

An Annotated Checklist of the Odonata of Canada - corrections

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This annotated list was first published in the Bulletin of American Odonatology 9(1): 1-20 (5 April 2005). **UNFORTUNATELY THE VERSION PUBLISHED WAS NOT THE ONE REVISED AFTER REVIEW.** Following is a list of changes that make the published version complete to the date of publication.

PAGE 1:

In the first paragraph insert “to Sept. 2004” after “revisions.” Insert “Most” before “french.” Delete “basic” and add “of species” after “list.” Prior to “Following ...” insert the sentence “We encourage the development of appropriate French names for the whole Canadian fauna.”

Replace the first paragraph under “Status” with the following paragraph: “The national and provincial general status rankings for the 208 species of Canadian dragonflies were recently posted on the Wild Species website (see <http://www.wildspecies.ca/dragonflies.cfm?lang=3De>). Much of the conservation ranking of Canadian dragonflies was led by Jim Duncan of the Wildlife and Ecosystem Protection Branch of Manitoba Conservation on behalf of the National General Status Working Group (NGSWG), which is composed of biologists from each Canadian province and territory and from three federal agencies whose mandate includes wildlife (see <http://www.wildspecies.ca/members.cfm?lang=e>). Jim organized a workshop held 9 October 2002 during national entomological meetings in Winnipeg, Manitoba; others involved were Joe Ackerman, John Acorn, Paul Brunelle, Rob Cannings, Philip Corbet, Jim Duncan, Brent Elliot, Terry Galloway, Donna Giberson, Henri Goulet, Marjorie Hughes, Dan Johnson, Colin Jones, Shelley Pardy, Bill Preston and Bill Watkins. The rankings were finalized in Ottawa on 22 November 2003 by the National General Status Working Group, which is composed of biologists from each Canadian province and territory and from three federal agencies whose mandate includes wildlife (see <http://www.wildspecies.ca/members.cfm?lang=e>). Rob Cannings and Paul Brunelle also participated. Our update of the ranking table (Table 1) includes the elimination of some rank “5” (“undetermined”) provincial listings where no reliable record exists and the addition of several species for various provinces and territories (indicated by a “6”, which signifies known presence but unassessed status). Note that the Odonata of Nunavut Territory has been little studied and the odonate fauna of Saskatchewan is the least well-documented. The NGSWG has outlined the importance of these rankings: “Ensuring human actions don’t drive species extinct in Canada means knowing the status of species across the length and breadth of the nation – which species are secure for now, which to keep an eye on, and which need to be formally assessed and perhaps protected. The most recent effort on dragonflies provides an overview of their status in Canada. It brings the results of the remarkably extensive data accumulation by volunteers as well as that of Provincial, Territorial, and Federal agencies onto a single platform for the first time. This effort was conducted under the auspices of the Accord for the Protection of Species at Risk.”

Change “References” to “About the References” and change the first sentence of the following paragraph to “Although the list of references contains publications not cited in the text, it is not intended to be a comprehensive compilation of the literature covering Canadian Odonata.” In the middle of the paragraph change “justification” to “list” and “listed” to “included.”

PAGE 2:

left column: Change “35,000” to “nearly 40,000.” After “Brunelle 1997” insert “(as *N.* sp. nov.)”

right column: At end of “Recent Additions” add the sentence “Recent additions to provincial occurrences, including those published in *Argia* up to vol. 16(3), are included in table 1.”

Under “Excluded Records” replace the *Lestes disjunctus* text with the following: “***Lestes disjunctus*** Walker should be raised to a full species from subspecific rank in accordance with the DSA list, a change based on the paper by Donnelly (2003). The status of this species in Ontario is problematic, but recent analysis (Catling 2004) suggests to us that the argument for exclusion is a little stronger than the argument for inclusion. Detailed study of specimens from Atlantic Canada in the *L. australis* – *L. disjunctus* group is incomplete. With further study, the presence of *L. australis* in Canada might be confirmed.”

