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# ARGIA

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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. Membership in DSA includes a subscription to 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.

## Membership in the Dragonfly Society of the Americas

Membership in the DSA is open to any person in any country and includes a subscription to ARGIA. Dues for individuals in the US, Canada, or Latin America are \$20 us for regular membership and \$25 us for institutions or contributing membership, payable annually on or before 1 March of membership year. Dues for members in the Old World are \$30 us. Dues for all who choose to receive ARGIA in PDF form are \$15. The Bulletin Of American Odonatology is available by a separate subscription at \$20 us for North Americans and \$25 us for non-North Americans and institutions. Membership dues and BAO subscription fees should be mailed to Jerrell Daigle, 2067 Little River Lane, Tallahassee, FL, USA 32311. More information on joining DSA and subscribing to BAO may be found at <[http://www.odonatacentral.org/index.php/PageAction.get/name/DSA\\_Membership](http://www.odonatacentral.org/index.php/PageAction.get/name/DSA_Membership)>.

## ARGIA and BAO Submission Guidelines

Digital submissions of all materials (via e-mail or CD) are much preferred to hardcopy. All articles and notes should be submitted in Word or Rich Text Format, without any figures or tables embedded. Only minimal formatting to facilitate review is needed. Photographs should be submitted as TIFF (preferred) or JPEG files with a minimum of 300 ppi at the intended print size. Charts, graphs, diagrams, and other vector graphics are best submitted in Illustrator format or EPS. If this is not possible, submit as PNG or TIFF at a minimum of 600 ppi at the intended print size. Charts and graphs may also be submitted in Excel documents. Tables may be submitted as Word or Excel documents. For more information see the entire guidelines at the end of this issue or visit <<http://www.odonatacentral.org/index.php/PageAction.get/name/DSASubmissionGuidelines>>. ARGIA submissions should be sent to John Abbott, Section of Integrative Biology, C0930, University of Texas, Austin TX, USA 78712, <[jcabbott@mail.utexas.edu](mailto:jcabbott@mail.utexas.edu)>; BAO submissions should be sent to Ken Tennessen, P.O. Box 585, Wautoma, WI, USA 54982, <[ktennessen@centurytel.net](mailto:ktennessen@centurytel.net)>.

**Front cover:** *Erythrodiplax fusca* (Red-faced Dragonlet), photographed at Bentsen–Rio Grande Valley State Park, Texas on 17 February 2008. Photo by Jim Bangma.

## In This Issue

We begin this issue with the sad news that Philip Corbet unexpectedly passed away February 13th at the age of 78. Philip was arguably the most knowledgeable person about odonate biology and ecology. His 1999 treatise, *Dragonflies: Behavior and Ecology of Odonata*, was monumental and essentially the culmination of a lifetime's work. Philip was singled out as one of the three original Honorary Members of DSA (the others were George Bick and Minter Westfall). Philip was the last surviving member of this exceptional trio.

I first met Philip in 1995 at the International Symposium on Odonatology held in Essen, Germany. As a shy graduate student, I wasn't sure how to even approach this giant of the odonate world, but I found him to be very inviting and especially encouraging with my research. I only met Philip again on two additional occasions at meetings, including last year's WDA meeting at Swakopmund, Namibia. I had the pleasure of chatting about odes with him and Sarah over a picnic lunch amongst the sand dunes. Following his obituary, several longtime friends offer brief remembrances.

I was also recently notified of the passing of DSA member Bud Gode. Bud was a member of DSA for over 10 years and upon his passing, an Interpretive Nature Trail was named in honor of him at Madera Canyon in Green Valley, Arizona.

Bryan Pfeiffer reports on the very successful NymphFest held in February. More than 60 people eager to learn about the nymphal stage of odonates were in attendance. I suspect based on the attendance of this event, NymphFest 2009 is a near certainty. Perhaps we can have more events like this around the country focused on this exciting life-stage.

