trichoptera: Limnephilidae) in a pond in southern Alberta, Canada. Canadian Journal of Zoology 64: 2348-2356.

Carle, F. L. 1982. A contribution to the knowledge of the Odonata. Ph.D. thesis, Virginia Polytechnic Institute and State University, Blacksburg, VA. 1095 pp.

Etnier, D. A., J. T. Baxter, Jr., S. J. Fraley, & C. R. Parker. 1998 [2000]. A checklist of the Trichoptera of Tennessee. Journal of the Tennessee Academy of Science 73: 53-72.

Fleming, G. P., & W. H. Moorhead III. 1996. Ecological land units of the Laurel Fork area, Highland County, Virginia. Natural Heritage Technical Report 96-8. Virginia Department of Conservation and Recreation, Division of Natural Heritage, Richmond, VA. 114 pp. plus appendices.

Floyd, M. A., & G. A. Schuster. 1990. The caddisflies (Insecta: Trichoptera) of the Buck Creek system, Pulaski County, Kentucky. Transactions of the Kentucky Academy of Science 51: 127-134.

Griffith, M. B., & S. A. Perry. 1992. Trichoptera of headwater streams in the Fernow Experimental Forest, Monongahela National Forest, West Virginia. Entomological News 103: 110-116.

Handley, C. O., Jr. 1979. Mammals. Pp. 483-621 *In* D. W. Linzey (ed.), Endangered and Threatened Plants and Animals of Virginia. Center for Environmental Studies, Virginia Polytechnic Institute and State University, Blacksburg, VA.

Hill, P. L., & D. C. Tarter. 1978. A taxonomic and distributional study of adult limnephilid caddisflies of West Virginia (Trichoptera: Limnephilidae). Entomological News 89: 214-216.

Hoffman, R. L. 1969. The biotic regions of Virginia. Pp. 23-62 *In* The Insects of Virginia: No. 1. Research

Division Bulletin 48, Virginia Polytechnic Institute and State University, Blacksburg, VA.

Hoffman, R. L. 1987. Local sites of special concern in Virginia. Virginia Journal of Science 38: 399-408.

Hoffman, R. L. 1996. The water strider *Limnoporus dissortis* (Drake & Harris) (Gerridae) added to the heteropteron fauna of Virginia. Banisteria 8: 56-57.

Masteller, E. C., & O. S. Flint, Jr. 1979. Light trap and emergence trap records of caddisflies (Trichoptera) of the Lake Erie region of Pennsylvania and adjacent Ohio. Great Lakes Entomologist 12: 165-177.

Masteller, E. C., & O. S. Flint, Jr. 1992. The Trichoptera (caddisflies) of Pennsylvania: an annotated checklist. Journal of the Pennsylvania Academy of Science 66: 68-78.

Michael, A. G., & J. F. Matta. 1977. The Insects of Virginia: No. 12. The Dytiscidae of Virginia (Coleoptera: Adephaga) (Subfamilies: Laccophilinae, Colymbetinae, Dytiscinae, Hydaticinae and Cybistrinae). Research Division Bulletin 124, Virginia Polytechnic Institute and State University, Blacksburg, VA. 53 pp.

Pagels, J. F., & J. R. Baker. 1997. Breeding records and nesting diet of the Northern Saw-whet Owl (*Aegolius acadicus*) in Virginia. The Raven 68: 89-92.

Pagels, J. F., R. P. Eckerlin, J. R. Baker, & M. L. Fies. 1990. New records of the distribution and intestinal parasites of the endangered northern flying squirrel, *Glaucomys sabrinus* (Mammalia: Sciuridae), in Virginia. Brimleyana 16: 73-78.

Pagels, J. F., L. A. Smock, & S. H. Sklarew. 1998. The water shrew, *Sorex palustris* Richardson (Insectivora: Soricidae), and its habitat in Virginia. Brimleyana 25: 120-134.

Parker, C. R., & J. R. Voshell, Jr. 1981. A preliminary checklist of the caddisflies (Trichoptera) of Virginia. Journal of the Georgia Entomological Society 16: 1-7.

Phillippi, M. A., & G. A. Schuster. 1987. New records of caddisflies (Trichoptera) from Kentucky. Entomological News 98: 113-116.

Resh, V. H. 1975. A distributional study of the caddisflies of Kentucky. Transactions of the Kentucky Academy of Science 36: 6-16.

Roble, S. M. 1994. A preliminary checklist of the damselflies of Virginia, with notes on distribution and seasonality (Odonata: Zygoptera). Banisteria 4: 3-23.

Stout, B. M., III, & J. S. Stout. 1989. Northern caddisfly (Trichoptera) fauna in a remnant boreal wetlands of West Virginia. Entomological News 100: 37-40.

Tarter, D. C. 1990. A checklist of the caddisflies (Trichoptera) from West Virginia. Entomological News 101: 236-245.

Tarter, D. C., & P. L. Hill. 1979. Caddisflies (Trichoptera) of the Cranberry Glades in West Virginia. Entomological News 90: 205-206.

Tarter, D. C., & P. L. Hill. 1980. Adult limnephilid caddisfly records in West Virginia (Trichoptera: Limnephilidae). Entomological News 91: 170-172.

Wiggins, G. B. 1977. Larvae of the North American Caddisfly Genera (Trichoptera). University of Toronto Press, Toronto. 401 pp.

Wiggins, G. B. 1996. Larvae of the North American Caddisfly Genera (Trichoptera). 2nd Edition. University of Toronto Press, Toronto. 457 pp.

Woodward, S. L., & R. L. Hoffman. 1991. The nature of Virginia. Pp. 23-48 *In* K. Terwilliger (coordinator). Virginia's Endangered Species: Proceedings of a Symposium. McDonald and Woodward Publishing Company, Blacksburg, VA.