Under “Excluded Records” replace the ***Plathemis subornata*** text with the following: “***Plathemis subornata*** (Hagen) was reported from British Columbia (Cannings 1983, Needham *et al.* 2000). Despite specimen evidence we have omitted *P. subornata* after taking the following points into account: The species occurs in the southwestern United States (north to southern Oregon) and lives too distant to be expected as accidental in BC. (2) It is not a wandering species. (3) Appropriate habitat does not exist for hundreds of kilometers around Nanaimo where the specimens were reported to have been collected. (4) All records are earlier than 1973 and come from a single collector, creating more doubt. (5) There are so many specimens attributed to a single BC location that a labeling error is suggested; it seems likely that the specimens originated in the southwestern US, but were sorted and labeled incorrectly.”

PAGE 3:

Change the title “Synonymy” to “SCIENTIFIC NAME CHANGES SINCE WALKER’S PUBLICATIONS.” After “*Lestes australis*” in the lower right column, insert “See excluded records.” Also in the right hand column replace the *Macromia rickeri* text with: “***Macromia rickeri*** - Walker and Corbet (1975) is here treated as a subspecies of *M. magnifica*; this new status is based on unpublished research by D.R. Paulson. The subspecies name is *Macromia magnifica rickeri* Walker. Most recently *M. rickeri* has been treated as a synonym of *M. magnifica* (e.g. Needham *et al.* 2000, Cannings 2002b). See also notes below under the title subspecies.”

Add “and not a subspecies” after “synonym” in the very last line.

PAGE 4:

Under the title “subspecies” replace the first paragraph with “Where more than one subspecies occurs in North America or where the nominate subspecies occurs elsewhere (e.g. *Aeshna juncea*) the subspecies occurring in Canada are listed below the species name and

indented in the list; where these have been given separate common names (eg. Paulson 2004), these are indicated. Although there are relatively few subspecies in Canadian Odonata, several pose taxonomic questions that have not yet been resolved. The NGSWG ranks only species. Subspecies are ranked collectively as the species to which they belong. Thus not all subspecies in the list are included in Table 1.”

At the end of the second paragraph insert “and *Macromia illinoensis* includes only the subspecies *illinoensis*.”

Everything after the second paragraph in the subspecies section should be replaced with the following:

“The subspecies of *Aeshna interrupta* described by Walker (1908, 1958) are problematic. Populations in Canada include members of *A. i. interrupta*, *A. i. interna*, and *A. i. lineata*, although they do not form clear, geographically separate populations. What Walker calls *A. i. interrupta* is mostly eastern and *A. i. lineata* is mostly western, the two meeting in northwestern Ontario, but individuals resembling *A. i. lineata* occur at low frequencies in the Atlantic provinces and the populations on the Pacific coast, west of the Cascade and Coast mountains, look like *A. i. interrupta* of the East. This spotted form also mixes with *A. i. lineata* in the interior of British Columbia. Even more confusing, there are occasional specimens with the stripe patterns of each subspecies on either side of the thorax. *Aeshna i. interna*, with relatively broad thoracic stripes, occurs in southeastern British Columbia and in the southern Rocky Mountains of Alberta, but the region is also characterized by intergrades (Cannings and Stuart 1977). Clearly, interesting patterns of variation in thoracic stripes and shape of cerci occur in the species, and this variation requires more study. There may be two variable geographic forms, one eastern and one western, each of which has members that look like the other. Alternatively the colour patterns may be a response to environmental factors such as temperature.

The subspecies of *Aeshna umbrosa* are also confusing. The nominate green-marked subspecies, *A. u. umbrosa* is transcontinental whereas Walker (1958) indicates that the blue-marked subspecies, *A. u. occidentalis* is strictly western, found in Canada only in southern British Columbia. Blue-marked individuals occur in eastern Canada, but a more confusing observation is that both blue- and green-marked forms occur throughout much of British Columbia, often in the same locality (Walker 1958, Cannings and Stuart 1977). See Walker (1958) for additional information on these races and reference to a dark form on Vancouver Island.