Speaking of meetings, Jim Johnson and Steve Valley announce the details of the DSA annual meeting to be held in Bend, Oregon in late July. This is a beautiful part of the country and

I encourage everyone who can to attend. There are plans for both pre- and post-meeting trips as well. Be sure to check the Calendar of Upcoming Events so you don't miss out on any of the other various upcoming meetings.

Kathy and Dave Biggs also announce their plans to hold the fourth annual CalOdes Blitz immediately after the DSA annual meeting post-trip. This year they plan to blitz the northern part of the state and if previous years are any indication, they will no doubt come up with some nice finds.

Bob DuBois and Ken Tennesen provide some insight into the nymphal habitat preferences of *Somatochlora ensigera* (Plains Emerald). Like so many other emeralds, very little is known about where the nymphs of this species live. Bob and Ken found some success in locating them in the Turtle River of North Dakota, and share their methods with us.

Susan Stanley and Ellen Pehek report on the odonates of a park wetland located on Staten Island within New York City. They have put together a respectable list for such an urbanized area and I'm sure additional species will be added since their surveying has just begun.

Paul Catling and Brenda Kostiuik detail their observations of darners swarming over bison in the Northwest Territories. They were feeding on several species of horse fly and Paul and Brenda consider the potential benefits to animals like bison when predators are visibly reducing the number of biting flies. I have a photograph of a road warning sign I took in the Northwest Territories a number of years ago that depicts a man being carried off by a mosquito. Dragonflies may truly be life savers in this part of the world!

Sid Dunkle relays a tremendous dragonfly migratory event he witnessed in Veracruz, Mexico. This is probably the least understood phenomenon in dragonflies. DSA members,

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## Calendar of Upcoming Events

For additional information, see <<http://www.odonatacentral.org/index.php/PageAction.get/name/DSAOtherMeetings>>.

Event	Date	Location	Contact
DSA SE Regional Meeting	8–11 May	Cheraw, South Carolina	Jerrell Daigle <jdaigle@netally.com>
Dragonfly Days	15–18 May	Weslaco, Texas	Jennifer Owen <jennifer.owen@tpwd.state.tx.us>
DSA NE Regional Meeting	26–29 Jun	Adirondacks, New York	Jan Trybula <trybulj@potdam.edu>
DSA Annual Meeting	1–3 Aug	Bend, Oregon	Jim Johnson <jt_johnson@comcast.net>
CalOdes Blitz	9–10 Aug	Trinity Co., California	Kathy Biggs <biggsnest@sonic.net>



particularly along coastlines, should keep an eye out for these events and report them to the North American Dragonfly Migration Project, <may@aesop.rutgers.edu>.

Sue and John Gregoire update us on the third year of their ongoing project to document the emergence of *Celithemis elisa* (Calico Pennant) in the Finger Lakes of New York. Long-term studies like these are uncommon, but very important, and really give us a better handle on the natural variation to be expected in populations on a yearly basis. The Gregoire's population of *C. elisa* continues to be strong.


Richard Groover reports some interesting observations of *Perithemis tenera* (Eastern Amberwing) and their apparent avoidance of eutrophic ponds. Richard is soliciting comments and additional observations from DSA members regarding the habitat preference of *P. tenera*.

Adrian Trapero reports on his observation of a male–male tandem of *Telebasis dominicanum* in Cuba. Anomalous linkages are relatively uncommon and Adrian provides a brief summary for us.

There has been a tremendous flurry of activity in southern Florida recently. Dennis Paulson reports on his rediscovery of the elusive *Chrysobasis lucifer* (Lucifer Damselfly). Jerrell Daigle and Tim Manolis also report on their recent trips in the sunshine state.

Juerg De Marmels reminds us that we should not overlook even the most unsuspecting habitats right beneath our noses with a Christmas story of a rare damselfly found in his kitchen.

