DISTRIBUTION OF NORTH AMERICAN ODONATA. PART II:
MACROMIIDAE, CORDULIIDAE AND LIBELLULIDAE
Thomas W. Donnelly, p. 61 - 32
THE DRAGONFLY SOCIETY OF THE AMERICAS

Business address: c/o T. Donnelly, 2091 Partridge Lane, Binghamton NY 13903

<table>
<thead>
<tr>
<th>EXECUTIVE COUNCIL 2003 - 2005</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>President</td>
<td>R. Beckemeyer</td>
<td>Wichita KS</td>
</tr>
<tr>
<td>President Elect</td>
<td>S. Krotzer</td>
<td>Centreville AL</td>
</tr>
<tr>
<td>Immediate past President</td>
<td>D. Paulson</td>
<td>Seattle WA</td>
</tr>
<tr>
<td>Vice President, Canada</td>
<td>R. Cannings</td>
<td>Victoria, BC</td>
</tr>
<tr>
<td>Vice President, Latin America</td>
<td>R. Novelo G.</td>
<td>Jalapa, Veracruz</td>
</tr>
<tr>
<td>Secretary</td>
<td>S. Dunkle</td>
<td>Plano TX</td>
</tr>
<tr>
<td>Treasurer</td>
<td>J. Daigle</td>
<td>Tallahassee FL</td>
</tr>
<tr>
<td>Editor</td>
<td>T. Donnelly</td>
<td>Binghamton NY</td>
</tr>
<tr>
<td>Regular member</td>
<td>J. Abbott</td>
<td>Austin TX</td>
</tr>
<tr>
<td>Regular member</td>
<td>S. Valley</td>
<td>Albany OR</td>
</tr>
<tr>
<td>Regular member</td>
<td>S. Hummel</td>
<td>Lake View IA</td>
</tr>
</tbody>
</table>

JOURNALS PUBLISHED BY THE SOCIETY

ARGIA, the quarterly news journal of the DSA, is devoted to non-technical papers and news items relating to nearly every aspect of the study of Odonata and the people who are interested in them. The editor especially welcomes reports of studies in progress, news of forthcoming meetings, commentaries on species, habitat conservation, noteworthy occurrences, personal news items, accounts of meetings and collecting trips, and reviews of technical and non-technical publications. Articles for publication in ARGIA should preferably be submitted as hard copy and (if over 500 words) also on floppy disk (3.5" or 5.25"). The editor prefers MS DOS based files, preferably written in WORD, WORD for WINDOWS, WordPerfect, or WordStar. Macintosh WORD disks can be handled. All files should be submitted unformatted and without paragraph indents. Each submission should be accompanied by a text (=ASCII) file. Other languages should be submitted only as text (=ASCII) files. Line drawings are acceptable as illustrations.

T. Donnelly (address below) is the interim editor of ARGIA.

BULLETIN OF AMERICAN ODONATOLOGY is devoted to studies of Odonata of the New World. This journal considers a wide range of topics for publication, including faunal synopses, behavioral studies, ecological studies, etc. The BAO publishes taxonomic studies but will not consider the publication of new names at any taxonomic level. Enquiries and submission of manuscripts should be made to BAO editor T. Donnelly, 2091 Partridge Lane, Binghamton NY 13903. Final submissions (after review) should be made on floppy disk, as above, with illustrations in final form and preferably adjusted to final size.

MEMBERSHIP IN THE DRAGONFLY SOCIETY OF THE AMERICAS

Membership in the DSA is open to any person in any country. Dues for individuals in the US, Canada, or Latin America are $15 for regular membership and $20 for institutions or contributing membership, payable annually on or before 1 March of membership year. Dues for members in the Old World are $25. Dues should be mailed to Jerrell Daigle, 2067 Little River Lane, TALLAHASSEE FL 32311.

The BULLETIN OF AMERICAN ODONATOLOGY is available by a separate subscription at $15 for members and $18.75 for non-members and institutions.
DISTRIBUTION OF NORTH AMERICAN ODONATA. PART II: MACROMIIDAE, CORDULIIDAE, LIBELLULIDAE

Thomas W. Donnelly, 2091 Partridge Lane, Binghamton NY 13903, tdonnelly@binghamton.edu

ABSTRACT: Dot-map presentations show the distributions for species of Macromiidae, Corduliidae, and Libellulidae in North America. Additional comments, including subspecies information, are provided for several species.

INTRODUCTION: This is the second of a series that started with Donnelly (2004a). Introductory and explanatory comments in that number will not be repeated here.