Although little studied until recently, *Gomphus fraternus manitobanus*, a pale form, appears to be discrete in Canada. It ranges from the region of Winnipeg westward and evidently does not overlap with the dark eastern subspecies, *Gomphus fraternus fraternus*.

The relatively dark *Ophiogomphus severus montanus* is the common form of the species in the interior of British Columbia and in the Rocky Mountains of Alberta whereas the lighter *O. s. severus* is the Great Plains form, occurring in British Columbia east of the Rockies and in Alberta and Saskatchewan.

Although identical structurally to *M. m. magnifica*, subspecies *M. m. rickeri* is a dark coloured form endemic to southern British Columbia. The yellow bands on abdominal segments 3-6 of the nominate subspecies are reduced in *M. m. rickeri* and divided into two spots. *Macromia m. rickeri* is restricted to the Fraser River Valley (south coast) and Shuswap Lake region (south-central interior). These populations occur in cooler and wetter environments than the paler, more wide-ranging *M. m. magnifica*, which inhabits the drier and warmer Okanagan

and Kettle valleys of the southern interior of the province. The ranges of the two subspecies do not overlap. Additional support for subspecies rank has been accumulated by D. R. Paulson (pers. comm.).

There is some evidence that the eastern *Sympetrum semicinctorum* and the western *S. occidentale* are conspecific (= *S. semicinctorum*), although we believe the issue requires more study. Not only is there some difficulty in separating the species, but *S. occidentale* has two Canadian subspecies -- *S. o. occidentale* in British Columbia and *S. o. fasciatum* on the Great Plains. If the species are lumped, presumably all the taxa might be designated subspecies. A similar situation exists with the eastern *Erythemis simplicicollis* and the western *E. collocata* (Donnelly 2004d) and the eastern *Amphiagrion saucium* and the western *A. abbreviatum*. We have maintained these taxa as separate species pending more study.

Other species have recognizable forms but are not currently treated as subspecies either because they have been placed in synonymy (e.g. *Somatochlora albicincta massettensis*) or the variations within Canada have not been recognized taxonomically (e.g. *Epitheca cynosura*, *Epitheca princeps*, *Leucorrhinia proxima*).

PAGE 5:

Replace "*A. fumipennis* ...." with

*A. fumipennis* Burmeister, 1839 – Variable Dancer

*A. fumipennis violacea* (Hagen, 1861) - Violet Dancer / argie violacée

Replace "*E. traviatum* ..." with

*E. traviatum* Sélys, 1876 - Slender Bluet

*E. traviatum westfalli* Donnelly, 1964 - Slender Bluet

Replace "*Aeshn interrupta* ... aeschne des joncs" with

*A. interrupta* Walker 1908 - Variable Darner / aeschne domino

*A. interrupta interrupta* Walker, 1908 – Variable Darner

*A. interrupta lineata* Walker, 1908 - Variable Darner

*A. interrupta interna* Walker, 1908 - Variable Darner

*A. juncea* (Linnaeus, 1758) - Sedge Darner / aeschne des joncs

*A. juncea americana* Bartenev, 1929 - Sedge Darner / aeschne des joncs

Capitalize D on "darner" after "*A. palmata*."

PAGE 6:

Replace "*A. umbrosa* ..." with

*Aeshna umbrosa* Walker, 1908 – Shadow Darner / aeschne des pénombres

*A. umbrosa umbrosa* Walker, 1908 - Shadow Darner

*A. umbrosa occidentalis* Walker, 1912 - Shadow Darner

Replace "*G. fraternus* ..." with

*G. fraternus* (Say, 1839) - Midland Clubtail / gomphe fraternel

*G. fraternus fraternus* (Say, 1839) - Midland Clubtail

*G. fraternus manitobanus* Walker, 1958 – Manitoba Clubtail

Replace “*O. severus* ...” with

*O. severus* Hagen, 1874 - Pale Snaketail

*O. severus severus* Hagen, 1874 - Pale Snaketail

*O. severus montanus* (Sélys, 1878)- Pale Snaketail

PAGE 7:

Replace “*Macromia illinoensis* ...” with

*Macromia illinoensis* Walsh, 1862 - Swift River Cruiser / macromie noire

*Macromia illinoensis illinoensis* Walsh, 1862 - Illinois River Cruiser / macromie noire

Replace “*M. magnifica* ...” with

*M. magnifica* McLachlan in Sélys, 1874 - Western River Cruiser

*M. magnifica magnifica* McLachlan in Sélys, 1874 - Western River Cruiser

*M. magnifica rickeri* Walker, 1937 - Western River Cruiser.