There are several new distributional records to report in this issue. Alan Myrup recounts his recent discovery of *Somatochlora hudsonica* (Hudsonian Emerald) in Utah. George Harp reports several new records for northern Mexico. And Giff Beaton and Marion Dobbs provide a summary of odonate activities and records in Georgia for 2007.

Jason Bried and Hal White are both soliciting help with their various projects, so please see if you might not be able to contribute to their work. Finally, Kurt Mead reviews a recent children's book called, *Dazzling Dragonflies*. 

## **Philip Corbet, Specialist on the Ecology of Dragonflies and Mosquitoes, and Earnest Advocate of a Human Population Policy**

Philip Steven Corbet, who died on 13 February 2008 aged 78 in West Cornwall, was a zoologist—by inclination, training, experience and achievement. His father, Alexander Steven Corbet, Deputy Keeper of Entomology at The Natural History Museum, was the recognised authority on Malaysian butterflies. The atmosphere in the Corbet family home was pervaded by his father's love of natural history. Philip's sister, Sarah A. Corbet, is an authority on British bumble bees and the pollination of plants by insects.

Philip Corbet was born on 21 May 1929 in Kuala Lumpur, West Malaysia, where his father was a microbiologist at the Rubber Research Institute. His schooling was at Nelson Boys' College, New Zealand and then, for one year only, at Dauntsey's School, Wiltshire. Only at Dauntsey's did he receive any instruction in biology. After graduating BSc with First Class Honours in Zoology at the University of Reading, where he was awarded the Colin Morley Prize for Zoology, Corbet undertook research for the PhD Degree at Gonville & Caius College, Cambridge under the supervision of Professor V.B. (later Sir Vincent) Wigglesworth FRS, the distinguished insect physiologist. Corbet remained grateful to Sir Vincent for allowing him to conduct his PhD research on a topic that Corbet himself had chosen—seasonal regulation in dragonflies, rather than on a subject suggested by his supervisor. The resulting research confirmed Corbet's deep

affection for dragonflies. It also provided the foundation for his life-long interest in the group, and for an ecological classification that has formed an informative template for interpreting life histories of dragonflies and other aquatic insects. Corbet's PhD research led to his suggesting to James Fisher, then on the Editorial Board of the popular *New Naturalist* books, that a volume devoted to dragonflies would be an appropriate addition to the series. The outcome was the widely used volume *Dragonflies* by Corbet, Longfield, and Moore, first published in 1960.

Corbet's professional career reflected the diversity of his zoological, and especially entomological, interests, being pursued in four continents and embracing research, administration and resource management.

During 1954–1962 Corbet was employed as a zoologist and entomologist by the East African High Commission in Uganda, first, from 1954 to 1957, at the East African Freshwater Fisheries Research Organization at Jinja, where he produced the definitive account of the food of non-cichlid fishes in the Lake Victoria basin, leaving this work with detailed investigations of the insect food of the Nile Crocodile and the behaviour of several groups of aquatic insects. Latterly, from 1957 to 1962, he specialized on the behaviour and ecology of mosquitoes

at the East African Virus Research Institute, Entebbe, a prestigious laboratory which, as the Rockefeller Yellow Fever Institute, had been the place where, some years earlier, the jungle cycle of Yellow Fever had been elucidated by A.J. Haddow and others. At the EAVRI, under the inspiring leadership of Haddow, Corbet's research output was exceptionally high, and on the strength of this he was invited by the Canada Department of Agriculture Research Branch to join the Entomology Research Institute (later the Biosystematics Research Institute), Ottawa. He readily accepted this offer in 1962, a time when career prospects for expatriate staff in Uganda were being diminished by the imminence of self government.

