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# THE DRAGONFLY SOCIETY OF THE AMERICAS

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## 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.

Cover: What's my name? I can't fault *Epiheca (Tetragoneuria) cynosura*, but note that wasp waist. Could it be *costalis*? Or an iyergrade? Photo by John Pogacnik, northeastern Ohio

# ARGIA - The News Journal of the D.S.A.

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## In This Issue

It doesn't feel much like dragonfly time right now. Hammered by two major snow falls and an electricity outage, we are wondering what part of our garden will survive, more than whether *Gomphus vastus* is still around. This is one reason why I enjoy preparing this issue. There are notices for four upcoming field meetings: The DSA annual meeting north of Sacramento CA., the 2<sup>nd</sup> annual Eglin AFB FL survey, and the southeastern DSA (northern Georgia) and Northeastern DSA (southeastern Ohio) field trips. Bring your sun block, and leave your woolies at home.

Philip Corbet has communicated a graceful response to his Honorary Membership in the Society. The honor is ours.

We have had many reports of first records and significant range extensions. The Prathers report *Celithemis elisa* from Colorado, George Harp gives us Arkansas records and the first *Triacanthagyna septima* from the US. Ann Johnson gives us some new Iowa records – and that from one of the most thoroughly covered states.

Bill Mauffray fills us in on his Georgia project, which is filling in some big gaps. Gordon Hutchings tells us of a place few of us will ever visit – northern Saskatchewan. This region is critical for distributions, because many transcontinental species seem not to occur here, leaving disjunct eastern and western populations. Gordon fills in some of these “gaps”.

Ginger Brown's Rhode Island project proceeds apace, filling in the map of New England nicely.

Change of pace. Have you ever linked songs with dragonflies? How about “Come Fly With Me” for *Anax junius*. Or, “I've Been Lurking on the Railroad” for any *Gomphus* you want to name (I could never resist a truly dreadful pun.). And how about “Your Cheating Heart” for our old friend *Epitheca (Tetragoneuria) cynosura*? I have identified a fascinating problem with these bugs, which seem to intergrade shamelessly with *costalis* – but only in some places. I present the preliminary evidence in this issue.

Fred Sibley has finally bitten a bullet which should have been bitten long ago and undertaken a study of (mainly) artificial ponds. He has turned up many surprises in his first two years, and we will have to re-think many of our notions as to how odonates colonize new habitats.

Jose Ramos Hernández reminds us that odonate studies are alive and well in Cuba. His article gives us an idea of occurrence throughout the year, which we have all too seldom for tropical areas. I don't know how many more of these articles I can take before I simply board a plane and go.

Dennis Paulson tells us that to fill in the map for species distribution, there are some places that need coverage. He makes a good point. Let's hear it for the Great Plains.

Roy Beckemeyer send in several articles. His visit to a butterfly festival in Texas reminds me that it is warm down there right about now. And beckoning. His account of a visit to New Harmony reminds us that there is a fascinating place in southern Indiana to visit and learn more about Thomas Say and his times.

Roy's account of a clever beetle catching dog reminds us that he is an observer of the canine world as well as the bug world. I should add that Paul and Rachel Novak's dog Poppy took the first record of *Neurocordulia yamaskanensis* for New York. Years ago we had a cat in New Jersey that cleverly snatched a *Tetragoneuria cynosura* right out of the air. (I wish I had preserved the mangled specimen!) There are accounts of botanists who trained monkeys to bright down tropical epiphytic plants. Why can't someone train a dog to spot, or even catch, a *Gomphus*?

We all look forward to Tim Manolis' California odonate manual. I hope it will be available at the Annual Meeting.

This is as good a place as any to announce that I am well into a dragonfly and damselfly manual covering all of North America. It will be published by Cornell University Press. The art work is being done by Elise O'Grady, many of whose fine illustrations are found in the recent Needham et al Dragonfly manual. Her color plates look great. Stay tuned.

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**CALIFORNIA IS PROUD TO HOST THE 2003 ANNUAL MEETING OF THE DRAGONFLY SOCIETY OF THE AMERICAS (DSA)**

DATE: June 20-22

PLACE: Williams, Colusa Co., CA

Williams is a central location for visiting some the best California sites with western endemic species. Follow in Clarence Kennedy's footsteps in the Chico area, &/or collect and observe Pacific Odonata at Pope Creek and Bear Creek in the rugged coastal mountains of California! Hope you can come!

DSA meeting web site link:  
<http://www.sonic.net/~bigsnest/DSA2003/>  
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**EGLIN AFB ODONATA SURVEY in APRIL 2003**

**Jerrell J. Daigle**, [jdaigle@nettally.com](mailto:jdaigle@nettally.com),  
 850/878-8787

A return trip to Eglin Air Force Base to inventory Odonata and search for the Florida *Ophiogomphus* (See ARGIA 14:2) is tentatively scheduled for the second week in April 2003. If there is enough interest, side trips to Bogalusa, Louisiana for *Ophiogomphus australis* and southern Alabama for *Ophiogomphus* sp. will be included. Please let me know if you are interested in attending. Thanks! Bring some good luck with you!

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**2003 NORTHEAST REGIONAL MEETING, MARIETTA, OHIO, LATE MAY 2003**

**Dave McShaffrey** ([mcscaffd@marietta.edu](mailto:mcscaffd@marietta.edu))

The 2003 Northeast Regional meeting will be held in Marietta, Ohio, from May 23rd to the 25th. Marietta is at the confluence of the Ohio and Muskingum Rivers and is directly across from West Virginia. Collecting locales include sites on the Muskingum River (home to large beds of endangered mussels) and the Little Muskingum River. Both rivers are dependable sites for *Macromia*, which is actually easy to catch in the limited confines of the Little Muskingum River. It might be a bit early for *Macromia*, but other May catches include *Basiaeschna janata*, *Gomphus exilis* and *quadricolor*, and *Tetragoneuria cynosura* (or whatever Nick is calling it this week). In addition to these sites, there are 3 lentic sites lined up for collections, as well as numerous smaller streams tributary to the Little Muskingum within the Wayne National Forest. Collecting permits are not required for Odonata in Ohio unless one is collecting on protected lands such as state parks; we will make arrangements for such permits. We are also hoping to make arrangements

with the USFWS for transportation to the Ohio River Islands National Wildlife Refuge; several of the islands are adjacent to Marietta. Meeting and lab space will be available at Marietta College. There are many lodging possibilities ranging from typical chain motels near Interstate 77 to the Historic Lafayette Hotel located right at the confluence. Camping is available at private campgrounds and sites maintained by the Forest Service. When not collecting, Marietta is home to a number of antique stores (including one that specializes in tools) and museums. Across the river, Fenton Art Glass is located in Willamstown, WV. There are numerous restaurants, including one on a paddlewheel showboat moored in the Muskingum River. A website will be set up with meeting info, watch [www.marietta.edu/~odonata](http://www.marietta.edu/~odonata) or contact Dave McShaffrey for details.

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**2003 DSA SOUTHEASTERN MEETING**

Jerrell Daigle ([jdaigle@nettally.com](mailto:jdaigle@nettally.com))

The 2003 DSA Southeastern meeting will be held in La Fayette, Georgia from May 22-26. La Fayette is in the extreme northwestern corner of Georgia. It will be hosted by Giff Beaton and the Georgia Dragonfly Survey. We will be staying at the Key West Inn, although there are 5 other local hotels. We will meet Thursday evening, May 22, to get settled in. We hope to survey the mostly unknown odonate fauna in the area. If we are lucky, we might be able to find *Gomphus consanguis*. If you have any questions, please let me know. Thanks!

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**COMMUNICATION FROM PHILIP CORBET**

I wish to convey my deep appreciation to members of the Dragonfly Society of the Americas for having accorded me Honorary Membership. I am delighted and greatly honored by this recognition. I have watched the development of the DSA from its earliest days, and avidly consumed my copies of ARGIA, with excitement and admiration. I remember the informal meeting of potential founders (in Johnson City in August 1989) at which the idea of establishing the DSA became a reality. I remember also, with amusement, the irreverent suggestion, emanating from the floor, that a possible name for the newsletter might be "The Anal Loop." Fortunately ARGIA prevailed!

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## FIRST COLORADO RECORD OF CELITHEMIS ELISA

### Bill and Inez Prather

On July 17, 2001, we photographed a male *Celithemis elisa* (Calico Pennant) at Pella Crossing in Boulder County, Colorado. Pella Crossing is a Boulder County Parks and Open Space property consisting of reclaimed gravel pits. Dr. B. C. Kondratieff, Colorado State University, indicated that this species was not listed by Evans (1988) or Evans (1995) and represented a new state record. He also indicated a voucher specimen would be useful to confirm the original identification.

Ironically, during a trip to Tamarack Pond, Tamarack Ranch State Wildlife Area, in Logan County, Colorado on June 15, 2002, there was an additional photographed sighting of a female *C. elisa*. On June 18, 2002 we saw and photographed several *C. elisa* at Pella Crossing. We notified Dr. B. C. Kondratieff, and subsequently Drs. Mary Alice Evans and the late Howard Ensign Evans, Colorado State University, collected one female *C. elisa* for a confirmation. Additionally on July 20, 2002, we found *C. elisa* at Golden Ponds, a Longmont City Park in Boulder County. *Celithemis elisa* is a widespread eastern Nearctic species known from Kansas and Nebraska (Needham et al. 2000).

### Acknowledgments:

We thank Mark Brennan, Boulder County Parks and Open Space, for help in obtaining a collecting permit.

### References:

- Evans, M.A. 1988. Checklist of the Odonata of Colorado. Great Basin Naturalist. 48: 96-101.  
Evans, M.A. 1995. Checklist of the Odonata of New Mexico with additions to the Colorado Checklist. Pro. Mus. Nat. Hist. Ser. 3(8): 1-6.  
Needham, J.G., M.J. Westfall and M.L. May. 2000. Dragonflies of North America. Scientific Publishers, Gainesville, Florida.

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## FIRST RECORDS FOR THE USA AND ARKANSAS

George L. Harp, 3206 Maplewood Terrace,  
Jonesboro, AR 72401 (glharp@mail.astate.edu)

On 2 November 2000, Sue Perry and Elizabeth Nance, Everglades National Park biologists, and I

were conducting a one-day dragonfly survey of Big Cypress National Preserve. Of the 18 species seen or field identified, one was of particular interest. Elizabeth collected a female *Triacanthagyna septima* along the Hammock Trail, across the road from the Loop Road Education Center, Monroe County, Florida. It is currently reported from Cuba, Jamaica, Puerto Rico and from Mexico south into Bolivia (Needham, Westfall and May 2000). This is a first record for the United States.