SUBSPECIES, AND SPECIES OF SPECIAL INTEREST:

Macromia illinoiensis: Donnelly and Tennesen (1994) described structural variations in the taxa georgina and illinoiensis and proposed that they had a subspecific relationship. They noted four counties where the taxa varied smoothly between the subspecific end members, and noted that in a fifth county (Macon Co. NC) there were separate populations of the two which did not so vary. May and Carle (1996) noted that “The two taxa seem distinct in structural characters in New Jersey and are sympatric in Virginia and North Carolina.” We see no reason to alter our conclusion.

Macromia X wabashensis: I treat this as a hybrid, probably between taeniolata and pacifica. The Texas specimens might alternatively have annulata as one parent.

Epitheca costalis, cynosura, and petechialis: These taxa have caused extensive difficulties. Recent examination of numerous specimens from eastern Texas, Oklahoma, Kansas, and Colorado, have shown unspotted petechialis is far more widespread than previously recognized. Probably plains (western Kansas, Colorado, western Oklahoma, central and western Texas) records of “costalis” and “cynosura” are probably pale-winged petechialis. The only reliable method of distinguishing among these three taxa is by a close examination of the male cerci and abdominal base.

In several localities in Ohio and scattered localities elsewhere, costalis and cynosura appear to intergrade freely, although in other localities, no evidence of intergradation has been detected. While these species appear to be valid biological species, the extent of, and the reasons for, their apparent intergradation are not yet understood.

Epitheca semiaquae: There is a broad gap in the distribution of species, with no records from north-central Florida to Texas. Specimens from Massachusetts appear to lack the wing spots and have been called cynosura.

Somatochlora hinea: The records from Alabama, Ohio, and Indiana are historic.

Williamsiana tintneri: The record from Albany, New York is historic.

Erythemis simplicicollis and collocata: The apparent subspecific relationship between these two taxa was discussed by Donnelly (2004b).

Leucorrhina provins: The eastern and western forms are different in both appearance and habits. The eastern forms have yellow pale color and become quite pruinose. They commonly do not perch in conspicuous positions. The western forms are patterned with bright red, are far less pruinose, and perch in very exposed positions. The boundary between the two forms appears to be approximately in western Wisconsin.

Orthemis antillae species: This species has not been named. It flies with ferruginea around Miami, and the two can be distinguished by several differences in appearance. The antillae species ranges to Trinidad, but is not certainly specifically distinct with a co-occurring, and also unnamed, purple form in Hispaniola, Puerto Rico, and the Virgin Islands. It is premature to name any of these forms.

Perithemis tenera: This species appears to grade smoothly into the tropical "species" mooma, and several specimens from southern Texas could be referred to mooma. It is more realistic to regard them as one wide ranging and variable species. Some of the Mexican records shown are of "mooma", but Mexican records of tenera are numerous and widespread.

Plathemis lydia: Eastern and western forms, distinguished by the shape of the styli on the basal abdominal segment (Donnelly, 1991), grade

1Bulletin of American Odonatology 8(1) 1:32
together in a narrow zone in west-central Montana to western Wyoming.

**Sympetrum internum** and *rubicundulum*: Throughout most of their considerable overlapping ranges, these appear to be easily distinguishable species (Williamson, 1933). Along the Atlantic seaboard, from at least New Jersey to Cape Cod, the most abundant form appear to be *rubicundulum*, but with a hamule intermediate between this species and *internum*. Specimens of apparently valid *internum* are found sporadically in the same area.

**Sympetrum internum** and *obtrusum*: Hybrids between these two species have been found at several northeastern localities (Donnelly, 1991)

**Sympetrum semicinctum**: Specimens taken in westernmost Ontario and Wisconsin, and in Northeastern Minnesota, appear to be transitional between *semicinctum* and *occidentale*. I believe the two to have a subspecific relation, as shown. I have not further differentiated *californicum* and *fasciatum*.

---

**REFERENCES CITED**


---

**INDEX TO MAPS**

(NOTE: M refers to Macromiidae, C to Corduliidae, and L to Libellulidae)

