DISTRIBUTION OF THE SMOKY WILLOWFLY, *Bolotoperla rossi* (Frison) (Plecoptera: Taeniopterygidae: Brachypterainae) IN EASTERN NORTH AMERICA

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ABSTRACT

Previous records of *Bolotoperla rossi* (Frison) are reviewed and new records are presented, including the apparent first records from South Carolina and Massachusetts. Additional records are also presented for Maine, New Hampshire, New York, North Carolina, Pennsylvania, Quebec, Tennessee, Virginia and West Virginia.

Keywords: Plecoptera, *Bolotoperla rossi*, new records, distribution

INTRODUCTION

Frison (1942) described *Bolotoperla rossi* (as *Brachyptera rossi* Frison) from a single male specimen collected in New Hampshire. Ricker (1943) in his discussion of taeniopterygid genera and subgenera stated “...rossi Frison will probably require a new subgeneric name”. Illies (1966) later transferred the species to *Taenionema* Banks and it
remained in that genus until Ricker & Ross (1975) proposed a new monotypic genus, Bolotoperla, for the species. Ricker & Ross (1975) also published the first description of the female based on a Quebec specimen, and provided the initial records of this species from North Carolina and West Virginia. Kondratieff & Voshell (1979) included the species on a checklist of stoneflies known to occur in Virginia, but without specific collecting data. The larva of the species was described by Kirchner & Harper (1983) from material collected at three sites in Virginia and two sites in West Virginia. Subsequently, additional records from Maine (Mingo 1983), North Carolina (Kondratieff et al. 1995), New York (Bauman & Kondratieff 2009; Myers et al. 2011), Pennsylvania (Masteller 1996; Earle 1994; 2009), Quebec (Harper & Harper 1983), Tennessee (DeWalt et al. 2007), Virginia (Kondratieff & Kirchner 1987), and West Virginia (Tarter & Nelson 2010) have been published. Stewart (2000) summarized the known distribution at that time as Maine, North Carolina, New Hampshire, New York, Pennsylvania, Virginia and West Virginia and also provided excellent illustrations of the adults of the species. Additionally, Baumann & Kondratieff (2009) presented scanning electron micrographs of the male genitalia, including the unique epiproct from a specimen collected at the Sacandaga River, New York.

In recent years we and our colleagues have occasionally collected in the Appalachians during the emergence period of Bolotoperla, consequently we have accumulated a few noteworthy records of the species. We take this opportunity to provide a more complete record of the distribution of this interesting species, including the documentation of populations in Massachusetts and South Carolina.

MATERIALS AND METHODS

Samples were primarily collected with beating sheets, and by hand picking from bridge railings, boulders and driftwood along the stream banks; some specimen records were obtained from colleagues. Specimens were preserved in 75-80% ethanol and archived in Audrey B. Harrison Collection (ABHC), Jackson, Mississippi, Bill P. Stark Collection (BPSC), Mississippi College, Clinton, Mississippi, Monte L. Bean Museum (BYUC), Brigham Young University, Provo, Utah, C.P. Gillette Museum of Arthropod Diversity (CSUC), Colorado State University, Fort Collins, Colorado, Clemson University Arthropod Collection (CUAC), Clemson, South Carolina, Illinois Natural History Survey, Urbana, Illinois (INHS), Collection Ouellet-Robert, Université Monttréal (UCM), and Scott A. Grubbs Collection (WKUC), Western Kentucky University, Bowling Green, Kentucky. GPS coordinates for most new records sites were determined in the field with a portable Garmin GPS 72H, or comparable unit. Records without GPS coordinates were georeferenced using ACME Mapper 2.1, and all records were mapped using ArcMap 10.3.1.

RESULTS

Bolotoperla rossi (Frison)

Bolotoperla rossi: Ricker & Ross, 1975:136
Bolotoperla rossi: Baumann & Kondratieff, 2009:220

Published records: CANADA: QC, Brome Co. (Ricker et al. 1968; Ricker & Ross 1975), Unknown site, plot on Fig. 3 (Harper & Harper 1983). UNITED STATES: ME, Penobscot Co., Washington Co. (Mingo 1983); NC, Burke Co., Swain Co. (Ricker & Ross 1975); Unknown Co. (Kondratieff et al. 1995); NH, Grafton Co. (Frison 1942); NY, Unknown Co. (Myers et al. 2011), Hamilton Co. (Baumann & Kondratieff 2009); PA, Dauphin Co. (Earle 1994, 2009; Masteller 1996), Pike Co. (Earle 2009), Sullivan Co., Union Co. (Masteller 1996); TN, Blount Co. (DeWalt et al. 2007); VA, Giles Co., Washington Co. (Kirchner & Harper 1983); Grayson Co. (Stark et al. 1998). Unknown Co. (Kondratieff & Voshell 1979; Kondratieff & Kirchner 1987); WV, Braxton Co., Pocahontas Co. (Kirchner & Harper 1983), Greenbrier Co., Lewis Co., Nicholas Co. (Tarter & Nelson 2010), Wayne Co. (Ricker & Ross 1975).

New records: CANADA: QC: Riviere-aux-Orignaux, Saint-Camille, 21 May 1988, Y. Dulude,
Berlieff, R.F. 995, T. Arsland, 1 larva CUAC).

Silver Lake Road, 1 May 2005, L. Myers, 3 larvae (BYUC).

NH: Strafford Co. Cocheco River, Watson Road, 5 km W Dover, 23 April 2008, D.S. Chandler, 2♂, 2♀, 2 larvae (BYUC).

NY: Clinton Co., Saranac River, off Silver Lake Road, 1 May 2005, L. Myers, 3♂, 1 larva (CSUC).

PA: Union Co., White Deer Creek, 0.5 miles below sheet tram trail, 3 April 1995, S. Moulton, 1♂ (CSUC).


WV: Greenbrier Co., North Fork Cherry River at Coats Run, Hwy 39/55, 22 May 1999, B. Stark, R.F. Kirchner, 1♂ (BPSC).
Fig. 1. Distribution of *Bolotoperla rossi* in North America. Each dot represents a single collection site.
DISCUSSION

*Bolotoperla rossi* was previously known from sites as far north as Quebec (Ricker & Ross 1975; Harper & Harper 1983) and Maine (Mingo 1983) and as far south as North Carolina (Ricker & Ross 1975). Records from South Carolina have not been specifically included on checklists of southern Appalachian stoneflies (e.g. McCaskill & Prins 1968), consequently the South Carolina records provided by Clemson University represent a small range extension for the species, and the small series of specimens collected at Westfield River, Berkshire Co. represent the first specimens from Massachusetts. The known distribution of *B. rossi* is shown in Fig. 1. Based on proximity to known sites, additional state records might be sought in northern Georgia, western Maryland, northern New Jersey, Connecticut and Vermont.

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REFERENCES


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