Three damselflies are reported for the first time from Arkansas. On approximately 20 April 2002, I collected a male *Ischnura prognata* along Cane Island Slough, approximately 200m N of St Hwy 18, 2km NE of Lake City, Craighead County. No others were seen. Subsequently, Herschel Raney saw several individuals of this species at the Lorange Creek Natural Area, south of Little Rock, Pulaski County. On 18 May 2002, I collected a female *Nehalennia integricollis* at a small retaining pond above Caddo Pond, approximately 5km northeast of Glenwood and in the Ouachita National Forest, Montgomery County. This site was visited in July and September, but no additional individuals were seen. This record was first reported by Donnelly (2002), but with incomplete collection data.

While the Arkansas records for *Ischnura prognata* and *Nehalennia integricollis* basically fill in gaps along the edges of their known ranges, that of *Triacanthagyna septima* is an extension of its range to the north. This individual may be a migrant. Or it could be further indication of global warming.

I thank Sidney Dunkle and Dennis Paulson for confirming identification of *Nehalennia* and *Triacanthagyna*, respectively. The identification of *Ischnura prognata* was confirmed by Dennis Paulson and John Abbott after examination of a digital image posted by Herschel Raney.

### Literature Cited:

- Donnelly, T.W. 2002. Odes in a cold climate – The DSA Arkansas outing in the Ouachita Mountains. ARGIA 14(2):4-5.  
Needham, J.G., M.J. Westfall, Jr. and M.L. May. 2000. Dragonflies of North America. Scientific Publishers, Gainesville, FL. 939pp.  
Westfall, M.J., Jr. and M.L. May. 1996. Damselflies of North America. Scientific

Publishers, Gainesville, FL. 649pp.

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## TWO NEW SPECIES FOR IOWA

### Ann Johnson

In 1999 Bob Cruden and Bud Gode published their inventory of Iowa odonates. Over a period of fifteen years, they covered all counties of the state and many sites numerous times. While their work was comprehensive, Iowa is a big state and even in fifteen years two guys cannot possibly be in all 99 counties during all flight seasons. In the past three years, a few of us have added a number of records to our county database to further expand our knowledge of ranges. The thought has always been in the back of my mind that somewhere out there was a species that Bud and Bob missed. Even newcomers to this hobby have much to offer as this story is about to prove.

Aaron Brees is a hot young birder. For a couple of years now he has rolled his eyes as my summer attentions turned to odes, but somehow the allure of these winged jewels caught his interest this summer and it will no doubt be a summer he will not soon forget.

After returning from an early summer birding survey in the Lake Erie area, Aaron decided that his home county in southern Iowa was woefully under-represented in the Iowa Breeding Bird Atlas data. As he worked to rectify this, he began identifying a few odes flying in the same areas. I loaned him my small net and he ordered some equipment. The following chronology of events, documented in e-mail messages as he awaited delivery of his book and net, appears to be fantasy but is really only proof of how much we really do not know about distribution.

July 10 - E-mail from Aaron - "I also got a look at another bug that has clear wings, green eyes and a dark unmarked thorax. It looks like a Prince Baskettail but is slightly smaller and seems to not have any wing markings. I know I could have caught it but a Prince kept running it off and it finally disappeared."

July 11 - E-mail from Aaron - "I managed to catch and photograph a male and a female of my unidentified--maybe Common Baskettail--dragonfly. I am going to go to Stephen's in the morning and try to catch something to use the last of my film on, then go to Des Moines and drop it at

a one hour place while I bird Saylorville. Hopefully the pictures will be good enough for you to identify some of these guys for me."

July 12 - E-mail from Aaron - "Got my dragon pictures back. They are not very good but they should be sufficient for ID purposes. I am very confident that the darner is a Cyrano Darner. The ones that we were thinking were Common Baskettails are not. I believe they are emeralds. I see from your map that no emerald is expected down here, and mine do not exactly look like Plains Emeralds (the yellow thorax spots/stripes are not very obvious) although that is what they must be I guess. Unfortunately it was overcast and the lighting was poor when I took the pictures. I also made a mistake in composing the pictures so they are too dark. Hopefully you can make some sense of them or better yet, maybe we can relocate them--they have been consistently in the same spot."

July 13 - Thinking that perhaps we had a nice range extension for Plains Emerald (*Somatochlora ensigera*) I headed south. Aaron and I spent the day trying to catch his emeralds. I managed to get a net on one female and we had the first state record of Mocha Emerald (*Somatochlora linearis*). There were fair numbers flying but the only ones we could get a net on were females. Aaron promised to keep trying to catch a male in the ensuing days. Each day brought more frustration as the bugs were flying but males were just out of reach.

July 17 - E-mail from Aaron - "Finally! I caught a male this afternoon at Rathbun W.A. north of Promise City. It was hunting over the soybean field along the edge of the tree line that lines the dry creek that we walked into on your first trip down. So, a new site and the bug. Completely unexpected."

The success of finally collecting a male of a new Iowa species was overshadowed by the questions on the phone that evening. "Do Eastern Pondhawks always have those white claspers?" "Yep." "Do they ever have black faces?" "Nope." "Damn!"

We both knew what he had seen so it was back to southern Iowa on Saturday, July 20. At an old oxbow of the South Fork of the Chariton River we photographed and collected Aaron's second state record within two weeks - Slaty Skimmer (*Libellula incesta*).

Nearly as exciting, had the heat not about done us in, was discovering a large number of Blue-faced

Meadowhawks (*Sympetrum ambiguum*) on our walk back to the car. This is a species previously recorded from only one site in the state and about 150 miles to the northeast. A few days later, Aaron found yet another population in the next county to the north. Not a bad summer! Wonder what will happen when he gets good...

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## GEORGIA SUMMARY

**Bill Mauffray**, International Odonata Research Institute, Gainesville, FL 32614, [Iori@afn.org](mailto:Iori@afn.org)

During 2002 more than two hundred new county records including one new state record have been added along with numerous flight season date expansions. This has been mainly due to the efforts of Giff Beaton of Marietta, Georgia. His greatest find of the year was the discovery of *Gomphus adelphus* or a new species closely related to *adelphus* in Northwest Georgia. Other contributions were made by Alan Harvey, Francis Michael Stiteler and a few others from the Georgia Dragonfly Survey. There are now 3 web sites covering Georgia Odonata. The IORI site, <http://www.afn.org/~iori/galist.htm> provides a lists the Georgia species displaying individual counties along with the source of the records. The GDS Georgia dragonfly survey site [http://www.bio.gasou.edu/bio-home/Harvey/ga\\_dragons.html](http://www.bio.gasou.edu/bio-home/Harvey/ga_dragons.html) provides a key, county dot map, and images. Giff Beaton's site <http://www.giffbeaton.com/dragonflies.htm> provides the list with images. The plan is to merge the 3 sites and publish a hard copy soon. If you have any collection data from Georgia it would be very much appreciated. Send it to Bill Mauffray, [iori@afn.org](mailto:iori@afn.org).

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## A LIST OF THE ODONATA OF ATHABASCA SAND DUNES PROVINCIAL WILDERNESS PARK, SASKATCHEWAN

**Gordon E. Hutchings**, 971 Arundel Dr. , Victoria, B.C., V9A-2C4

**PURPOSE-** This report gives the results of a 12-day survey of Odonata (Dragonflies and Damselflies) which took place from August 2nd to 14th, of 2002 at Athabasca Sand Dunes Provincial Wilderness Park (A.S.D.P.W.P.) in northwestern Saskatchewan. I collected a wide variety of insect orders during this period but mainly concentrated on groups associated with aquatic habitats. The Odonata were one of my main insects of focus due

to their dominant appearance at these sites, and previous familiarity from working with this order for twenty years of research. This preliminary list of species represents the first survey of its kind in A.S.D.P.W.P. for Odonata, and at the time of this report, has added a new species for the province. I retained 208 Odonata specimens representing 6 families.

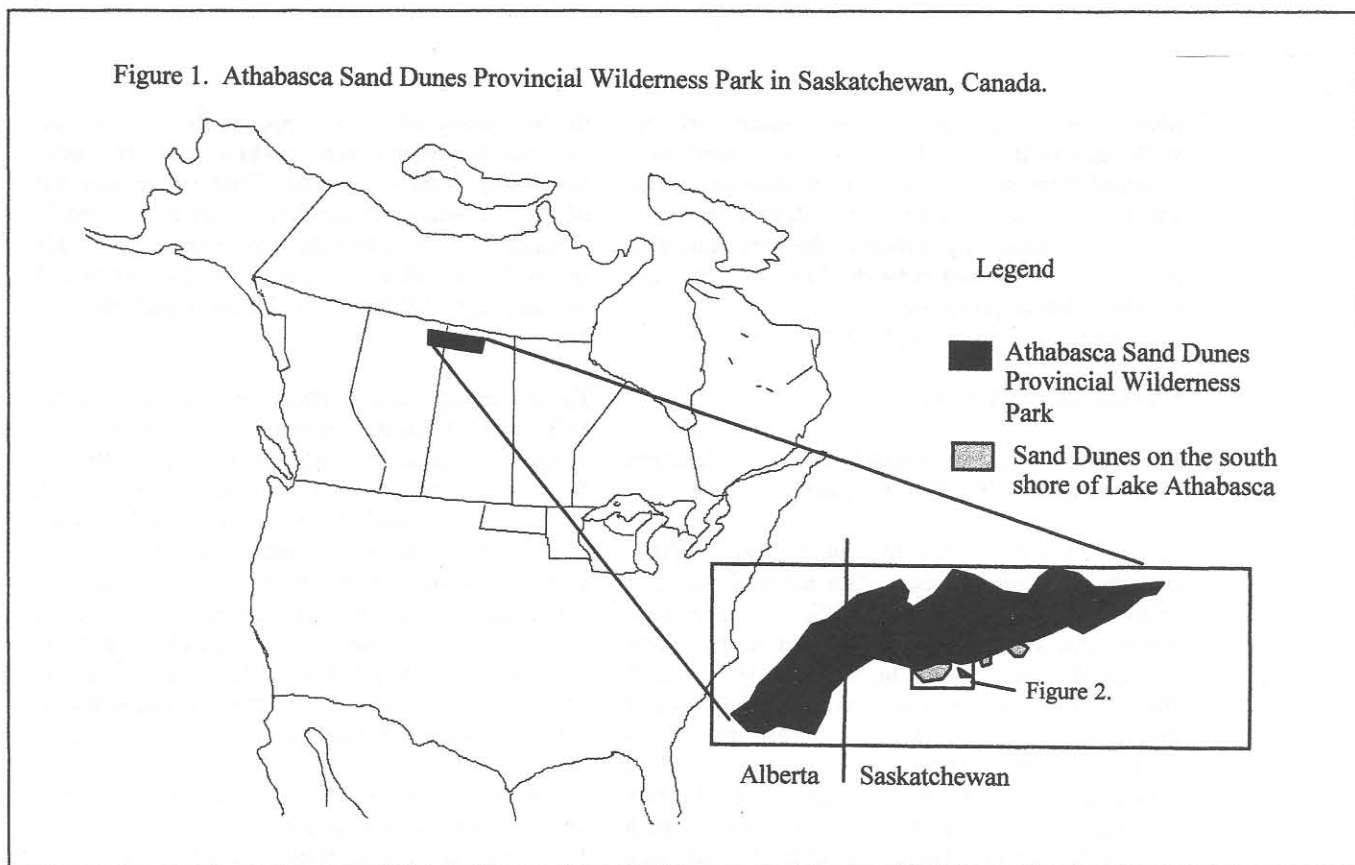
For this report I have examined approximately 2500 individual Odonata specimens collected and examined in-hand, or verified at close proximity on the wing or perched. Listings have been broken down into taxonomic levels from sub-order, down to individual species and then treated separately. In total, 22 species were recorded with one very significant record being established not only for the province, but for the North American continent. This odonate survey extended the ranges of several species and contributed to the current data available for Odonata in Saskatchewan.