- Didymops floridensis M1
- Didymops transversa M1
- Macromia alleghaniensis M2 C1
- Macromia annulata M1
- Macromia illinoiensis M2 C1
- Macromia magnifica M1
- Macromia margarita M1
- Macromia pacifica M1
- Macromia X wabashensis M2 C1
- Macromia taeniolata M1
- Cordulia shuttleffi M2 C1
- Dorocordulia lepida M2 C1
- Dorocordulia libera M2 C1
- Epitheca (Epicerodulia) princeps C3
- Epitheca (Tetragonuria) canis C3
- Epitheca (Tetragonuria) costalis C2
- Epitheca (Tetragonuria) cynosura C2
- Epitheca (Tetragonuria) petechialis C2
- Epitheca (Tetragonuria) semiaquae C2
- Epitheca (Tetragonuria) sepia C2
- Epitheca (Tetragonuria) spinigera C2
- Epitheca (Tetragonuria) spinosa C2
- Epitheca (Tetragonuria) stella C2
- Helocordulia selysii M2 C1
- Helocordulia uhleri C4
- Neurocordulia alabamensis C3
- Neurocordulia michaeli C3
- Neurocordulia molesta C4
- Neurocordulia obsoleta C4
- Neurocordulia virginiens C3
- Neurocordulia xanthosoma C3
- Neurocordulia yamaskaensis C4
- Somatochlorella albicincta C5
- Somatochlorella brevicincta C6
- Somatochlorella calverti C7
- Somatochlorella cingulata C5
- Somatochlorella elongata C8
- Somatochlorella ensigera C8
- Somatochlorella filosa C8
- Somatochlorella forcipata C7
- Somatochlorella franklinii C7
- Somatochlorella georgiana C8
- Somatochlorella hineana C4
Donnelly: Distribution of North American Odonata, Part II

Somatochlora hudsonica C6
Somatochlora incurvata C10 L1
Somatochlora kennedyi C7
Somatochlora linearis C8
Somatochlora margarita C7
Somatochlora minor C9
Somatochlora ozarkensis C8
Somatochlora provocans C9
Somatochlora sahlbergi C6
Somatochlora semicircularis C6
Somatochlora septentrionalis C6
Somatochlora tenebrosa C9
Somatochlora walshii C9
Somatochlora whitehousei C5
Somatochlora williamsoni C5
Williamsonia fletcheri C4
Williamsonia lintneri C4
Brachymesia furcata C10 L1
Brachymesia gravida L2
Brachymesia herbida C10 L1
Brechmhoroga mendax C10 L1
Brechmhoroga pertinax C10 L1
Cannaphila insularis C10 L1
Celithemis amanda L5
Celithemis berthia L5
Celithemis elisa L7
Celithemis eponina L7
Celithemis fasciata L7
Celithemis martha L6
Celithemis ornata L7
Celithemis verna L6
Crocothemis servilia C10 L1
Dythemis fugax L2
Dythemis maya L2
Dythemis nigrescens L2
Dythemis velox L2
Erythmis attala L4
Erythmis peruviana L4
Erythmis plebeja L5
Erythmis simplicicollis L4
Erythmis vesiculosa L5
Erythrodiplax basifusca L4
Erythrodiplax berenice L4
Erythrodiplax funerea L3
Erythrodiplax fusca L4
Erythrodiplax minuscula L3
Erythrodiplax umbrata L5
Idiapihe cubensis L3
Ladona deplanata L6
Ladona exusta L6
Ladona julia L7
Leucorrhinia borealis L9
Leucorrhinia frigida L7
Leucorrhinia glacialis L8
Leucorrhinia hudsonica L8
Leucorrhinia intacta L9
Leucorrhinia patricia L9
Leucorrhinia proxima L8
Libellula auripennis L10
Libellula axilena L10
Libellula comanche L10
Libellula composita L11
Libellula crobeipennis L10
Libellula cyanis L10
Libellula flavida L9
Libellula forensis L8
Libellula incesta L11
Libellula jesseana L9
Libellula luctuosa L12
Libellula needhami L10
Libellula nodisticta L9
Libellula pulchella L12
Libellula quadrimaculata L12
Libellula saturata L11
Libellula semifasciata L11
Libellula vires L11
Macrodiplax balteata L2
Macrothemis imitans L2
Macrothemis inacuta C10 L1
Macrothemis inequiquinguis L2
Miaethria marcella L5
Micrathyria acuquis L3
Micrathyria didyma L3
Micrathyria hageni L3
Nannothemis bella L11
Orthemis antillean species L13
Orthemis discolor L13
Orthemis ferruginea L13
Pachydiplax longipennis L14
Palothemis lineatipes L3
Pantala flavescens L14
Pantala hymenae L14
Perithemis domitia L13
Perithemis intensa L13
Perithemis tenera L13
Plathemis lydia L15
Plathemis subornata L15
Pseudoleon superbus L5
Symperum ambigu L15
Symperum corripus L17
Symperum costiferum L16
Symperum danae L16
Symperum illatum L8
Symperum internum L17
Symperum madidum L15
Symperum obtusum L17
Symperum pallipes L15
Symperum rubicundulum L15
Symperum semicinctum L16
Symperum signiferum L13
Symperum vicinum L18
Symperum internum X obtusum L17

