

# *Somatochlora walshii* (Odonata: Corduliidae), a New State Record for Ohio<sup>1</sup>

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**ABSTRACT.** The authors report the discovery of the Brush-tipped Emerald, *Somatochlora walshii* (Odonata: Corduliidae)—a species previously unknown from Ohio. During the summer of 2000 this species was documented in apparent breeding populations at State Nature Preserves in Ashtabula and Portage counties. While no larvae were found, reproductive behavior was observed and the numerous adults suggest a stable breeding population. Habitat descriptions from other localities match that of these 2 sites, and a long-known population exists in Pennsylvania only about 21 km from the Ashtabula County site. This brings the total number of reported Odonata for Ohio to 162 species and subspecies.

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## INTRODUCTION

Since 1991 the authors have been involved with an intensive effort of the Ohio Odonata Survey to document presence and distribution of Odonata throughout the state. As of 1999, that effort added 1,792 new county records and nine new state records.

During the summer of 2000 the authors worked under contract with the Division of Wildlife, Ohio Department of Natural Resources to re-survey the state for the federally endangered Hine's Emerald Dragonfly, *Somatochlora hineana* (Williamson 1931). *S. hineana* was first discovered and named from specimens taken near Indian Lake, Logan County, OH. Homer Price last reported *S. hineana* from the Oak Openings near Toledo, OH, in 1961. Previous surveys by both authors (Moody 1994) failed to locate *S. hineana* in Ohio. Since those surveys, the authors have spent significant time working with researchers studying *S. hineana* in Illinois, and during 1999 visited known populations in Wisconsin and the Upper Peninsula of Michigan. A new perspective of the habitat parameters from these experiences raised hope that areas previously not searched in Ohio might still support *S. hineana*. Teams of at least two people inspecting over 12 sites spent a total of 22 days in the field.

While no specimens of *S. hineana* were found, we did document two populations of a species previously unknown for the state (Glotzhober and others 2000). Between 23 June and 3 August 2000, the authors and other workers collected specimens of the Brush-tipped Emerald, *Somatochlora walshii* (Scudder 1866) from two fens in northeastern Ohio.

The survey's database now contains 25,880 records, including both recent collections and historic museum specimens dating back to 1895. With the addition of *Somatochlora walshii* to the state list, there are now records for 162 species and subspecies of Odonata from Ohio.

## METHODS

In March 2000 the authors met with botanists, zoologists, and area managers from the Cleveland Mu-

seum of Natural History, the Ohio Field Office of The Nature Conservancy, the Ohio Department of Natural Resources (ODNR), Division of Natural Areas and Preserves and the ODNR, Division of Wildlife. In a joint session we reviewed habitat information and life history of *S. hineana* with these individuals and prepared a list of potential survey sites that had not previously been surveyed for *S. hineana*. These localities were visited during June, July, and early August of 2000 between 9 AM and 1:00 PM on sunny days with low to moderate winds. These conditions have been identified as optimal flight periods for *S. hineana* (Hine's Emerald Dragonfly Recovery Team 2000).

Data recorded included GIS location, water pH, and water and air temperature. In most cases, two or more workers collected together to optimize collecting success. Where possible, area managers or other workers familiar with the area introduced us to the sites, and in some cases assisted in our searches. We attempted to collect voucher specimens of adults of all species observed. Adults were collected using aerial nets, preserved with acetone, and enclosed in Mylar™ Odonata envelopes with data. Having two or more collectors working together greatly increased the percentages of species seen that were collected. The larvae of wetland species of Odonata are often embedded in the muck between roots of vegetation, collecting larvae presents significant time challenges and potential impact on the habitat. For these reasons, this survey did not include searches for larvae. The data was later added to the Ohio Odonata Survey database.