While at the EAVRI Corbet led the field team that discovered the mosquito vector of O'nyong-nyong Fever, a hitherto unknown arbovirus, with Dengue-like symptoms, that was causing a fulminating epidemic among humans in Uganda and Kenya in 1959. However his principal assignment at Entebbe was to collect large samples of mosquitoes from different heights above the ground in rain forest and then to discover and validate external characters of females that enabled their physiological age to be estimated without having to resort to the laborious and time-consuming process of dissecting the ovaries. Corbet became adept at this arcane skill, to such an extent that, towards the end of his employment in Uganda, as he was wont to recall, he had an opportunity to demonstrate his aptitude in a memorable way. While relaxing on an open veranda at sundown, Corbet and an entomological colleague (the late A.W.R. McCrae) noticed a mosquito flying slowly between them, whereupon Corbet was able to state with confidence the mosquito's species and to add that it was a young female who had not yet laid eggs.

Such proficiency served Corbet well in his next assignment—the study of mosquito biology in the Canadian High Arctic. There he discovered, and described, the phenomenon of facultative autogeny—a hitherto unknown reproductive strategy of mosquitoes. The strategy entails the ability by individuals of blood-sucking species to retain two options for oogenesis. If, after a period of trying to obtain vertebrate blood (normally a prerequisite for egg development of mosquitoes) a female fails to do so, she can safeguard her reproductive options by

abandoning further attempts at host-seeking and dedicating her scant remaining energy reserves to developing at least a few eggs. This strategy, well suited to the High Arctic where sources of vertebrate blood are sparse and unpredictable, was later detected by other workers among mosquitoes in harsh and variable environments elsewhere. Corbet's other principal achievement while a research entomologist in Canada was to lead the investigative team that diagnosed, and subsequently suppressed, the insect nuisance in the St. Lawrence River that threatened the viability of the 1967 World Exhibition (Expo 67) in Montreal. His team's diagnosis and recommendations proved to be correct and practicable so that the threat was averted.

Corbet's career as a full-time research entomologist effectively ended in 1967, with his appointment as Director of the Canada Department of Agriculture Research Institute at Belleville, Ontario. The Institute, formerly known as the Canadian Institute for Biological Control, adopted, under Corbet's direction, the broader remit of discovering and developing methods for pest suppression that avoided, or greatly reduced, the use of synthetic organic chemical pesticides. This responsibility, which Corbet discharged for four years, marked a turning point in his personal priorities. As an ecologist with a responsibility for pest management, Corbet saw clearly the driving role of human population pressure in destabilising ecosystems, and also of precipitating pest outbreaks. Thereafter he used his many opportunities as an invited symposium speaker to emphasise this causal relationship and to point to the



Philip Corbet and Sarah Jewell in Swakopmund, Namibia at the 5th World Dragonfly Association International Symposium on Odonatology in April 2007. Photo by John C. Abbott.

need for national policies to balance the size of human populations and the resources available to support them on a sustainable basis.

His compulsion to communicate these principles more widely led to his acceptance in 1971 of the position of Professor and Chairman of the Biology Department at the University of Waterloo, Ontario and in 1974 as Professor and Director of the Joint Centre for Environmental Sciences at the University of Canterbury and Lincoln Agricultural College (now Lincoln University), Canterbury, New Zealand. The directorship of the Joint Centre (now the Centre for Resource Management) afforded Corbet access to a variety of influential fora in which to present the ecological perspective, including service on the New Zealand Environmental Council, the New Zealand Government Fact-Finding Group on Nuclear Energy, the first council of the New Zealand Demographic Society and the first executive of the New Zealand Club of Rome. Many of the graduates from the Joint Centre, which administered a two-year MSc Degree in Resource Management, secured influential positions in departments and agencies concerned with environmental planning, resource allocation and nature conservation, in New Zealand and elsewhere. An additional source of satisfaction to Corbet and the architects of the programme was that senior employees from resource-oriented government departments were seconded to take the MSc course.

While in Canada Corbet had been trying to gain wider recognition of the need for a population policy and in 1971 had orchestrated an open letter to the Prime Minister, signed by 25 senior biologists, calling for the Prime Minister to acknowledge this need and to put in place a demographic policy. Like other such initiatives at that time, it failed to generate a tangible response.