Replace “*Williamsonia fletcheri*” with “*Williamsonia fletcheri*”

PAGE 8:

Replace “*S. occidentale* ...” with

*S. occidentale* Bartenev, 1915 - Western Meadowhawk

*S. occidentale occidentale* Bartenev, 1915 - Western Meadowhawk

*S. occidentale fasciatum* Walker 1951 - Western Meadowhawk

Replace the paragraph under the title; “Hybrids” with

“In addition to the hybrids reported from Canada (listed below), hybrids have been reported from the US for species that also occur in Canada including *Enallagma anna* x *carunculatum* (possibly equivalent to *E. opimolocus* -- Westfall and May 1996, Miller and Ivie 1996), *Enallagma boreale* x *carunculatum* (Paulson, pers. comm.), *Gomphus graslinellus* x *lividus* (Williamson 1906), *Ophiogomphus rupinsulensis* x *carolus* (Donnelly, pers. comm.) and *Sympetrum internum* x *obtrusum* (e.g. Donnelly 2004b). In the Canadian maritime provinces, the closely related *Sympetrum internum*, *S. rubicundulum* and *S. obtrusum* all apparently hybridize freely, given the abundance of specimens with intermediate morphological characteristics (P. Brunelle, pers. obs.). In addition, even less closely related related *Sympetrum* species have been collected in tandem (*S. semicinatum* with *S. vicinum*; *S. obtrusum* with *S. semicinatum*).”

Replace the last sentence of the Acknowledgements with “T.W. Donnelly, J. Duncan, C. D. Jones, D.R. Paulson, and L. Twolan commented on the manuscript. D.R. Paulson also encouraged us, based on his own research, to designate *Macromia rickeri* a subspecies of *M. magnifica*.”

PAGES 14 - 20:

There are no corrections to Table 1. Several references that required changes or were omitted are

listed below.

Bree, D. 2004. Additional records of Arrowhead Spiketail (*Cordulegaster obliqua*) in Ontario. Pp. 6-8 in P.M. Catling, C.D. Jones and P. Pratt, eds. Ontario Odonata Vol.4. Toronto Entomologists' Association, Toronto, Ontario, Canada.

Cannings, R.A., S.G. Cannings, L.R. Ramsay and G.E. Hutchings. 2005. Four species of Odonata new to British Columbia, Canada. Notulae Odonatologicae Vol. 6(5). In press.

Catling, P.M. 2004. The Austral Spreadwing, *Lestes australis*, in Ontario. Pp. 18-21 in P. M. Catling, C.D. Jones and P. Pratt, eds. Ontario Odonata Vol. 4. Toronto Entomologist's Association, Toronto, Ontario, Canada.

Cook, C. and D. Bridgehouse. 2005. *Aeshna mutata* Hagen (Spatterdock Darner) in Nova Scotia, a new provincial record, and significant range extension. Argia 16(4): 15.

Hughes, M.L. and P.M. Catling. 2005. First Records of *Stylurus amnicola* for Manitoba. Argia (the news journal of the Dragonfly Society of the Americas) 16: 6-8.

Paulson, D.R. 2004. New common names for some North American Odonata. Argia (the news journal of the Dragonfly Society of the Americas) 16(3): 29-30.

Wild Species General Status of Species in Canada – <http://www.wildspecies.ca/> . new ranks for odonates. On the Internet at <http://www.especessauvages.ca/dragonflies.cfm?lang=3De>. (accessed: 16 December 2004).