3
Tauriphila australis L4
Tauriphila azteca L4
Tholymis citrina L3
Tramea abdominalis L6
Tramea binotata L5

Tramea calverti L6
Tramea carolina L6
Tramea insularis L5
Tramea lacerata L18
Tramea onusta L18

♦ Adult specimen; often used for stage unspecified

■ Photograph of adult

Ⅰ Larva or exuviae

◇ Sight Record

□ Record specified for state (US or Mexico) or region

Key to the symbols used in the maps.
MACROMIIDAE 1

Didymops floridensis, transversa
Macromia pacifica, annulata, georgina, magnifica, taeniolata margarita
MACROMIIDAE 2; CORDULIIDA 1

Macromia illinoiensis, allegheniensis, X wabashensis
Cordulia shurtleffi
Dorocordulia libera, lepida
Helocordulia selysii

Helocordulia selysii
Many western *cynosura* records may be clear-winged *petechialis*.

Many western *costalis* records may be clear-winged *petechialis*.

**CORDULIIDAE 2** *Epitheca cynosura, costalis, petechialis, sepia, stella, spinosa*
CORDULIIDAE 3

*Epitheca canis, spinigera, princeps*

*Neurocordulia alabamensis, michaeli, virginiensis, xanthosoma*
CORDULIIDAE 4

Helocordulia uhleri
Neurocordulia yamaskanensis, molesta, obsoleta
Williamsonia fletcheri, lintneri
Somatochloria hineana
CORDULIIDAE 5  Somatochloro albicincta, cingulata, whitehousei
Somatochlora brevicincta

Somatochlora sahlbergi

Somatochlora septentrionalis

Somatochlora hudsonica

Somatochlora semicircularis

Somatochlora williamsoni

CORDULIIDAE 6 Somatochlora brevicincta, sahlbergi, septentrionalis, hudsonica, semicircularis, williamsoni
CORDUILLÆ 7  Somatochlora kennedyi, calverti, margarita, forcipata, franklinii
CORDULIIDAE 8  Somatochlora elongata, ensigera, filosa, linearis, georgiana, ozarkensis
CORDULIIDAE 9  Somatochlorella provocans, tenebrosa, minor, walshii
CORDULIIDAE 10; LIBELLULIDAE 1

Somatochlorina incurvata
Brachymesia furcata, herbida
Brechmorhogax mendax, pertinax
Macrothems inacuta
Cannaphila insularis

15 © Thomas W. Donnelly
LIBELLULIDAE 2  

Brachymesia gravida  
Macrothemis imitans, inequiunguis  
Macrodiplax baletata  
Dythemis fugax, maya, nigrescens, velox
LIBELULIDAE 3

Idiaphe cubensis
Paltothemis lineatipes
Micrathyria aequalis, didyma, hagenii
Erythrodilax funerea, minuscula
Tholymis citrina
LIBELLULIDAE 4
Erythemis simplicicollis, attala, peruviana
Erythrodiplex basifusca, fusca
Tauriphila australis, azteca

18 © Thomas W. Donnelly
LIBELLULIDAE  5

Erythrodiplax umbrata
Erythemis vesiculosa, plebeja
Tramea insularis, binotata
Pseudoleon superbus
Miathyria marcella
Celithemis amanda, bertha
LIBELLULIDAE 6  
Ladona deplanata, exusta  
Tramea calverti, carolina,  
abdominalis  
Celithemis verna, martha
LIBELLULIDAE 7
Celithemis elisa, ornata, eponina, fasciata
Celithemis ornata
Leucorrhinia frigida
LIBELLULIDAE 8

Leucorrhinia proxima, glacialis, hudsonica
Libellula forensis
Sympetrum illotum
LIBELLULIDAE 9

Leucorrhinia patricia, intacta, borealis
Libellula nodisticta, flavida, jesseana
Libellula auripennis, axilena, comanche, croceipennis, cyanea, needhami
LIBELLULIDAE 11
Libellula incesta, vibrans, composita, saturata, semifasciata
Nannothemis bella
LIBELLULIDAE 13  Orthemis ferruginea, discolor, antillean species
Perithemis domitia, intensa, tenera
Sympetrum signiferum
LIBELLULIDAE 14  Pachydiplax longipennis; Pantala flavescens, hymenaea
LIBELLULIDAE 16  Sympetrum semicinctum, danae, costiferum
LIBELLULIDAE 17  Sympetrum corruptum, internum, obtrusum (incl. hybrid)