Somatochlora kennedyi (Odonata: Corduliidae): a new species for British Columbia, with notes on geographic variation in size and wing venation

REX D. KENNER

5560 LINSCOTT COURT, RICHMOND, BC V7C 2W9

ABSTRACT

The first confirmed record for *Somatochlora kennedyi* Walker in British Columbia is reported. Specimens of this species from the northern Yukon are smaller than those from elsewhere in its range and have a reduced number of cells in certain parts of the wings. The reduced number of cells may cause some keys to yield ambiguous results.

Keywords: *Somatochlora*, Corduliidae, Odonata, British Columbia, geographic variation

INTRODUCTION

In the summer of 1997, the Conservation Data Centre (Ministry of Environment, Lands and Parks) sponsored two expeditions to northeastern British Columbia to survey the odonate fauna of that region. During the first, Leah Ramsay and I made a number of interesting discoveries among which was the capture of a female *Somatochlora kennedyi* Walker near Fort Nelson. This is the first confirmed record for this species in British Columbia. While comparing this specimen to named *S. kennedyi* specimens in the collection of the Spencer Entomological Museum (SEM), certain anomolies were noted in the size and wing venation of specimens from the Yukon. That information is presented here.

Somatochlora kennedyi is a southern boreal species with a distribution which extends from the northern Yukon east to Newfoundland, south to Minnesota, Wisconsin, Michigan; and east to Ohio, New York and Massachusetts (Walker and Corbet 1975; Cannings *et al.* 1991; Bick and Mauffray 2000). The distribution is poorly known, especially in the west; Cannings and Cannings (1994) noted that it is "unusual for a southern boreal species to be unknown in British Columbia and Alberta". The records for the Yukon, Manitoba and the Northwest Territories are from late June and July (Walker and Corbet 1975; Cannings *et al.* 1991). *Somatochlora kennedyi* has been reported from "sedge/rush and polygon sedge fens" and "deep sedge/moss marsh" in the Yukon (Cannings and Cannings 1994) and "a shallow pond in a swampy wood" in New Brunswick (Walker 1925).

MATERIAL EXAMINED

All specimens of *S. kennedyi* examined are deposited in the SEM, Department of Zoology, University of British Columbia. All specimens were dried in acetone and are stored in clear envelopes. The collection data for the BC specimen are 1 ♀, Andy Bailly Lake, S of Fort Nelson, 25 June 1997, R. D. Kenner. The details for the 20 Yukon specimens are given in Cannings *et al.* (1991): 1 ♂, 1 ♀, Loon Lake (60° 02' N 127° 35' W) and 15 ♂, 3 ♀, Old Crow area (2 separate sites).

RESULTS AND DISCUSSION

The specimen from Andy Bailly Lake is a young female, caught while it was resting on the road beside our vehicle. We saw no other individuals. Due to its teneral nature, the abdomen partially collapsed during treatment with acetone for preservation. I determined it to be *S. kennedyi* using the keys in Walker and Corbet (1975) and by comparison with named specimens in the collection of the SEM. The specimen was also examined by R. A. Cannings and S. G. Cannings who have previous experience with this species and they confirmed the determination. The occurrence of *S. kennedyi* in BC was expected (Cannings and Stuart 1977), especially since it has been collected in the southeastern Yukon not far from the BC-Yukon border (Cannings *et al.* 1991).

Although this is the first confirmed record for BC, it may not be the first time *S. kennedyi* has been collected in BC. There is in the SEM, a previously unidentified final stadium larval specimen which keys out as *S. kennedyi.* It was collected in sweeps of the "moss/rush/sedge" in the fen at the south end of Eddontenajon Lake on 17 June 1987 by S. G. Cannings. Separating the larvae of *S. kennedyi* from those of *S. franklini* (Selys) depends on differences in the arrangement of setae on the dorsum of the abdominal segments (Walker 1925; Walker and Corbet 1975). Some of these setae may break off during capture and storage and it is difficult for me to be completely certain of the identification without named material for direct comparison.

In keys for adult female *Somatochlora* sp. (Walker 1925; Walker and Corbet 1975) the number of cells "in the fork of R_2" is one of several characters used for separating *S. kennedyi* and *S. franklini*; *S. kennedyi* has 11–20 cells and *S. franklini* has 6–9 cells. This character is also used in the key in Needham and Westfall (1955). The data in Table 1 show that the number of cells in the fork of R_2 is not a reliable character for separating *S. kennedyi* and *S. franklini* in the northern Yukon. A more useful character appears to be the colour of the lateral lobes of the postclypeus (brown in *S. kennedyi* but black in *S. franklini*).

Table 1

Latitudinal variation in morphological characteristics of *Somatochlora kennedyi* from British Columbia and the Yukon.

	Andy Bailly L. 58°49'N	Loon L. 60°02'N		Old Crow Area 67°35'N		Walker and Corbet (1975)	
	1 ♀	1 ♂	1 ♀	15 ♂	3 ♀	♂	♀
Total length (mm)	43.5	47	49	41-45 (42.5)	40-43 (42)	51.5-55	47-55
Hind wing length (mm)	30	29.5	33	25.5-28 (26.7)	26.5-28 (27.5)	29.5-32	29.5-33.5
# cells in R_2 fore wing	12/14	12/13	13/15	5-15 (10.8)	7-11 (9.2)	13-19	11-18
# cells in R_2 hind wing	12/14	13/13	18/19	9-15 (11.9)	9-12 (10)	12-19	12-20

Numbers in parentheses are mean values.

The data in Table 1 also show that both total length and hind wing length for the specimens from the Old Crow area are smaller than the lower limit given in Walker and Corbet (1975). The partial collapse of the abdomen of the BC specimen may have contributed to its apparent small size.

The literature contains a number of references to geographical variations in size. Walker (1925) briefly discusses geographical variations in *Somatochlora* spp. and reports that *S. franklini* is "larger towards the southern limit of its range" and *S. albicincta* (Burmeister) is smaller in the far north and on the Labrador coast. Although Tennessen (1977) states that a decrease in size with latitude is common in North American odonates, there are a number of references which show either increases or decreases in size with increasing latitude for both odonates and non-odonate insects (see, for examples, citations in Stewart 1982 and Corbet 1999). Cannings (1982) showed that the larvae of *Sympetrum illotum* Hagen increase in size with increasing latitude. It is clear that factors other than latitude need to be taken into account in developing an understanding of the observed size variations.

ACKNOWLEDGEMENTS

I thank S. G. Cannings for the opportunity and the Ministry of Environment, Lands and Parks for financial support during the field work . I thank Leah Ramsay for being a great field companion, R. A. Cannings and S. G. Cannings for examining the specimen and G. G. E. Scudder and K. Needham for allowing me unlimited access to the collections of the SEM and space to work.

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