**INTRODUCTION-** This large sandy region was created when the last glaciers withdrew, more than 8000 years ago and is compromised of about 4000 square kilometres. Athabasca Sand Dunes Provincial Wilderness Park, whose boundaries were officially established in 1986, is situated on the south shore of Lake Athabasca and is straddled between the Canadian provinces of Alberta, to the west, and Saskatchewan to the east. The 1925 square kilometre park features open sand sheets, active dunes, extensive pine/lichen forests and a wide variety of interspersed wetlands featuring large rivers, lakes and spruce bogs. Its wide variety of habitats, situated in a remote, northern latitude, foster some unique organisms that are found nowhere else. At least nine endemic plants are found here, but little is known of the invertebrate fauna. Every collecting trip has produced new range extensions for many species and this barely scratches the surface of what is still yet to be discovered.

**METHODS AND MATERIALS-** A fauna survey, specifically focused on odonates, was carried out on foot from a central base-camp at Beaver Point situated between William River and MacFarlane River on the south shore of Athabasca Lake. As access was completely on foot, specific areas deemed suitable for Odonata within a 20 kilometre radius were chosen using air photos and topographical maps.

Territorial patrolling and mating adult Odonata were collected with aerial insect nets on the

Figure 1. Athabasca Sand Dunes Provincial Wilderness Park in Saskatchewan, Canada.



perimeter of wetlands, and feeding adults from open, terrestrial habitats ranging from sand dunes to pine forests. Odonates were collected during the warmer hours of the day when the adults are active which was approximately between 9:00 AM and 7:00 PM., but some dusk feeding adults were collected up until 9:30 PM.

Voucher specimens were collected for all species encountered at each site with mating pairs, cannibalistic and other predator/prey interactions kept together.

Identification of specimens was accomplished in the field using hand-lenses and my personal expertise. Further applicable and relevant literature was consulted once I returned home, and comparisons were made using personal holdings of other odonate specimens. Confirmation was performed by a second odonatologist in the lab. The specimens were prepared and preserved using the latest known methods and finally deposited to the Royal Saskatchewan Museum in Regina in final curated state with associated data.

**STUDY SITES-** Within a day's walk while still maintaining the opportunity to collect specimens, there was a limit of day hikes from the base camp ranging up to and including 20 kilometres. Selected study sites included a river, large and small lake shores, forested ponds, a large fen/bog complex as

well as open slacks in the sand dunes. These were all situated between the William River to the west and the middle of lake shore at Cantara Bay. Specific sites were selected based on interpretations from topographical and air photo maps.

After each species name, both scientific and common, there is a number to indicate the total number of specimens of that species. In brackets are the sites locality number with specimens collected from each. The selected sites chosen for surveys are included in Table 1.

## ODONATA LISTS

suborder **ZYGOPTERA** - Damselflies

### LESTIDAE - Spreadwings

*Lestes disjunctus* - Common Spreadwing 21 [A2-1; A3-6; AF-2; A7-2; AN-2; A11-6; A12-2]

### COENAGRIONIDAE - Pond Damsels

*Enallagma boreale* - Boreal Bluet 16 [A3-7; AF-3; AC-6]

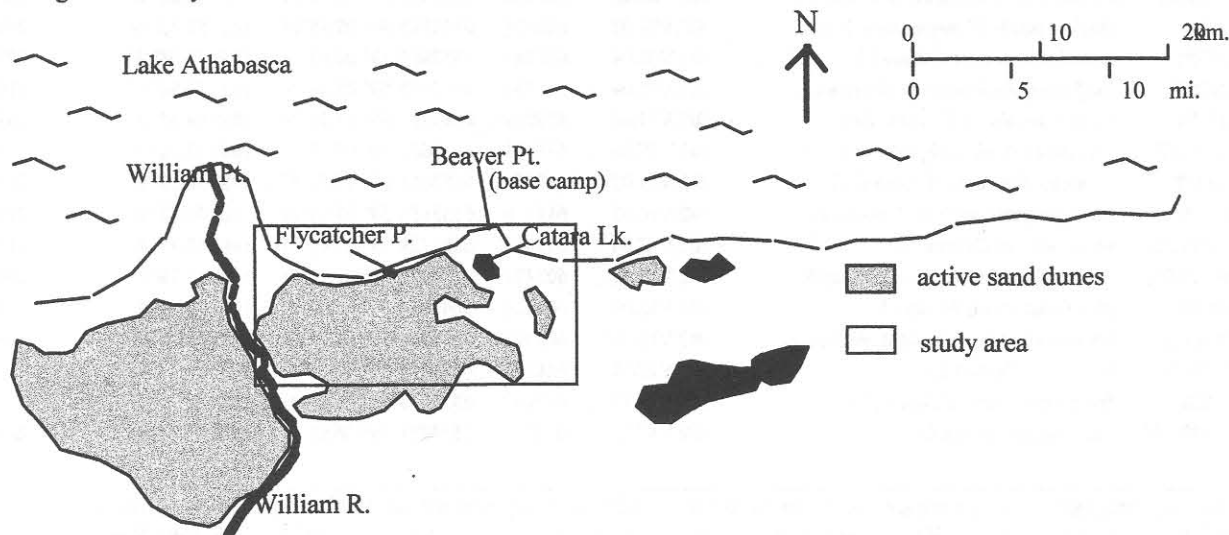
*Nehalennia irene* - Sedge Sprite 9 [A2-1; A7-2; A8-2; AN-2; A11-2]

suborder **ANISOPTERA** - Dragonflies

### AESHNIDAE - Darners



Figure 2. Study area of Athabasca Sand Dunes Provincial Wilderness Park



*Aeshna canadensis* - Canada Darner 22 [A1-1; A2-1; A3-1; AF-1; A7-3; A8-2; AC-1; AW-1; AN-4; A11-5; A12-2]

*Aeshna eremita* - Lake Darner 18 [A1-4; A2-1; A3-3; A5-1; AF-3; AC-1; AW-1; A10-2; A11-2]

*Aeshna interrupta* - Variable Darner 22 [A1-4; A2-3; A6-1; AF-4; A7-3; AC-3; AW-1; A10-3]

*Aeshna juncea* - Sedge Darner 3 [AF-1; A10-2]

*Aeshna sitchensis* - Zigzag Darner 5 [A1-1; A4-1; AW-1; AN-2]

*Aeshna subarctica* - Subarctic Darner 15 [A2-1; A3-3; A7-1; A8-1; AC-3; AN-3; A11-1; A12-2]

*Aeshna tuberculifera* - Black-tipped Darner 10 [A1-2; A2-1; A3-1; A4-1; A5-1; AC-1; AN-2; A12-1]

*Aeshna umbrosa* - Shadow Darner 9 [AC-7; A10-1; A12-1]

#### GOMPHIDAE - Clubtails

*Ophiogomphus colubrinus* - Boreal Snaketail 1 [AW-1]

#### CORDULIIDAE - Emeralds

*Somatochlora albicincta* - Ringed Emerald 3 [A11-2; A12-1]

*Somatochlora cingulata* - Lake Emerald 8 [A2-1; AC-7]

*Somatochlora franklini* - Delicate Emerald 1 [A9-1]

#### LIBELLULIDAE - Skimmers

*Leucorrhinia glacialis* - Crimson-ringed Whiteface 5 [A3-2; A8-2; A11-1]

*Leucorrhinia hudsonica* - Hudsonian Whiteface 13 [A1-6; A3-1; AF-2; A7-1; AN-3]

*Leucorrhinia patricia* - Canada Whiteface 5 [A8-1; AN-3; A11-1]

*Leucorrhinia proxima* - Red-waisted Whiteface 4 [A3-1; A8-3]

*Sympetrum danae* - Black Meadowhawk 10 [A6-3; A7-2; A8-2; A10-2; A11-1]

*Sympetrum internum* - Cherry-faced Meadowhawk 1 [A10-1]

*Sympetrum obtrusum* - White-faced Meadowhawk 7 [AF-1; A11-3; A12-3]

**DISCUSSION-** Initially, the suitable base camp was projected for Thomson Bay, just east of the William River, but due to lake surface conditions from the west winds, the transport party from Fond-du-lac deposited the solo collector and all equipment just inside (east) of Beaver Point. This alternative site was 20 kilometres from the William River and the dunes to the west and proved to be quite difficult for repeat visits. Instead, regular visits to the large wetland complex in the Cantara Lake area was performed and the majority of species was collected from there.