In 1978, after four years as Director of the Joint Centre, Corbet resigned to take a chair in the Department of Zoology at the University of Canterbury. He had found that the position at the Joint Centre had become too political and insufficiently scientific for his taste. Soon afterwards he was awarded a Commonwealth Visiting Professorship in the Department of Applied Biology at the University of Cambridge. While there, he and his Swedish wife, who had just become parents, decided to try to relocate in Europe so that their daughter would be able to know her wider family. Accordingly in 1980 Corbet accepted the foundation chair of Zoology in the Department of Biological Sciences at the University of Dundee, where he was Head of Department from 1983 to 1986.

While at Dundee Corbet served on the Nature Conservancy Council Committee for Scotland and chaired the Science

## Some Tributes to Philip

The following are messages sent to the Editor after the announcement of Philip's death.

Back when I was beginning my studies of dragonflies in Gainesville, Florida, I bought Justin Leonard's copy of Philip Corbet's book "A Biology of Dragonflies." It was, and still is, one of the most interesting books I have ever read. One of Philip's major strengths was in bringing together and correlating information from throughout the field of odonatology in his books and articles, and he was the world's overall most knowledgeable odonatologist. Eventually I met "gentleman Philip" at several International symposia, and even got into the field with him when he visited Gainesville. I always enjoyed our conversations and consultations, and we collaborated in 1995 on editing, along with Hidenori Ubukata, the "Proceedings of the International Symposium on the Conservation of Dragonflies and Their Habitats." I learned then just how meticulous "wordsmith Philip" was in his writing. Thank heavens by that time, we could e-mail various versions of manuscripts back and forth among us! Because of his research, ability to correlate widely scattered data, famous plenary sessions at international symposia, generous help to numerous students and colleagues worldwide, and kind and gentlemanly nature, Philip Corbet will be greatly missed!

~Sid Dunkle

I served on the executive council of SIO with Philip when I was Secretary General of the society in the 1970s. He was one of the most gracious and thoughtful scientists I have ever met. I also had opportunity to discuss several topics of dragonfly biology with him. He was constantly asking questions about a multitude of dragonfly subjects, including behavior, bionomics, and habitat, in preparation for writing his epic book, "Dragonflies. Behaviour and Ecology of Odonata" published in 1999. To me, his demeanor, curiosity, knowledge of insects, and writing skills are unparalleled. I am deeply saddened to hear of his death. The odonatological community will greatly miss him and his knowledge in the years ahead, but for those who knew him, he will be there in our thoughts whenever we see a live dragonfly.

~Ken Tennesen

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*tributes continued . . .*

I first met Philip Corbet in a cold and dreary small room at O'Hare Airport. I had flown up with Bob Cumming from sunny Texas to attend Monty's 1963 Odonata Symposium—arguably the first serious attempt in the US to bring odonatists together. Following the custom of the time, none of us in the group in the waiting area (which somewhat resembled a prison but without the charm) introduced ourselves or struck up conversations. It turned out that we were nearly all traveling to the symposium, which we only discovered when we stepped out of the DC-3 at Lafayette and were greeted by a smiling Monty. I remember Merle Jacobs was one of the group, and I forget who the others were. The tall one with rather long, but kempt, hair was Philip Corbet. He was at the time coming from Ottawa. I later met him in Cambridge just before he moved to Dundee, and I have encountered him at a few organized meetings. His presentation at the symposium was on migration, and he sparked a long discussion on a topic which at this time was little thought of by odonatists. I remember his presentation as very organized. Such was his enthusiasm and organization that he was very well received. Borrer was quiet and very pleasant. Monty was ebullient. Even Dolly was charming. Corbet's interests seemed to span the entire world of Odonata—behavior, life history, etc.—everything but taxonomy. Such was his charm and enthusiasm that you never missed that he ignored this aspect of odonates throughout his entire life.