## RESULTS

On 23 June 2000 Moody and assistant John Swartz captured four male *S. walshii* at Mantua Bog Nature Preserve at 10:35 AM, 12:10 PM, 12:35 PM, and 12:40 PM. One male was retained and the others released. On 30 June 2000 John Swartz, Dan Riggs, Eric Chapman, Renee Schrifft, Katie Lublin, and Kathleen Bradley joined the authors at Pymatuning Creek Wetlands Nature Preserve. At 11:15 AM Lublin netted a male *S. walshii* from a perch about two meters off the ground on a willow in the middle of the deep fen. Another male was taken at 11:52 by Glotzhober, and still another male a little later by

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Chapman. That afternoon we visited wetlands west of Pymatuning Creek and collected two more male *S. walshii* at about 3:00 PM. Additional males were seen on 1 July 2000, and Riggs collected one female with an egg cluster on her vulvar lamella. That afternoon the authors, John Swartz, and Dan Riggs visited Mantua Bog, where three more male *S. walshii* were collected. Subsequent trips revealed *S. walshii* flying on 8 July and 3 August of 2000 at Pymatuning Creek Wetlands.

### HABITAT DESCRIPTIONS

Walker and Corbet (1975) described the habitat for *S. walshii* as "small slow streams of clear water in boggy or marshy places. It avoids ponds of any sort and is also absent from streams with an easily perceptible flow." Allen Barlow (personal communication 2000) described habitat in New Jersey as permanent *Sphagnum* marshes with water about 30 cm deep at elevations above sea level of 350 to 409 m (1150 to 1340 ft). The New Jersey record is presumed to be the most southern record for this species (N 40° 48', W 74° 33'). Dunkle (2000) listed this species as uncommon, indicating they use "very small streams running through open bogs, fens, marshes or swamps... Sometimes they patrol over marsh grass with little visible water." Dunkle (2000) gave the flight season for adults as June through mid-September, while Needham and others (2000) gave the dates of 3 June through 14 September. *Somatochlora walshii* has been recorded in southern Canada from coast to coast, and in Washington, Minnesota, Wisconsin, northern Michigan, Pennsylvania, New York, New Jersey, and all the New England states (Dunkle 2000).

These descriptions fit well the Ohio locations discovered by the authors. Mantua Bog State Nature Preserve (Mantua Twp., Portage Co., OH, N 41° 16' 49", W 81° 12' 41") is one of the best alkaline fens in Ohio (ODNR 1996). Stein (1974) gathered information from both published and unpublished sources on the characteristics of this site. She reported that it appeared to be fed by ground water flow from the base of a hill on the north side (opposite) of the bike path (former rail lines). The water then flows through the fen toward the Cuyahoga River. In addition to fen species, Mantua Bog also includes some bog elements (Stein 1974). A lens of marly, alkaline clay dominates the fen areas, while in some locations this is covered by a layer of *Sphagnum* moss (Stein 1974). Twenty-three state-listed plants are reported for the preserve (ODNR 1996).

The fen meadow at Mantua Bog where we observed and collected *S. walshii* consisted of a relatively dry sedge meadow mixed with various fen species. Along the old rail tracks it was deeper and more bog-like, and further to the southeast the meadow blended into some deeper open water and marsh containing burreed (*Sparganium* sp.), duckweed (*Lemna* sp.), arrowhead (*Sagittaria* sp.), and cattails (*Typha* sp.). Some areas of the fen were dry enough to support several species of ferns and clumps of raspberry (*Rubus* sp.). While in the fen we were seldom standing in water, but our feet were always wet and sometimes holes were ankle to knee deep. At Mantua Bog *S. walshii* was not abundant,

but we observed one or two individuals for several minutes every 15 to 20 minutes. They patrolled the fen meadow at one to two meters off the ground.

Other Odonata collected or observed at Mantua Bog Nature Preserve include: *Calopteryx maculata*\*, *Ischnura posita*, *I. verticalis*, *Anax junius*\*, *Epithea cynosura*, *E. princeps*, *Erythemis simplicicollis*, *Libellula luctuosa*\*, *L. pulchella*\*, *Pachydiplax longipennis*\*, *Perithemis tenera*, *Plathemis lydia*\*, *Sympetrum obtrusum*, and *S. rubicundulum* (\* denotes observed only).