The 208 specimens collected represents 22 species. Only a few specimens of each species were usually collected from the various sites and does not represent the abundance of that particular species documented from there. *Aeshna tuberculifera* is a very significant range extension for North America with previous records in Canada being from southern Ontario and the British Columbia/Alberta border in the southern Rocky Mountains. This baseline survey for the area provides encouragement for future surveys to search for even more new and interesting records. The optimal time of year for adult Odonata sampling in the

site	site description	date	easting	northing	latitude	longitude	elev. (m)
A1 CAMP	sand beach base camp at Beaver Pt.	/02.VIII.03	618431	6556850	59° 08.06' N	108° 55.82' W	210
A2 MALAI2	Athabasca Lk. shoreline at Beaver Pt.	/02.VIII.03	618428	6556847	59° 07.99' N	108° 56.01' W	210
A3 ASDP3	shallow ponds 30 metre above beach	/02.VIII.04	616896	6555848	59° 07.55' N	108° 57.46' W	209
A4 ASDP4	sand dunes west of Cantara Lk.	/02.VIII.04	616388	6552989	59° 06.02' N	108° 58.08' W	222
A5 ASDP5	sand dune ponds south of Cantara Lk.	/02.VIII.04	617754	6552925	59° 05.96' N	108° 56.66' W	219
A6 ASDP6	sand dunes above Thomson Bay	/02.VIII.06	610059	6549637	59° 04.31' N	108° 04.81' W	243
AF FLYCAT	Flycatcher Pond ~250m above A. Lk.	/02.VIII.06	611711	6551603	59° 05.35' N	108° 03.02' W	214
A7 ASDP7	Carex sp. fen north of Cantara Lk.	/02.VIII.07	617974	6555653	59° 07.53' N	108° 56.33' W	213
A8 ASDP8	fen/open pools north of Cantara Lk.	/02.VIII.07	618759	6555653	59° 07.41' N	108° 55.52' W	213
AC CANTAR	north shore of Cantara Lk.	/02.VIII.08	618517	6555728	59° 07.45' N	108° 55.77' W	213
AW WILOOK	crest of dune/forest above William R.	/02.VIII.09	603474	6546673	59° 02.81' N	108° 11.78' W	249
A9 ASDP9	pine forest above William R.	/02.VIII.09	604526	6547030	59° 02.99' N	108° 10.67' W	255
A10 WILFEN	fen immediately adjacent to William R.	/02.VIII.09	603472	6546506	59° 02.73' N	108° 11.79' W	221
AN CANFN	fen east of Cantara Lk.	/02.VIII.12	618843	6555157	59° 07.14' N	108° 55.44' W	213
A11 ASDP11	fen complex east of Cantara Lk.	/02.VIII.12	619039	6554843	59° 06.97' N	108° 55.25' W	213
A12 CANSTH	fen south of Cantara Lk.	/02.VIII.12	619216	6554731	59° 06.91' N	108° 55.07' W	211

northwestern part of the province seems to be from mid-July to mid-August. For a more complete picture of local diversity, further sampling over the entire spring and summer months, will most likely add further new species. Highly suitable sites with all the familiar characteristics and traits known to support various species of known odonates from other western Canadian sites, instead provided voluminous amounts of low diversity. Another effective way of sampling in the future would be to use aquatic nets to obtain Odonata in the larval stage, and visiting more sights in subsequent years.

Future visitors to the area can increase the diversity of odonates by collecting specimens and delivering them with all locality information, to the Royal Saskatchewan Museum (R.S.M.). It must also be mentioned that the air photos provided for the expedition were invaluable in choosing which sites to visit in the limited time available for this expedition, especially since the mode of transportation was done completely on foot.

#### ACKNOWLEDGEMENTS

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collecting equipment as well as preserving fluids and storage boxes for the specimens. Karen Potts and Vern Helm provided some additional last minute equipment and transport arrangements.

#### BIBLIOGRAPHY

- Cannings, R.A. and Stuart, K.M. 1977. *The Dragonflies of British Columbia*. B.C. Prov. Museum Handbook 35.
- Dunkle, Sidney W. 2000. *Dragonflies Through Binoculars, A Field Guide To Dragonflies of North America*. Oxford University Press.
- Fung, K. 1999. *Atlas of Saskatchewan*. University of Saskatchewan
- Jonker, Peter M. and J. Stan Rowe. 2001. *The Sand Dunes of Lake Athabasca, Your Adventure in Learning*. University of Saskatchewan Extension Press.
- Parker, Dale, *Odonata of Saskatchewan*, 1999. [www.usask.ca/biology/skabugs/Odonata.html](http://www.usask.ca/biology/skabugs/Odonata.html)
- Roney, Keith and J. Duncan. 2000. *Compiled List of The Odonata of Saskatchewan*. Personal communication.
- Walker, E. M. 1955. *The Odonata of Canada and Alaska*. Vol. I. U. of Toronto Press 292 pp.
- 1958. *The Odonata of Canada and Alaska*. Vol. II. U. of Toronto Press 318 pp.
- and P.S. Corbet. 1975. *The Odonata of Canada and Alaska*. Vol III. U. of Toronto Press.
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## RHODE ISLAND ODONATA ATLAS 2002 SUMMARY

### Virginia Brown

The fifth season of the Rhode Island Odonata Atlas was characterized by low water, a marked increase in records of southern species, a dearth of river species, and a change of place for both the project and the collection. As of this writing, we have not yet received all of the collected 2002 material from volunteers, and the dragonfly season is certainly not over yet. However, the dedicated group of Atlas field volunteers have produced approximately 1100 specimens to date, and the odonate collection has grown to about 11,000 specimens. The contributions of these volunteers and others involved in clerical duties and collection management is enormous. Approximately 550 volunteer hours were logged in 2002, most of these in the field. This figure will be slightly larger as end-of-season field forms and material come in. One hundred forty (140) sites were visited in 37 of Rhode Island's 39 townships. Only Block Island and Barrington were left un-sampled, but both of these townships received intensive effort in the first two years of the Atlas (1998 and 1999).

Although we did not add any new species to the Rhode Island fauna this year, during the five years of this project the state's odonate list went from 114 species to 133 species, increasing by 16.6% with the added effort of volunteers and staff. From a taxonomic perspective, many new records for both common and rare odonates were found in 2002. Distributions were completed for two widespread, abundant species: the blue dasher (*Pachydiplax longipennis*) and the fragile forktail (*Ischnura posita*). That is, specimen vouchers have been taken for these species in every Rhode Island township. A number of other species, including the common green darner, ruby meadowhawk, eastern forktail, and slender spreadwing, also have nearly complete distributions. These and other species are needed from fewer than 5 and as little as one additional township.

Early in the 2002 season, a new population of the ringed boghaunter dragonfly, *Williamsonia lintneri*, was discovered in Richmond, bringing the total number of populations for this rare dragonfly in Rhode Island to 24. Richmond, with its abundance of shallow graminoid fens and relatively large areas of forest, supports 9 populations of this species, 37.5% of Rhode Islands *lintneri* populations. The new Richmond site is less than a

mile from two other wetlands containing breeding populations of ringed boghaunters and well within flight distance of two others. The close proximity of *lintneri* populations in Richmond clearly indicates that dispersal occurs between sites. A few of the fens in the Richmond metapopulation support large source populations, while others contain very small numbers of animals on a yearly basis, and still others support *lintneri* only in certain years. Although we have no data on the size of the new Richmond population, we intend to conduct exuvial (larval shell) counts in 2003 in order to quantify it.

Also of great interest in 2002 was an "incursion" of a southern dragonfly not previously reported during the course of this project (1998 to present). The taper-tailed darner (*Gomphaeschna antilope*) was first collected in New England in June 1996 from Exeter, Rhode Island. It remains rare in New England, documented outside of Rhode Island by only 4 Massachusetts records. After a six year hiatus, *antilope* reappeared here in good numbers in 2002. In June, a male was collected in Charlestown, followed shortly by a male from South Kingstown, where several were seen at one time. Coincidentally, on the same day the South Kingstown animal was collected, *antilope* was again observed, this time in a West Greenwich gravel pit. Four to six individuals were seen foraging at the West Greenwich site, but avoided capture. Although we still have no evidence of reproduction in the state, *antilope* is a bog species and all observations have been made near appropriate habitat.

Two other southern odonates were present in Rhode Island in good numbers this year. The blackwater bluet (*Enallagma weewa*) was collected at several stations along the Pawcatuck River in Charlestown, South Kingstown, and Richmond. To date, Rhode Island is the only place in New England where the blackwater bluet is recorded, making the new discoveries extremely significant. It is apparently thriving in our state, with large breeding populations known from 5 localities in southern Rhode Island. The nearest population continues to be in the twin forks area of Long Island. Coppery emeralds (*Somatochlora georgiana*) also appeared in the state in traditional as well as new locations in 2002. This southern dragonfly, the rarest in its genus and a conservation target for The Nature Conservancy, is well-documented in Rhode Island and is breeding here in several locations. Like the taper-tailed darner, it is represented in New England only by populations in Rhode Island and Massachusetts. It is a late season stream species





This article (which you can blame Nick for encouraging) grew out of a desire in 2001 to improve my identification skills and my knowledge of the odonate distribution in the area, which is Schuyler and Tompkins Counties, upstate New York. More by chance than plan I ended up checking 60 ponds 4 times a year, becoming addicted to the work and being constantly surprised by what I found. The study did improve my identification skills and local knowledge far more than I had imagined.

It has been a lot of fun to see, in person, things read about in the literature: the micro-habitat preferences of species, the change over in species during the day or during the seasons, behavior of different species, etc. And much of this has to be seen to be learned.

The study is evolving. It started in 2001 with no rigid protocol. Visits in 2002 were made in early June, late June, late-July and, mid-August. Visits averaged 15 minutes per pond and a monthly check, under ideal conditions, takes 4 days. Bad weather can stretch this count period considerably. Counts have been made between 10 AM and 4 PM, but it is now obvious that visits before 11 and after 3 have fewer species and fewer individuals.

Ignorance is bliss. Originally plans (made in the previous winter) were to list species and abundance at each pond, group the ponds into blocks of similar ponds after the first year, and sample only representative ponds in the second and subsequent years.

This has proven to be impossible on many levels. The record obtained of species present and their abundance is dependent on weather conditions, time of day, conspicuousness, and ease of identification. In addition abundance can vary over relative short periods, so counts on one pond on one day can give a false indication of abundance. When ponds are compared, they end up being different, each from the other, except on the broadest levels of comparison.