~Nick Donnelly



Committee of the Scottish Wildlife Trust. In 1983 he was elected first President of the British Dragonfly Society.

Among those who study dragonflies, Corbet was well known for his books, especially two synoptic treatments of the behaviour and ecology of the group, both of which promptly became accepted as standard texts: *A biology of dragonflies* (1962, reprinted 1983) and *Dragonflies: Behaviour and ecology of Odonata* (1999, reprinted 2001, and 2004). Both books came to be regarded as foundation sources for students of dragonflies, the second appearing in Japanese translation in 2006. Corbet also co-authored three other books on dragonflies, each with a regional focus: the *New Naturalist Dragonflies* referred to above (1960, reprinted 1985 with C. Longfield and N.W. Moore); volume 3 of *The Odonata of Canada and Alaska* (1975, reprinted 1978 and 1998 with E.M. Walker); and an

updated version of the 1960 *New Naturalist* book (to be published in the near future with S.J. Brooks). The book published in 1999, *Dragonflies: Behaviour and ecology of Odonata*, was regarded as a definitive synthesis for which Corbet was awarded the Neill Medal for Natural History by the Royal Society of Edinburgh.

His output of published research was varied and extensive, comprising more than 250 papers in refereed scientific journals reporting findings on fishes, crocodiles, bats, mosquitoes and dragonflies and other aquatic insects, pest management, demography, resource management and arctic microclimate. His research led to the award of the Degrees of DSc by the University of Reading (1962), ScD by the University of Cambridge (1976) and DSc by the Universities of Edinburgh (2003) and Dundee (2005). He was elected Fellow of the Institute of Biology (1967), the Entomological Society of Canada (1977) of which he was President during 1971–1972 and from which he received the Gold Medal for Outstanding Achievement in 1974, the Royal Society of Tropical Medicine and Hygiene (1985), and the Royal Society of Arts (1991). He became a Fellow of the Royal Society of Edinburgh in 1987, being awarded the Society's Neill Medal in 2002. Honorary Memberships included the British Dragonfly Society (1991), the Société Française d'Odonatologie (1997) and the Dragonfly Society of the Americas (2002). During 2001 to 2003 he was President of the Worldwide Dragonfly Association. He served as consultant, as an applied entomologist, for the Food and Agriculture Organization and the World Health Organization of the United Nations and for the European Economic Community.

In 1990 Corbet retired from the University of Dundee, as Professor Emeritus of Zoology, to work in an honorary capacity at the Department of Zoology, University of Edinburgh, until 1996, when he was appointed Honorary Professor there.

While living in Cornwall after retirement, Corbet served on the Council and Executive of the Cornwall Wildlife Trust and as foundation chair of the Trust's Conservation Strategy Committee.

Each of Corbet's three marriages was dissolved. His daughter, Katarina, survives him. In January 2001 he suffered a mild stroke, from which he made an almost complete recovery. He enjoyed great happiness during his closing years from his partnership with Sarah Jewell who, along with his sister Sarah Corbet, also an entomologist, survives him.



[This obituary was written by Philip Corbet and graciously provided to the editor by Mike Parr. Ed.]

## 2008 DSA Annual Meeting in Bend, Oregon, 1–3 August

Jim Johnson <jt\_johnson@comcast.net> and Steve Valley <svalley2@comcast.net>

This year's DSA Annual Meeting has been scheduled for 1–3 August 2008 in scenic Bend, Oregon, where we will spend field time in the shadows of dormant volcanoes—some of the most awe-inspiring terrain on the continent. Plan to arrive on 31 July to take full advantage of the field days. Full details and a registration page can be found at <<http://www.odonatacentral.org/index.php/PageAction.get/name/DSAAnnualMeeting>>. Please sign in to let us know that you are attending.