Pymatuning Creek Wetlands (Wayne Twp., Ashtabula Co., OH, N 41° 34' 6", W 80° 37' 49") is an alkaline fen-wetland complex about 9.0 km (5.5 mi) west of the Pennsylvania state line near Pymatuning Lake. The lake itself was all wetlands until it was dammed in 1933 (Bowell 1980). The preserve consists of slightly over 87 ha (215 acres) on both sides of the small, swampy Pymatuning Creek. The habitat appears to extend along the creek upstream of the preserve for 6.4 to 7.2 km (4.0 to 4.5 mi) and downstream for at least 4.8 km (3.0 mi), and perhaps more. We did not explore the wetlands on private property above or below the preserve.

The Pymatuning Creek Wetlands Nature Preserve contains a relatively small marly fen on the eastern edge, which flows into alder thickets (*Alnus* sp.) and several large tall sedge marshes, with scattered dogwood (*Cornus* sp.) and willow (*Salix* sp.) clumps, and a few small areas of open water. The open water areas include Calamus (*Acorus calamus*), arrowhead (*Sagittaria* sp.), burreed (*Sparganium* sp.), and spatterdock (*Nuphar* sp.). The tall sedge marshes had water depths of 30 to 60 cm (12–24 in) with occasional deeper holes. The tall sedges include *Carex lacustris* (Jim Bissel personal communications) that are 9.0 to 122 cm (3.0 to 4.0 ft) tall, intermixed with patches of lower sedges.

A second fen meadow on the west side of Pymatuning Creek (N 41° 34' 6", W 80° 38' 18") is accessed by traversing east of the railroad tracks for about 0.5 to 1.0 km until halfway between the creek and the railroad. Very tall grasses densely cover this area, but our feet were constantly in 15 to 30 cm (6–12 in) of water. Further east the marsh rapidly gets deeper and we did not enter that area. At both sites, *S. walshii* patrolled large areas at about the tops of the sedges or grasses—especially favoring those "openings" of lower sedges. Both areas were also characterized by water with an almost imperceptible flow.

Other Odonata collected or observed at Pymatuning Creek Wetlands include: *Calopteryx maculata*\*, *Lestes rectangularis*, *Amphiagrion saucium*, *Chromagrion conditum*, *Enallagma civile*, *Ischnura posita*, *I. verticalis*, *Nabalennia irene*, *Aeshna constricta*, *A. umbrosa*, *Anax junius*\*, *Epithea princeps*, *Erythemis simplicicollis*, *Libellula luctuosa*\*, *L. pulchella*\*, *Pachydiplax longipennis*, *Perithemis tenera*, *Plathemis lydia*\*, *Sympetrum rubicundulum*, *S. semicinctum*, *S. vicinum*, and *Tramea lacerata* (\* indicates observed only).

The senior author visited the eastern site of Pymatuning Creek Wetlands on 18 June 1995. Traveling alone on a very hot day, he spent 1.5 hours stumbling around in thick brush, cattails, and tall sedges with little

orientation to the site and little success. He observed but was unable to capture an unidentified *Somatochlora* sp. In retrospect, that was likely *S. walsbii*, based on the habitat, time of the year, and lack of other species of *Somatochlora* that fly at this time and in this habitat.

## DISCUSSION

While no larvae were collected and no exuvia or teneral specimens were observed, the authors conclude that both sites contain substantial breeding populations of *S. walsbii*. This assumption is reasonable based upon the number of individuals seen, the similarity of the new habitat with the previously described habitat, and the presence of an ovipositing female. Furthermore, a sustained population has been long documented at the Pymatuning Swamp (also known as Hartstown Swamp) in Crawford County, PA. This Pennsylvania population is 11 km (7.0 mi) east of the Ohio line and Pymatuning Lake, and 21 km (13 mi) in a direct line from Ohio's Pymatuning Creek Wetlands (Clark Shiffer personal communication).

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of Natural History, advised us on likely places to further our search, and in several cases provided on the ground orientation to sites. Other workers who assisted us in the field have been previously listed in this paper; their help was substantial and made the effort both more successful and more enjoyable. Finally, we thank Allen Barlow and Clark Shiffer for information provided via long e-mails and phone calls that provided important insights into understanding *Somatochlora walsbii* in Ohio.

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