If you make allowances for these problems and don't try to make fine distinctions, the pond checks provide good comparison counts. Using the data from all the ponds gives an excellent view of species abundance and seasonal distribution in the farming areas of the two counties.

A seemingly solid conclusion is that ponds are a new and very important part of the odonate habitat. My survey covers ALL the ponds in two 25 square kilometer blocks in hilly farm county of the Finger Lakes region - one in Schuyler County and one in Tompkins County. The 75 initial ponds included 67 man-made and eight natural sites, but five of the natural and four of the man-made were seasonal or heavily shaded and had no odonates. What is the point of this? In the last 50 years the number of ponds has increased 22 fold, and the variety and quality of these new ponds is much greater than that provided by the natural ponds alone. For Schuyler County alone this means 500-700 new sites. The impact of this on odonate populations and distribution much be large and may still be evolving.

Although Tompkins County, home of Cornell University, has been visited by many odontologists, I added *Lestes eurinus*, *Enallagma basidens*, *Enallagma traviatum* and *Perithemis tenera* to the county list from study area ponds at 900 to 1600 feet elevation (the lowest elevation in the county is 400 feet). These study ponds reflect only a small portion of the diversity found in county pond's and *Gomphus borealis*, *Leucorrhinia glacialis* and *frigida*, all common species, were new county records from "wildlife" ponds created on state land at elevations above 1600 feet.

Additional species are found nearby in non-farming area ponds: *Coenagrion resolutum*, *Enallagma borealis*, *Enallagma vesperum*, *Aeshna interrupta*, *Aeshna verticalis*, *Gomphus borealis*, *Cordulia shurtleffi*, *Dorocordulia libera*, *Leucorrhinia glacialis*, and *Leucorrhinia proxima*.

When the 60 species seen in the two years are ranked by number of ponds where found, *Ischnura verticalis* is present at 97% of the ponds (not at some new ponds) and on 85% of the visits. *Libellula luctuosa* is second at 89% of the ponds and on 53% of visits. Only 13 other species are found at more than half the ponds. Only 10 ponds have all of the 10 commonest species. Numbers of species seen at the ponds range from 6 to 32, with about 60% of any pond's species being "resident" (common on at least one visit). Some ponds are new, some are just damp mud in a dry summer, and some have unique species. Essentially no two ponds are alike. When the ten best ponds, judged by number of species and abundance, are compared one on one they only have about 50% of their species in common. Only three of the 39 shared "resident" species are common to all ten ponds -

*Ischnura verticalis*, *Libellula luctuosa*, and *Sympetrum internum*. A number of other groupings were tried and ponds just do not group. And this is a group of ponds that does not come close to covering the diversity of ponds found in the two counties.

For people who want to see what the farming area ponds of Central New York contain, following is a list of the species ranked by a combination of number of ponds where recorded and abundance.

In at least 50% of ponds: *Ischnura verticalis*, *Libellula luctuosa*, *Erythemis simplicicollis*, *Libellula lydia*, *Pachydiplax longipennis*, *Leucorrhinia intacta*, *Enallagma ebrium*, *Epitheca cynosura*, *Celithemis elisa*, *Libellula pulchella*, *Anax junius*, *Perithemis tenera*, *Sympetrum vicinum*, *Lestes rectangularis*, *Enallagma geminatum*.

In at least 25% of ponds: *Argia fumipennis violacea*, *Enallagma basidens*, *Enallagma civile*, *Sympetrum internum*, *Lestes congener*, *Enallagma hageni*, *Tramea lacerata*, *Libellula julia*, *Enallagma aspersum*, *Epitheca canis*, *Gomphus exilis*, *Lestes forcipatus*, *Arigomphus villosipes*.

In at least 10 % of the ponds: *Lestes eurinus*, *Enallagma cyathigerum*, *Lestes disjunctus*, *Chromagrion conditum*, *Lestes vigilax*, *Lestes dryas*, *Arigomphus furcifer*, *Celithemis eponina*, *Lestes inaequalis*, *Epitheca princeps*, *Enallagma signatum*, *Ischnura posita*

In less than 10 % of the ponds: *Nehalennia irene*, *Aeshna tuberculifera*, *Lestes unguiculatus*, *Enallagma antennatum*, *Enallagma traviatum*, *Libellula incesta*, *Aeshna canadensis*, *Aeshna constricta*, *Calopteryx maculata*, *Gomphus lividus*, *Leucorrhinia frigida*, *Amphiagrion saucium*, *Aeshna mutata*, *Aeshna umbrata*, *Basiaeschna janata*, *Gomphus spicatus*, *Hagenius brevistylus*, *Cordulegaster diastatops*, *Libellula quadrimaculata*, *Pantala flavescens*. At least 51 of these are presumed to breed in the ponds (exuviae, tenerals or mated pairs present).

Species such as *Ischnura posita*, and *Nehalennia irene* are easily overlooked, and *Lestes* and *Enallagma* are undercounted.

*Aeshna* (all species), *Gomphus lividus* and *spicatus*, *Leucorrhinia frigida*, *Libellula quadrimaculata* are rare in the study area but

common on nearby wildlife ponds at higher elevation (is location in forested areas also important?). Stream and seep species - *Calopteryx maculata*, *Amphiagrion saucium*, *Basiaeschna janata*, *Hagenius brevistylus*, *Cordulegaster diastatops* - are accidental and have wandered in from nearby habitats. *Pantala flavescens* is rare and was seen at two adjacent ponds in the study plot and one pond outside in 2001, but, seen at the same ponds in 2002. Despite a fair amount of pond checking outside the study area, these are the only individuals recorded.

Counts in May and September 2001 produced a few early emergence dates, late departure dates and a limited number of species. For me, this was not worth the effort. These early and late visits do add species to a pond list and, in the first year's data, there are indications of a 10-14 day difference in emergence for *Ischnura verticalis* between ponds of the lower block (900-1200 feet) and the higher block (1400-1600 feet).

Of the 60 species seen, most peak in mid-July with a smaller peak in early June, but early June species tend to be found at fewer ponds than the July species. *Ischnura verticalis* and *Anax junius* are equally common from early June through August - the only species showing this pattern. Twelve other species were present from June through August but with definite July or late June peaks (e.g. *Libellula lydia*).

*Enallagma* species illustrate some of the problems of comparing ponds. Seven of the ten species are quite common and could theoretically be expected on most of the ponds, but no pond has all seven and only 30% have 4 or more. One species is usually dominant (most common) on any given visit, and at five ponds the same species (*Enallagma basidens*, *civile*, and *geminatum* respectively) was dominant the whole season. These three species can be found into October, the first two fairly commonly. Other *Enallagma* are more seasonal, with *cyathigerum* primarily early Spring, *ebrium* and *hageni* peaking in late Spring but continuing into July, while *aspersum* peaks in July. *Enallagma* have been seen at all the ponds, but only 60% of the ponds have at least one species rated as common at least one visit. *E. ebrium* is found at more ponds than any other *Enallagma* but is less likely to dominate than *E. basidens*, *civile* or *geminatum*.

*Enallagma cyathigerum* was found only in fish-free ponds, and *aspersum* mainly at fish-free ponds. But some fish-free ponds do not have either species

and some ponds contain only one of the species. *E. cyathigerum* is dominant in June at a few ponds and *aspersum* dominant in July at a number of ponds. Both *aspersum* and *hageni* may replace *cyathigerum* seasonally at some ponds.

An aside here. When catching samples of *Enallagma cyathigerum* at a very open "wildlife" pond and a heavily shaded kettle pond in deep forest, I noticed an interesting difference between the two ponds. The pairs at the wildlife pond were all back from the pond or in tall grass at the edge, while pairs in the kettle lake were scattered all over the surface of the water. One major difference between the ponds was the presence of other odonates. The wildlife pond had numbers of *Cordulia*, *Dorocordulia* and *Anax*, all absent at the kettle pond. Were these predators responsible for absence of open water flying of the *cyathigerum*? Do fish perform a similar function in other ponds?

There was a trend of smaller and / or marginal ponds having more *Enallagma* species, as if the dominant species had not been established.

*Libellula* (including *Ladona* and *Plathemis*) show a distribution pattern similar to *Enallagma* with *lydia*, *luctuosa* and *pulchella* being the widespread species, and one or the other dominating each pond on any given visit. *L. lydia* tends to appear earlier, peak earlier and use some habitats (seeps, cow footprint puddles) where the other species are not found. *L. incesta* and *L. julia* are absent from most ponds, and yet each is dominant at one pond.

Is history of the pond important in determining which species is dominant? Does this dominance change from year to year? The erratic use of ponds - present one year and not the next, abundant one month and absent the next - has been reported by many others but is still worth some long term study in a consistent set of ponds.

The age of a pond is certainly important. New ponds have no species at the beginning, and the higher species counts are found at older ponds. It may be that older ponds in the study have been essentially abandoned, have had little disturbance from year to year, and have an increase in microhabitats due to an increase in aquatic and shore vegetation.

At some ponds abandonment means tree growth and heavy shading of the surface. This has reduced the species count dramatically, with one exception. A pond with a solid ring of old cottonwood trees

and one side shaded by a dense coniferous stand has a species list of 26 and three species in the highest abundance of any pond: *Libellula julia* (abundant and dominant), *Anax junius* (5-10 individuals plus at least one pair each visit), *Aeshna tuberculifera* (30-50 individuals laying eggs during one visit). I see no obvious explanation for this diversity.

The classic new pond is dug out of a dry hayfield. It is a dam and pond lining of nearly sterile subsoil. After two years there are still only scattered weeds and grass stalks. Two such ponds, "7" and "28", in the study, had no odonates the first year and six and seven species the second year, including *Celithemis elisa* *Enallagma civile* in abundance. Three other shared species (*Epiheca cynosura*, *Libellula lydia*, and *Libellula pulchella*) were present in small numbers and three species were found on only one pond and one visit (*Enallagma geminatum*, *Epiheca princeps*, and *Pantala flavescens*).

But not all new ponds are the same. One pond bulldozed out of existing cattail marsh had 16 species the second year; one dug out of a field without disturbing the surrounding hay had eight species in considerable numbers the second year; a third was created out of an existing pond and although looking like a "sub-soil" pond when created, quickly had odonates and aquatic vegetation - evidently survivors from the original pond. That said, four of the five new ponds had *Enallagma civile* and *Celithemis elisa* as important components of the fauna.

