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**SECOND LOCATION FOR TWO RARE ODONATA IN OHIO,
NANNOTHEMIS BELLA AND *LADONA JULIA*,
 (ODONATA: LIBELLULIDAE) DISCOVERED AT
 SINGER LAKE BOG, SUMMIT COUNTY, OHIO.**

Robert C. Glotzhober¹ and Eric Chapman²

Abstract

Previously the dragonflies (Odonata, Libellulidae) *Ladona julia* and *Nannothemis bella* were known in Ohio from only one extant population each: *L. julia* from extreme northwest Ohio in Williams County and *N. bella* from west-central Ohio in Champaign County. During the summer of 2000 populations of each of these species were found in close proximity to each other at Singer Lake, a wetlands complex in southern Summit County in northeastern Ohio. This new location is also home to a population of another rare Ohio dragonfly, *Dorocordulia libera* (Odonata, Corduliidae) that was discovered during 1999. The Singer Lake wetlands are proving to be a very significant habitat for Ohio Odonata.

Ladona julia (Uhler) (Odonata, Libellulidae) (synonym *Libellula julia*) has a widespread, northern distribution, with populations reported in a relatively narrow band coast to coast through southern Canada and the northern United States (Bick & Mauffray, 2001; Dunkle, 2000). In Michigan, it is widespread and often abundant at many sites (Mark O'Brien, personal communication). Indiana has records from 1917 in three northern counties, but there is only one small extant population currently known (Curry, 2001).

Ohio has three very old records of *L. julia* from 1898 and 1900, all from Stewart's Lake, Portage County, Franklin Township, Kent, Ohio. James S. Hine collected one male on 23 June 1898 (specimens at University of Michigan, Museum of Zoology). R. C. Osburn collected two other males, one on 21 June 1898 and one on 22 June 1900 (specimens at The Ohio State University, Museum of Biological Diversity). This species has not been collected at this location during the 100 plus years following. Stewart's Lake is approximately 32 kilometers north, north east of the Singer Lake site discussed in this paper. More recently a large and continuous population was discovered by Homer Price at Mud Lake in extreme northwestern Williams County on 30 May 1940 (Price 1950). Visits to Mud Lake during the last decade by the authors and several other workers have confirmed the continued existence of this population. Until the summer of 2000, no extant populations of this species were known from other locations in Ohio. The Ohio Odonata Society has recently recommended *L. julia* for addition to the Ohio endangered species list.

The Elfín Skimmer, *N. bella* (Uhler) (Odonata, Libellulidae) is the smallest dragonfly in North America, measuring only 18 to 21 mm in total length. Its distribution includes a swath through southeastern Canada and the northern United States from Minnesota to New England extending south to northern Illinois, east through Pennsylvania and New York, south along Atlantic coast to Virginia, inland through the hill region and south to northern Florida, Alabama and Louisiana (Bick and Mauffray 2001, Dunkle 2000). Within this range, populations are considered "local" in distribution, inhabiting only small

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pockets within larger habitats that may be suitable for species with less stringent habitat requirements (Dunkle 2000). Walker and Corbet (1975) consider it widespread but "almost exclusively an inhabitant of floating sphagnum bogs, where it is sometimes quite abundant." Kielb (1997) noted that while it is rare in collections, it may be underrepresented in these collections from Michigan. He suggested that its restriction to sphagnum bogs, its low flight habit, and its small size may lead to it being overlooked (Kielb 1997). Curry (2001) reports that in Indiana *N. bella* is "rare" and found in bogs and fens in five counties at the northern edge of the state.

Donald Borror (1930) first collected *N. bella* in Ohio at Cedar Bog Nature Preserve in Champaign County, Ohio. Three females were collected in 1933 at a marl fen near Kennard, Champaign County, Ohio by Edward S. Thomas and Charles F. Walker and reside in the collections of the Ohio Historical Society (Glotzhober 1997). The area around Kennard was searched during 1995 with no trace of remaining peatlands surviving (Glotzhober 1997). In 1959 Alrutz collected ten males and five females from Silver Lake in eastern Miami County (Alrutz 1961). Alrutz revisited this site in 1992 (Alrutz 1993) and the senior author has made subsequent visits. Alrutz (1993) concludes that the habitat has changed significantly. No remnant of the Silver Lake population appears to survive. For many years *N. bella* has been represented in Ohio by a single known population at Cedar Bog (Glotzhober 1997). In 1997 the Ohio Department of Natural Resources, Division of Wildlife listed *N. bella* as a State Endangered species.

