

**FIRST RECORD OF *ANTHOPOTAMUS VERTICIS*  
AND NEW RECORDS OF *A. DISTINCTUS*  
(EPHEMEROPTERA: POTAMANTHIDAE)  
IN NEW ENGLAND<sup>1</sup>**

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**ABSTRACT:** The species *Anthopotamus verticis* is recorded for the first time in New England from the Housatonic River in western Connecticut. Notes on the larval habitat and observations on the sympatric occurrence of this species with *A. distinctus* are presented. New distribution records for *A. distinctus* are presented for Massachusetts and Vermont.

In North America the family Potamanthidae is represented by a single genus, *Anthopotamus* McCafferty & Bae, which contains four species and is broadly distributed over central and eastern North America (Bae & McCafferty 1991). Currently only one species, *A. distinctus* (Traver), has been reported from New England (Bae & McCafferty 1991, Burian and Gibbs 1991). Throughout New England *A. distinctus* occurs unpredictably in medium to large streams with loose cobble bottoms. In October of 1994, routine sampling of a river in western Connecticut produced specimens of *Anthopotamus* larvae that were clearly not those of *A. distinctus*. In June of 1995, a series of specimens was reared from this site and determined to be *A. verticis* (Say). This is the first record of this species in New England. The new record is presented here, along with notes on the larval habitat and its co-occurrence with *A. distinctus*. New distribution records are presented for *A. distinctus* in Massachusetts and Vermont.

**METHODS**

Benthic samples were obtained with a D-frame aquatic net and standard kick technique. Live material for rearing was placed in foam cups and chilled for transport to the laboratory. Other specimens were kill-fixed by placing them directly into a modified Carnoy's fluid (Edmunds *et al.* 1976) and later transferred to 80% ethanol. Reared adults and larvae were identified using the most recent taxonomic keys (Bae & McCafferty 1991). Specimens of *A. verticis* were deposited in the Ephemeroptera Research Collection at Southern Connecticut State University. New locality records for *A. distinctus* were based on specimens recorded by Betsy Colburn of the Massachusetts Audubon Society, Steve Fiske of the Vermont Department of Environmental Conservation (DEC), and

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specimens in the insect collection of the Peabody Museum, Yale University. Voucher specimens supporting new localities of *A. distinctus* were deposited with each of the three collections. For specimens from the Vermont DEC, reference collection code numbers are cited as part of the new locality records. Latitude and longitude coordinates were not available for new Massachusetts records. Coordinates for Vermont sites were taken from U.S.G.S. 7.5' Quadrangle Maps. The Connecticut coordinates were determined using a Trimble Geoexplorer® G.P.S. receiver and checked using a U.S.G.S. 7.5' Quadrangle Map.

### New Potamanthidae Record:

*Anthopotamus verticis* (Say) 1839

**Specimens:** 7 Imagos (3 Males, 4 Females - Reared); 2 Subimagos (Male - Reared); and 6 Larvae, S.K.Burian 16-VI-1995; 7 Larvae, S.K.Burian 14-X-1994.

**CONNECTICUT:** Litchfield Co., Housatonic River at Housatonic Meadows State Park (Fly fishing Area) off Route 7[41°49'25"N/73°22'39"W].

**Habitat:** The channel of the Housatonic River at the site of the new record is about 40 to 45 m wide. Depth was variable because flow was regulated by a hydroelectric dam upstream of the collection site. Larvae of *A. verticis* were collected from side-channel areas in water about 0.5 m deep during low-flow conditions. Substrates at these locations were dominated by a mixture of medium to large cobbles. Larger particles were covered by a thick periphyton layer. Deposits of poorly-sorted medium gravel and sand occurred on the downstream sides of piles of cobbles and small boulders. Packs of coarse particulate organic matter were lodged among the cobbles in places. Filamentous green algae was present in tufts on the tops of some of the larger particles. Beneath the deposits of gravel and sand were thick deposits of fine sediments composed of gray-brown fine sand mixed with silt.

Most larvae were obtained from piles of mixed cobbles overlaying deposits of poorly sorted gravel and sand in areas out of the main flow. No specimens were obtained from similar substrates in the deeper and swifter mid-channel area.

At this locality, larvae of *A. verticis* share the river with larvae of *A. distinctus*. Larvae of both species were obtained simultaneously in kick samples. Field counts of larvae in samples obtained in October 1994 and June 1995 indicated that *A. distinctus* was more abundant on both dates than *A. verticis*. In fact, very few larvae of *A. verticis* were obtained in June of 1995 after repeated sampling, whereas numerous specimens of *A. distinctus* occurred in almost every sample. Although the life history and microhabitat preference of *A. verticis* have been studied (McCafferty & Bae 1994, Bae & McCafferty 1994) little is known about multiple species interactions. The co-occurrence of *A. verticis* and *A. distinctus*

at this site provides a unique opportunity to investigate their interactions and microhabitat distribution patterns.