As mentioned earlier some *Enallagma* are found only in fish-free ponds. However, the effect of fish on other species is difficult to determine. Almost every pond in the study that could have fish does, so there are no control fish-free ponds. In addition a fish pond where odonate numbers seem reduced can be matched with a very similar pond where the same species is common. More study is needed.

There are many slightly polluted ponds (septic tank or barnyard run off, cattle watering ponds), and most of the 60 species have been found in such ponds. It is difficult to argue that mild pollution limits the distribution of any of the pond species. In the most heavily polluted pond (chicken farm settling pond) fourteen species have been recorded in small numbers and the presence of teneral individuals of two (*Ischnura verticalis* and *Erythemis simplicicollis*) indicates that some larvae survive here. How polluted is this pond? I can't say that the bursting of gas bubbles on a hot summer



day drowns out all other sound, but it takes your mind off the smell.

What features would I include in the perfect pond? spring fed, lots of sunlight, heavy woods nearby, great variety of aquatic plants including water lilies, but with serious control of cattails (restrict to one corner and have lane of open water between them and shore), one end grading into a swampy grassy area, large areas of relatively shallow water with steep banks only at dam end. One pond in the study has two large aerators and 30 species of odonates. The perfect pond has one side mowed and the other side let gone to grass that is mowed once a year. The best ponds in the study are an acre or more in size, but 1/5th acre could probably have the same diversity with some planning.

Part of my intent at the beginning was to get some baseline data that could be compared to future counts. There is hope here that a survey of the same ponds 20 years from now would tell us more about how the ponds had changed than how the odonate fauna in the county had changed. Since my survey ends up being a survey of the pond odonates in a farming area, it would need to be compared, 20 years from now, to a survey of ponds only in farming areas.

It seems important to check all the ponds in a given area rather than picking selected ponds. The ten best ponds contained 54 of the 60 species and 39 of the 42 "common" species, but it is not clear how one would pick these ten best without doing the total survey first. In any case the absence of these species from a follow up survey might be viewed as significant. Equally important is using a large sample size. Counting only alternate ponds (total of 32) produced a drop of 15 in the number of species found. There were eight species found at single ponds, so increasing the number of farm ponds should add additional species. Do these additional species add anything useful? Possibly, since several of the species already found are breeding or common on only one pond.

Thoughts for future years: There are *Lestes forcipatus* pairs in numbers on several ponds but mismatched pairs (with *disjunctus*, *vigilax* and *rectangularis*) on only one. Is this a fluke or will the phenomena repeat next year? As noted by others the females in mismatched pairs do not cooperate. One had a death grip on a grass stalk while the male exhausted himself trying to fly away.

*Lestes unguiculatus* occurs in tiny numbers on two very small ponds but was present both years. At a non-study pond there were hundreds both years, but none were found in nearby ponds. Why isn't this species more widespread? Why doesn't it spread from the ponds where it's abundant?

*Enallagma basidens* was discovered on a survey pond in late June 2001, thanks to Mike Thomas, and then found on many ponds in August. In 2002 it was the earliest *Enallagma* on some ponds and the dominant one on several. Was I really such a novice in early 2001 that I overlooked it or was 2001 the year it invaded?

*Enallagma traviatum westfalli* has remained a rarity. On the one pond where it is resident they fly earlier in the day than other peaks and on days too cloudy for the dominate *Enallagma geminatum*. Is this a way to locate *E. traviatum*? Look on cloudy days when they are the only *Enallagma* flying?

What happens at an individual pond during an entire day? Many species seem to have a very sharp cut-off time when individuals stop pairing. How precise is this cut off time and does it vary at different ponds? Similarly for the change over from day species to afternoon species like *Enallagma signatum*.

There are several species pairs where one is dominant early in the season and another dominate later - *Lestes dryas / forcipatus*; *Enallagma cyathigerum / hageni / aspersum*; *Arigomphus furcifer / villosipes*; *Epitheca canis / cynosura*. Does the change over time occur on different days at different ponds? The disappearance of *Gomphus*, *Epitheca* and *Arigomphus* more or less coincide with increase in *Libellula* numbers. Is this a cause and effect?

**Summary:** Pond surveys are full of interesting surprises. In this study, all the ponds (60+) in two 25 square kilometer blocks were checked for two years. They are mainly farm ponds and do not represent the diversity found in the entire county. Within Schuyler and Tompkins County these man made ponds have provided a 20-25 fold increase in pond habitat over the last 50 years.

The diversity between the ponds is large despite their visual similarity. There is apparently competition between similar species, so it is rare to find more than one *Enallagma* or one *Libellula* common at a pond on any given visit. The most speciose pond has about half the total count (30 /

60), and about 60% of the species recorded from a pond are common on at least one visit.

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## ODONATA OF THE SIERRA LAS DAMAS, SANCTI- SPIRITUS PROVINCE, CUBA

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Translated by Nick Donnelly

**Introduction** – Odonates, known in Cuba as “Alguaciles” [an “alguacil” is a minor police official], “Caballitos del Diablo”, “Cabillitos de San Vicente”, “Cigarrones”, and other vernacular names, constitute very common and frequent faunistic elements in nearly all ecosystems, where at times one or more species form large populations.

The taxonomic status of Cuban odonates is considered to be well known (Alayo, 1968; Flint, 1996). Nevertheless, there have been no ecological studies on their populations. A small number of lists of species of certain localities have been published (Carfi, 1975, Flint 1996, Ramos Hernández, 1999, Hernández and Armas, in press). The aim of this communication is to list the species collected from a forested locality in central Cuba.

Sierra Las Damas is a karstic upland located in the southern part of the municipalities of Cabaiguán and Taguasco, in Sancti- Spiritus Province. It has an area of approximately 551 hectares and is covered by semideciduous forest on limestone, and gallery forests which grow along the banks of the Río Zaza, which divides the area into two parts. Because of its historical and natural value, in 1991 it was designated a Local Monument.

Collecting was done monthly for the year of 2001, always visiting the same localities on each trip. Anisoptera were injected with acetone in the thorax and abdomen; Zygoptera were immersed in acetone for 24 hours. Abundance of each species was estimated as follows: scarce (present in less than 50% of the sites), common (present at more than 50% of the sites), very common (present at all sites). The author retains the reference collection.

**Results**- I collected 230 specimens of 27 species, of 19 genera, and three families. 11 (41 %) of the species were very common; 9 (33 %) were

considered common; 7 (26 %) were scarce. Most of the species (15) were libellulids.

Following is a list of species, relative abundance, and biological notes:

### ZYGOPTERA; Coenagrionidae

*Enallagma coecum* (Hagen, 1861). Observed in each month, especially in vegetation on the river banks. Very common.

*Ischnura capreolus* (Hagen, 1861). Observed from April until July, in vegetation along the river bank, especially in back waters. Scarce.

*Ischnura hastata* (Say, 1839). From April to August, in vegetation along the river, especially near backwaters. Scarce.

*Ischnura ramburi* (Selys, 1850). From April to August, in vegetation along the river, especially near backwaters. Common.

*Leptobasis vacillans* Hagen 1877. Observed all months, in vegetation along the banks of the river. Very common.

*Telebasis dominicana* (Selys, 1857). From April to July in vegetation along the banks of the river, near backwaters. Common.

### ANISOPTERA; Aeshnidae.

*Anax junius* (Drury, 1770) From July to September, in the gallery forest. Scarce.

*Coryphaeschna adnexa* (Hagen, 1861). From July to September, frequently perched in the semideciduous forest. Common.

*Coryphaeschna viriditas* Calvert, 1952. From April to September, in the gallery forest. Scarce.

*Gynacantha ereagris* Gundlach, 1888. A crepuscular species. It was collected only once, in December, while resting during the day in the semideciduous forest. Scarce.

*Gynacantha nervosa* Rambur, 1842. A crepuscular species. Observed every month, always while resting in the in the interior of the semideciduous forest. Very common.

*Triacanthagyna septima* (Selys, 1857). A crepuscular species. From July to October it was

observed resting during the day in the semideciduous and in the gallery forests. Very common.

ANISOPTERA; Libellulidae

*Brachymesia herbida* Gundlach, 1888. In July and August, in the backwaters of the river. Common.

*Crocothemis servilia* (Drury, 1773). Observed in every month, always near the bank of the river. Common. It is an Asiatic species recently found in our island (Flint, 1996; Ramos Hernández, 2000; Trapero Quintana and López, 2001).

*Dythemis rufinervis* (Burmeister, 1839). From May to October, it was frequently seen perched on the ends of branches or grass stems along the banks of the river. Common.

*Dythemis sterilis* Hagen, 1861. From May to September, very frequently perched in bushes on the bank of the river, near backwaters. Common.

*Erythrodiplax fervida* (Erichson, 1848). From March to October, preferring shaded places on the banks of the rivers. Common.

*Erythrodiplax justiniana* (Selys, 1857). From May to November, preferring to perch on low vegetation on the banks of the river. Common.

*Erythrodiplax umbrata* (Linne, 1758). From February to December, on the banks of the river. Common.

*Erythemis plebeja* (Burmeister, 1839). From May to July, in vegetation near backwaters of the river. Scarce.

*Erythemis vesiculosa* (Fabricius, 1775). From May to December, resting on the ground or on bushes on the bank of the river. Very common.

*Macrothemis celeno* (Selys, 1857). It was observed in all months. It was very active flying along the channel of the river and perching on rocks. Very common.

*Micrathyria aequalis* (Hagen, 1861). From May to July, mainly seen resting on bushes near the backwaters of the river. Scarce.

*Orthemis ferruginea* (Fabricius, 1775). From May to October, on the banks of the river. Very common.

*Pantala flavescens* (Fabricius, 1798). From May to October. It was observed flying on the river and perched on high branches of trees. Common.

*Tholymis citrina* (Hagen, 1867). A crepuscular species. Observed from April to October, always while resting during the day in the interior of the semideciduous and gallery forests. It flies with *Gynacantha nervosa* and *Triacanthagyna septima*. Very common.

*Tramea calverti* Muttkowski, 1910. From May to October, on the banks of the river. Common.

**Acknowledgments:** To Dr. Luis F. de Armas (Instituto de Ecología y Sistemática, La Habana), for his careful revision of the manuscript and his useful suggestions. To Abel Hernández Muñoz (Provincial Secretary of Culture, Sancti-Spiritus), for helping me with literature.