RESULTS AND DISCUSSION

On 1 June 2000 Jim Bissell of the Cleveland Museum of Natural History and John Pogacnik of Lake Metro Parks were exploring the Singer Lake area in Summit County, Green Township. This site is just north of the Stark County line, its center being approximately 40° 55'N and 81° 29'W. That same day they e-mailed the senior author with a report of finding 25 to 30 individuals of *N. bella* and 8 to 10 of *L. julia* on or near a floating sphagnum bog on the property. A single voucher of each of these two species was collected by Pogacnik and ultimately deposited at the Cleveland Museum of Natural History. On 3 June Pogacnik sent digital images of specimens of each to the senior author for tentative confirmation. On 7 June the junior author confirmed their report on site, followed up by a visit by both authors and Pogacnik on 9 June 2000. Additional specimens of each were collected and deposited in the natural history collections of the Ohio Historical Society. On this later visit we were accompanied by Renee Schrift and Katie Lublin from the Cleveland Museum of Natural History and Larry Rosche and Lou Gardella members of the Ohio Odonata Society. In the intervening week, additional individuals of *N. bella* had emerged and we observed tenels, adults, and adults in copula. The adult population visible that day on the floating sphagnum mat was conservatively estimated at between 50 to 100 individuals. In the nearby woods/bog edge we also observed a smaller number of *L. julia*, noting from one to two dozen individuals.

Singer Lake is a glacial relict wetland complex with a shallow boggy pond dominated by spatterdock (*Nuphar* sp.), plus several bogs and kettle ponds separated by sandy hills. One of the leatherleaf (*Chamaedaphne calyculata*) bogs covers 10.5 hectares (26 acres) and is the largest leatherleaf bog in Ohio (Jim Bissell, pers. comm.). Depending on what areas are included, the total wetland area is somewhere between 61 and 142 ha. Portions of the area recently have been purchased as a nature preserve by the Cleveland Museum of Natural History. The Singer Lake area was outlined by Bissell (2001) in which he summarized the area's rich botanical diversity, highlighting many of the basin's rare and endangered plants.

The bog where *N. bella* was found is a large (circa 0.8 ha), old age floating sphagnum mat. It is bordered to the north and west by forest, from which it is separated by a moat of water from 10 to 30 m wide and about 1-2 m deep. The mat fades to more open swamp to the east and south. Jim Bissell (personal communication) provided the following botanical description. Compared to the other sphagnum mats in the Singer complex that are dominated by leatherleaf (*C. calyculata*), this mat is much more open. The edge of the floating mat has a discontinuous outer ring of poison sumac (*Rhus vernix*), and contains scattered clumps of leatherleaf and high bush blueberry (*Vaccinium corymbosum*). Spike rush (*Eleocharis erythropoda*) grows throughout the mat, and the southernmost portion has a sedge meadow of *Carex utriculata*. There are small open pools throughout the mat that contain spatterdock (*Nuphar* sp.) and swamp loosestrife (*Decodon verticillatus*) both of which also grow around the edge.

The Singer Lake wetlands are proving to be highly significant for Odonata in Ohio. In addition to the two rare species reported in this paper, Chapman (1999) reported the discovery of a large apparent breeding population of the *Dorocordulia libera* from Singer Lake – the first find of this species in Ohio in 75 years. Table 1 gives a current Odonata list from the site. The authors believe other interesting finds may yet be made among the many different wetland habitats within this wetland basin.

Table 1. Odonata of Singer Lake Wetlands

Family	Genus, species, Author
Lestidae	<i>Lestes dryas</i> Kirby <i>Lestes eurinus</i> Say
Coenagrionidae	<i>Enallagma hageni</i> (Walsh) <i>Enallagma aspersum</i> (Hagen) <i>Ischnura posita</i> (Hagen) <i>Ischnura verticalis</i> (Say)
Gomphidae	<i>Gomphus exilis</i> Selys <i>Arigomphus villosipes</i> Selys
Aeshnidae	<i>Aeshna mutata</i> Hagen <i>Aeshna verticalis</i> Hagen <i>Anax junius</i> (Drury)
Corduliidae	<i>Dorocordulia libera</i> (Selys) <i>Epitheca cynosura</i> (Say) <i>Epitheca princeps</i> Hagen
Libellulidae	<i>Erythemis simplicicollis</i> Say <i>Ladona julia</i> (Uhler) <i>Leucorrhinia intacta</i> Hagen <i>Libellula luctuosa</i> Burmeister <i>Libellula cyanea</i> Fabricius <i>Libellula semifasciata</i> Burmeister <i>Libellula pulchella</i> Drury <i>Libellula incesta</i> Hagen <i>Nannothemis bella</i> (Uhler) <i>Pachydiplax longipennis</i> (Burmeister) <i>Perithemis tenera</i> (Say) <i>Plathemis (Libellula) lydia</i> Drury <i>Sympetrum obtrusum</i> (Hagen) <i>Sympetrum rubicundulum</i> (Say) <i>Tramea lacerata</i> Hagen

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