### New Localities for *A. distinctus*

*A. distinctus* has a range that spans the New England States; however, this is based on only a few published locations. Many suitable habitats between known localities are unoccupied, resulting in an erratic distribution pattern. The following new records provide a clarification of the actual distribution of *A. distinctus* in New England:

**MASSACHUSETTS:** Franklin Co., (Larvae, Female Imago) East Branch of the North River, Colrain, B. Colburn and F. Garretson 9-VII-1992, 15-XI-1994, 23-VI-1995; (Larvae) Burrington Brook (headwaters of the West Branch of the North River), B. Colburn and F. Garretson 15-XI-1994; (Larvae) West Branch of the North River, B. Colburn and F. Garretson 17-XI 1994; (Larvae) Green River, B. Colburn and F. Garretson 17-XI-1994.

**VERMONT:** Addison Co., (Larvae) Lewis Creek, code 91.046a [44°14'55"N/73°14'01"W], 29-IX-1991; Bennington Co., (Larvae) North Branch of the Deerfield River, code 89.075a&b [42°54'50"N/72°50'16"W], 4-X-1989; (Larvae) Walloomsac River, code 89.077a [42°55'08"N/73°16'08"W], 5-X-1989; Caledonia Co., (Larvae) Passumpsic River, code 90.041a [44°23'37"N/72°01'23"W], 2-VIII-1990; Chittenden Co., (Larvae) Lamoille River, code 92.055a&b streams L44°41'00"N/73°03'57"W], 29-IX-1992; (Larvae) Winooski River, code 91.023a [44°20'35"N/72°46'20"W], 5-IX-1991; Franklin Co., (Larvae) Missisquoi River, code 91.062b [44°49'10"N/72°39'50"W], 4-X-1991; Lamoille Co., (Larvae) Lamoille River, Hyde Park, [44°35'30"N/72°38'30"W], W.G. Downs 20-VI-1975; Orange Co., (Larvae) First Branch of the White River, code 92.011b [43°58'34"N/72°27'24"W], 1-IX-1992; (Larvae) Connecticut River, code 92.034b [44°09'05"N/72°02'32"W], 17-IX-1992; Windam Co., (Larvae) Saxtons River, code 92.112b [43°08'27"N/72°30'02"W], 4-X-1993; (Larvae) Williams River, code 92.043a&b [43°11'30"N/72°29'17"W], 18-IX-1992; Windsor Co., (Larvae) White River, code 88.083a&b [43°49'30"N/72°34'00"W], 26-IX-1988.

New locality records for Massachusetts and Vermont all occur in streams between the Connecticut River and the Hudson River. Records for Vermont are the most extensive for any of the New England States and show *A. distinctus* to be broadly distributed with populations in all major physiographic regions. In southern New England the only records east of the Connecticut River were those reported by Burian and Bednarik (1994). In Maine *A. distinctus* has only been recorded from streams in Aroostook County (Burian and Gibbs 1991). Currently, no records are available for New Hampshire and Rhode Island.

### ACKNOWLEDGMENTS

I would like to thank Betsy Colburn and Fran Garretson of the Massachusetts Audubon Society for providing the data on *A. distinctus* in the Deerfield River System, Steve Fiske and his staff for generously providing specimens and site data from Vermont, and Leonard E. Munstermann of the Peabody Museum, Yale University, for the loan of specimens from the entomology collection.

## LITERATURE CITED

- Bae, Y.J. and W.P. McCafferty.** 1991. Phylogenetic systematics of the Potamanthidae (Ephemeroptera). *Trans. Am. Entomol. Soc.* 117: 1-143.
- Bae, Y.J. and W.P. McCafferty.** 1994. Microhabitat of *Anthopotamus verticis* (Ephemeroptera: Potamanthidae). *Hydrobiol.* 288: 65-78.
- Burian, S.K. and A.F. Bednarik.** 1994. The mayflies (Ephemeroptera) of Connecticut: An initial faunal survey. *Entomol. News* 105: 204-216.
- Burian, S.K. and K.E. Gibbs.** 1991. Mayflies of Maine: an annotated faunal list. *Maine Agricultural Exp. Sta. Tech. Bull. No. 142*, 109 p.
- Edmunds, G.F., Jr., S.L. Jensen, and L. Berner.** 1976. The mayflies of North and Central America. Univ. Minnesota Press, Minneapolis, 330 p.
- McCafferty, W.P. and Y.J. Bae.** 1994. Life history of *Anthopotamus verticis* (Ephemeroptera: Potamanthidae). *Great Lakes Entomol.* 27: 57-67.
- Say, T.** 1839. Description of new North American neuropterous insects, and observations on some already described. *J. Acad. Nat. Sci. Phil.* 8: 9-46.