References:

Alayo, D.P., 1968, Las Libélulas de Cuba (Insecta: Odonata). *Torreia*, n.s., 2: 1-102 (part 1 text); 3: 1-54 (part 2, plates).

Carfi, Salvatore, 1975, Libélulas colectadas en Cuba y en Cayo Avalos durante la "Expedición científica MARES 1967". *Redia*, 56: 13-18.

Flint, O.S. Jr., 1996, The Odonata of Cuba, with a report on a recent collection of the Cuban species. *COCUYO* 5: 17-20

Hernández Muñoz, A., 1988, Valoración ecológica de las Sierra Las Damas, para declararla área protegida. Unpublished thesis, Facultad de Biología, Universidad de La Habana, 63

Ramos Hernández, J.M., 1999, List of the odonata (Insecta: Odonata) from Cayo Caguanes and Cayo Palma, Sancti-Spiritus Province, central Cuba. *ARGIA* 11(3): 15-17.

Ramos Hernández, J.M., 2000, Geographic distribution of *Crocothemis servilia* (Drury) (Odonata: Libellulidae) in Cuba. *ARGIA*, 12(3): 28-29.

Ramos Hernández, J.M. and L.F. de Armas (in press). Odonatos del Cabo de San Antonia, extremo más occidental de Cuba. *COCUYO*

Trapero Quintana, A. and C. Naranjo López, 2001, New locality reports for *Crocothemis servilia* (Drury, 1773) (Odonata: Libellulidae) in Cuba. *ARGIA* 13(2): 3.

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## DRAGONFLIES INFILTRATE TEXAS BUTTERFLY FESTIVAL

Roy Beckemeyer

Watching the leaves begin to fall from the trees and the annuals start to wither up as mornings turned frosty, my wife decided she needed one last blast of butterfly watching before winter really descended on Kansas. She tossed me a brochure for the "7<sup>th</sup> Annual Texas Butterfly Festival" to be held in Mission, Texas in mid October, and said "Oh, and there is a dragonfly walk, too." I looked through the brochure and saw an evening of Texas Barbecue and Mariachi Music, and my mouth started to water. Needless to say, she didn't really have to twist my arm to convince me that we should head for the Rio Grande.

Soon we were driving south with thoughts of exotic tropical butterflies (Pat), dragonflies (Roy) and birds (both of us) dominating our daydreams. Fall turned back to spring somewhere in the vicinity of Austin, and by the time we were heading south out of San Antonio we ran into one of the late-summer/early fall nature extravaganzas that occurs yearly in the LRGV (Lower Rio Grande Valley): the swarm/migration of the American Snout butterfly (*Libytheana carinenta*). Monarch migration is known to almost everyone, but the Snout puts on a really big show as well, occurring in huge masses across south Texas. As we drove, there were literally thousands of these butterflies fluttering around, and our windshield was getting hard to see through as Snout remains spattered across it (accompanied by the occasional crunch of a Pipevine Swallowtail, Monarch, or a *Tramea lacerata*). When we stopped in the little town of Three Rivers, about 35 miles or so south of San Antonio, the car's radiator was papered with Snout wings.

Three Rivers gets its name from the joining of the Atacosa, Frio, and Nueces Rivers nearby, and is near Choke Canyon Reservoir (Live Oak County). Since we had lots of daylight left, we headed for the State Park at the reservoir, since there were bound to be lots of BB&D's (birds, butterflies and dragonflies) there. The short drive to the park was made enjoyable by the many Scissor-tailed

Flycatchers perched on the telephone and fence wires, and the Golden-fronted Woodpeckers that were there in place of the Red-bellied ones we have in Kansas. The reservoir yielded a lifer for me: *Enallagma durum*, the Big Bluet – that looked truly gigantic next to the *Enallagma civile* and *Ischnura ramburii* that were there in the grasses along the shore. Other odonates here included *Telebasis salva*, *Anax junius*, *Brachymesia gravida*, *Erythemis simplicicollis*, and *Erythrodiplax umbrata*.

The next day we arrived at Mission, and checked in to register at the festival. Sponsored by the Mission Chamber of Commerce, the butterfly festival is one of a series of activities through the year in the valley that are devoted to nature tourism. These include bird and dragonfly festivals, too (Joshua Rose wrote about the LRGV Dragonfly Festival in last June's *ARGIA* – 14(2):5-6). In addition to such butterfly luminaries as Robert Pyle, Ro Wauer, and John Tveten, DSA's own Bob Behrstock was there as a guide to the varied flora and fauna of south Texas, including dragonflies. Many of the attendees at this festival were former birders who were expanding their horizons to include butterflies. A certain number were also willing to cast their nets even further and begin watching and learning dragonflies. It is neat to watch a group of enthusiastic folks and see the various types. They range from the very serious listers, who are just transferring their twitching to a new group of organisms, to general naturalists who are interested in everything around them. An example was one event that I was surprised to see on the list of activities for a butterfly festival, but was on that had gotten my interest – an evening of black-lighting at Bentsen Rio Grande Valley State Park. In addition to giving the opportunity to see and hear various owls, it was a chance to see some exotic insects as well. This event was attended by at least a couple of dozen people, all of whom spent several hours walking from one to another of the three lighted sheets set up in the campground and exclaiming as new orders of insects appeared. The only odonate that made a showing was an *Anax junius*, but there were such exotica as a webspinner (Order Embioptera), and members of the Neuroptera families Mantispidae (Mantidflies) and Berothidae (Beaded Lacewings), all of which were completely new insects for me. Add to this list various mayflies, earwigs, Antlions, true bugs, beetles of all kinds, lots of hymenoptera and diptera, and many, many moths, and it makes for an interesting evening.



envisioned by Robert Owen and William Maclure, of The Academy of Natural Sciences in Philadelphia. Many of the original buildings are still standing, and some of them are open for touring as part of a visit to the town. The site includes a very nice Visitors Center, where there are regular showings of a short movie summarizing the history of the town, a museum with a model of the town as it existed in the early 1820's, and displays centered on a number of the intellectuals who lived there during the second Utopian experiment. The museum displays included several sections on Say that included: a map showing his many collecting trips in the US, Canada, and Mexico, a copy of the portrait of Say that was painted by C.W. Peale (who also made many of the sketches that were published in the records of the Long expedition that Say participated in), excerpts from his works on conchology and entomology, including pictures and text, and a picture of his wife and examples of the drawings and color illustrations she did for his *American Conchology* book. I was disappointed that the museum docent who provided the tour would not allow me to take any pictures of the displays, as I had hoped to include a picture or two with this article.

Maclure, the second president of the Academy of Natural Sciences of Philadelphia, Charles Alexandre Lesuer, the Academy's curator, and Thomas Say, the Academy's librarian, were all close friends who eventually came under the spell of Robert Owen, who was a proponent of social experimentation. Owen envisioned a New Moral World of enlightenment and prosperity that could be brought about by a combination of education, science, technology, and communal living. Educators and scientists would be essential to achieving his plan. In 1825, he purchased New Harmony, and persuaded a group of distinguished intellectuals to accompany him there to establish a new community. In 1826, a keelboat named "Boatload of Knowledge" traveled down the Ohio River to New Harmony (at the junction of the Wabash and Ohio rivers). Say was elected captain of the boat. Their 47 day journey included being ice-bound for a while, but was largely free of any major disasters, and the party arrived to establish their experimental community on January 23, 1826. Maclure was in charge of the commune's educational program, but Say was in charge when Maclure was absent. The schools included an Infant School for children ages 2 to 5, Higher School for children to age 12, a School of Industry (a trade school), and finally, a program of adult education that included lectures, museum and

library resources. The Infant School was the one of the earliest schools for infants in North America.

The School of Industry ended in the 1840's, but its printing program was used to publish a number of landmark scientific works. These included Lesueur's *American Ichthyology*, Say's *Descriptions of Some New Terrestrial and Fluvatile Shells of North America*, and Say's *American Conchology* (1830-1838). Say lectured on natural history in the community's adult education program, and New Harmony was a center of scientific endeavor in the Midwest during the time it was active.

Much of the information in this brief account came from a pamphlet available from the gift shop at New Harmony (a reprint of an article from The Ohio Journal of Science, "The Original Boatload of Knowledge" by Donald E. Pitzer of the University of Southern Indiana). Pitzer notes that "Thomas Say made New Harmony the base for his research, lectures and publications until his death in 1834. An obelisk marks his grave in the yard of the 'Rapp-Maclure Mansion', where he lived on the square in New Harmony and where the remainder of his collection that was not sent East was destroyed in a fire in 1844."

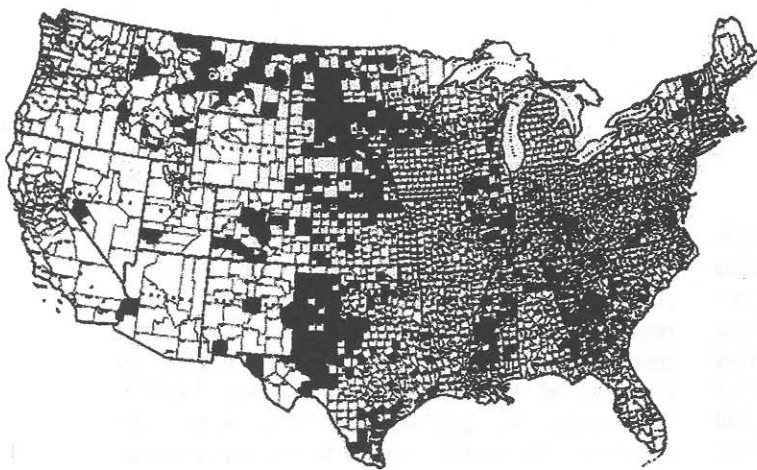
I can highly recommend that anyone interested in the history of Odonata study in North America who might be traveling I-64 across the country make plans to stop for an hour or two at New Harmony to visit the site where Thomas Say worked and lived for much of his scientifically productive life. A further inducement would be Harmonie State Park, just a few miles south of the town, which is located on the banks of the Wabash River, and which could be checked for dragonflies which might be descendants of those that Thomas Say collected a hundred and seventy years ago!

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**WHERE TO GO ON YOUR NEXT  
DRAGONFLY TRIP**

**Dennis Paulson**

This map shows all the counties in the United States for which we have fewer than 10 species of Odonata recorded. The data come from my own compilations and especially from the database Nick Donnelly has compiled for his dot-map project, and I thank Nick for sharing these records. Although the picture is changing all the time as new records come in, these figures are more or less up to date



and will suffice to show the general patterns of inadequately sampled regions.

It's probably not surprising that a region of the country that might have been considered less interesting for Odonata, the Great Plains, suffers the most from inadequate survey work. It is ironic that this same region is now the best-analyzed in the country from the standpoint of biodiversity and biogeography (Beckemeyer, ).

You can see how odonate surveys have been state-based when you look at states such as Iowa and Alabama, with no darkened counties, surrounded by undersampled states. The difference on either side of the Mississippi River is rather startling.

The reason the West appears to be better sampled than the East is in part because the counties are much larger, so scattered surveying around the state results in at least a visit or two to just about all the counties, and it's very easy to tally at least 10 species. Some eastern states contain counties with no records at all as well as extremely well-sampled counties with 80 or more species.

So next time you plan a trip to exotic locales to encounter new faunas, consider visiting a part of this big country with a concentration of shaded counties, where you can make real contributions to our knowledge of odonate distribution. I can testify that seeking new county records is an addictive pastime!

**ARE BEETLE DOGS SMARTER THAN DRAGONFLY DOGS? A CHALLENGE FROM THE PAST**

**Roy Beckemeyer**

Some of you may recall my digression here in ARGIA a while back on my "dragonfly dog", Joe,

the yellow lab. I just happened to come across an old account of a beetle dog that I thought needed to be recounted here. In an article titled "Some new beetles from North Carolina, with ecological notes (Coleop.)", by Charles Dury, and published in Entomological News in June, 1911 (22(6):273-275), was this tale:

"At night many moths and beetles came to light and some fine ones were captured. In this work I was ably assisted by a setter dog belonging to the manager of the Lodge. The intelligence of this dog was a marvel. After chewing up several specimens, his master told him not to bite them. He evidently understood for after that he knocked the beetles down with his paw and held them until we bottled them. The only *Acanthocinus nodosus* taken, was caught in this way by the dog. This dog seemed to understand what we were doing better than the mountaineers, one of whom said to the manager of the Lodge, 'What was the matter up to your house last night? I seen a feller jumping around on your porch waving a white flag.' He had evidently mistaken our butterfly net for a flag of truce...."

After reading this, I looked at Joe and said, "You've got a few things yet to learn, buddy." Wonder if I can train him to come to point on perching gomphids...?

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**BOOK NOTICE: A NEW FIELD GUIDE FOR CALIFORNIA**

This is "must have" guide is expected out before the 2003 DSA meeting in California. **DRAGONFLIES AND DAMSELFLIES OF CALIFORNIA** by Tim Manolis, (est. pub date Spring 2003), UC Press ISBN 0520235673. This is the first comprehensive guide to finding and identifying all of the 108 species known to occur in the state. It provides a general overview of the dragonfly body plan and life history, as well as information on how to watch and study dragonflies in the field. Accounts of each species discuss identification in the field and in the hand, behavior, habitat associations, geographic distribution, and flight season. Forty full-color plates and additional black and white figures illustrate identification marks for all of California's dragonflies and damselflies. A complete set of range maps and a checklist are included as well. Pricing and ordering information:





NEW BULLETIN OF AMERICAN  
ODONATOLOGY NUMBER

TO FULL SPECIES (ANISOPTERA:  
LIBELLULIDAE)

The final number of volume 6 of the BAO contains the following paper by Dennis Paulson:

COMMENTS ON THE *ERYTHRODIPLAX*  
*CONNATA* (BURMEISTER, 1839) GROUP,  
WITH THE ELEVATION OF *E. FUSCA*  
(RAMBUR, 1842), *E. MINUSCULA* (RAMBUR,  
1842), AND *E. BASIFUSCA* (CALVERT, 1895)

The next paper in press ( first number of volume 7) is by Mark O'Brien *et al* and is entitled:

THE ODONATA OF THE HURON  
MOUNTAINS, MARQUETTE CO.,  
MICHIGAN

TRAMEA

This issue begins with an important contribution by Roy Beckemeyer. Important URL's follow.

ODONATA SCIENTIFIC PAPERS ON THE WEB by Roy Beckemeyer

More and more, journal articles are appearing on the web. They are usually in Adobe Acrobat PDF format. This is convenient, as PDF readers are available free as downloads from Adobe.

Here are some of the many articles to be found on the internet that may be of interest to DSA members:

De Marmels, J., 2001, *Sympetrum paramo* sp. n. (Odonata: Libellulidae) from the Venezuelan high Andes, with a key to the species of *Sympetrum* Newman, 1833 found in Venezuela, Entomotropica (Formerly Boletín de Entomología Venezolana), 16(1):15-19.

[http://www.entomotropica.org/v16\\_1/entrop1601art002.pdf](http://www.entomotropica.org/v16_1/entrop1601art002.pdf)

Englund, R.A., 1999, The impacts of introduced poeciliid fish and Odonata on the endemic Megalagrion (Odonata) damselflies of Oahu Island, Hawaii, J. Insect Conservation, 3:225-243.

[http://147.46.94.112/e\\_journals/pdf\\_full/journal\\_jj11\\_199903\\_030307.pdf](http://147.46.94.112/e_journals/pdf_full/journal_jj11_199903_030307.pdf)

Gossum, H. van, R. Stoks, & L. De Bruyn, 2001, Male mate choice for female colour morphs: frequency and method dependence, Animal Behav., 61:F31-F34.

<http://www.academicpress.com/www/journal/ar/1720a.pdf>

May, M.L., 2002, Phylogeny and taxonomy of the damselfly genus *Enallagma* and related taxa (Odonata: Zygoptera: Coenagrionidae), Syst. Entomol., 27(4):387 (ABSTRACT Only available for free - complete article must be purchased with subscription). <http://www.blackwell-synergy.com/servlet/useragent?func=synergy&synergyAction=showAbstract&doi=10.1046/j.1365-3113.2002.00188.x>

Ellenrieder, N. von, 2002, A phylogenetic analysis of the extant Aeshnidae (Odonata: Anisoptera), Syst. Entomol., 27(4):437, (ABSTRACT Only available for free - complete article must be purchased with subscription). <http://www.blackwell-synergy.com/servlet/useragent?func=synergy&synergyAction=showAbstract&doi=10.1046/j.1365-3113.2002.00190.x>

Carle, F.L., & K.M. Kjer, 2002, Phylogeny of *Libellula* Linnaeus (Odonata: Insecta), Zootaxa, 87:1-18.

<http://www.mapress.com/zootaxa/2002f/zt00087.pdf>

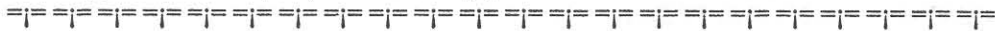
Stoks, R., M. De Block, H. Van Gossum, F. Valck, K. Lauwers, R. Verhagen, E. Matthysen, & L. De Bruyn, 1999, Lethal and sublethal costs of autotomy and predator presence in damselfly larvae, Oecologia, 120:87-91.

<http://www.uia.ac.be/u/matthys/stoksetal.pdf>

Rivera, A.C., 2000, An analysis of multivariate selection in a non-territorial damselfly (Odonata: Coenagrionidae), *Etologia*, 8:37-41.

[http://www.uvigo.es/webs/c04/webc04/etologia/volumen8/Etologia\\_vol.8\\_pp.37-41.pdf](http://www.uvigo.es/webs/c04/webc04/etologia/volumen8/Etologia_vol.8_pp.37-41.pdf)

I am sure that **ARGIA** readers would be interested to hear of any other odonate journal articles available for downloading on the internet, so please share any you find with the rest of us.



Important URL's for DSA meetings are: (Northeastern DSA in Marietta OH):

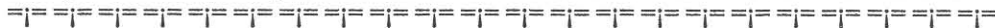
<http://mcnet.marietta.edu/~odonata/>

DSA annual meeting in Williams CA:

<http://www.sonic.net/~bigsnest/DSA2003/>

Giff Beaton's home page (he is host to the southeastern DSA meeting in Georgia):

<http://www.giffbeaton.com/dragonflies>.



The Odonata of the Eastern Mediterranean is at the following URL:

<http://www.libellen.org/epallage/>

Costantino dr. D'Antonio's Italian site is at:

<http://www.mimiko.it/odonata.htm>

## BACK ISSUES OF ARGIA AND THE BULLETIN OF AMERICAN ODONATOLOGY

The editor is able to provide back issues of **ARGIA**. Please contact T. Donnelly, 2091 Partridge Lane, Binghamton NY 13903. The present price schedule takes into account the different costs of duplication of each number of **ARGIA**. In the event that an issue becomes exhausted, then xerox copies will be sent. **Prices are \$2.00 per issue; these do not include postage; see below.**

Back Issues of the **BULLETIN OF AMERICA ODONATOLOGY** can be furnished at the prices given below. **Prices do not include postage; see below.**

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1(2) Distribution of Dragonflies and Damselflies in Florida, Sidney W. Dunkle p. 29-50	\$2.50
1(3) Morphological and ecological differences among species of <i>Ladona</i> , Michael L. May p. 51-56	\$1.50
Comportamiento reproductivo y policromatismo en <i>Ischnura denticollis</i> Burmeister, Alejandro Córdoba Aguilar [with English summary] p. 57-64	
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2(3) <i>Macromia illinoiensis</i> and <i>georgina</i> : a Study of heir Variation and Apparent Subspecific Relationship, T.W. Donnelly, K.J. Tennessen p. 27-61	\$3.00
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3(1) The Odonata of Ohio - a Preliminary Report, Robert C. Glotzhober p. 1-30	\$3.00
3(2) Four Decades of Stability and Change in the Odonata Population at Ten Acre Pond in Central Pennsylvania, Clark N. Shiffer & Harold B. White p. 31-40	\$1.50
Descripción e Historia Natural de las Larvas de Odonatos de Costa Rica. IV. <i>Mecistogaster ornata</i> (Rambur, 1842) [with English summary], Alonso Ramírez p. 43-47	
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5(1) The Dragonflies and Damselflies (Odonata) of Louisiana, Bill Mauffray p. 1-26	\$3.00
5(2) The Odonata of the Cayman Islands: a Review, R.R. Askew, R. Prosser, and P.S. Corbet p. 27-32	\$1.50
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Binghamton, New York

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