For those flying into the region, Portland International Airport (PDX) is the closest major hub. From here, it's about a four-hour drive to Bend through the Cascade Range. Another option is fly into the Roberts Field–Redmond Municipal Airport (RDM) which is about 15 miles north of Bend, although flight options are more limited. Rental cars are available at both airports. The flight time from Portland to Redmond is about 40 minutes.

We have arranged a block of rooms at the Super 8 (541-388-6888) under the name “Dragonfly Society”. Rates are \$70.09/\$74.59 + tax for a single room (weekday/weekend), \$76.39/\$80.89 + tax for a double (weekday/weekend). See <[http://www.super8.com/Super8/control/Booking/property\\_info?propertyId=04081](http://www.super8.com/Super8/control/Booking/property_info?propertyId=04081)> for more details about this motel. Make your reservation early to ensure that you get a room at the discounted rate.

For those looking for a more economical way to stay in Bend, Central Oregon Community College (where the Saturday meeting will be held) has dorm rooms available for rent. Rooms have two single beds (linens not included), bathrooms are typical “community style”, and free wi-fi is available throughout. The cost is \$28 for double occupancy or \$20 for single occupancy (availability permitting). If you are interested in this option, let Jim Johnson know by 1 July. There are also a variety other motels in Bend

### Call for Papers

This is an open invitation for papers, both technical and general in nature, to be presented at the 2008 DSA Annual Meeting, 2 August, in Bend, Oregon. We expect most presentations to take about 15 to 20 minutes, but more time may be granted upon request. You may propose a presentation when you register for the meeting on <[OdonataCentral.org](http://OdonataCentral.org)>, or you may contact Jim Johnson directly.

to choose from, as well as numerous campgrounds in the region.

Field excursions on Friday and Sunday will be taken to sites in the nearby Deschutes National Forest and the Crooked River. Target species will include *Tanypteryx hageni* (Black Petaltail), *Somatochlora albicincta* (Ringed Emerald), *S. semicircularis* (Mountain Emerald), *Ophiogomphus occidentis* (Sinuous Snaketail), *O. severus* (Pale Snaketail), and *Macromia magnifica* (Western River Cruiser). *A. sitchensis* (Zigzag Darner) is present, but scarce.

### Pre-Meeting Trip

We have scheduled a pre-meeting trip to John Day for the dates of 30 and 31 July (plan to arrive 29 July). John Day is located about 150 east of Bend mostly via Hwy 26. From Portland, the drive is about 265 miles.

We have arranged a block of rooms at Best Value Inn (541-575-1462) under the name “DSA”. Rates are \$50.00 + tax for single, \$65.00 + tax for double. See <<http://www.bestvalueinn.com/bestv.cfm?idp=1279>> for more details about this motel. Make your reservation early to ensure that you get a room at the discounted rate. Numerous campgrounds are in the region at Clyde Holliday State Park (about 5 miles west of John Day) and in the surrounding Malheur National Forest.

Various sites in the Malheur National Forest and along the John Day River (most conveniently visited on the way to Bend, 31 July) will be visited. Target species include *Gomphus lynnae* (Columbia Clubtail), *Erpetogomphus compositus* (White-belted Ringtail), *Ophiogomphus occidentis* (Sinuous Snaketail), *O. severus* (Pale Snaketail), *Macromia magnifica* (Western River Cruiser), and *Cordulegaster dorsalis* (Pacific Spiketail).

### Post-Meeting Trip

On 4 August, when we depart Bend, an informal post-meeting trip will be taken to the Willamette Pass area on Hwy. 58 in the vicinity of Crescent Lake. The drive from Bend is about 65 miles.

We have not arranged any accommodations. Oakridge (on Hwy 58 toward Eugene) has the most motels and eateries, but options can also be found in Crescent and Gilchrist (on Hwy 97) and Crescent Lake.




The primary sites to visit in this area are Crescent Creek for *Ophiogomphus morrisoni* (Great Basin Snaketail) and Gold Lake for *Octogomphus specularis* (Grappletail) both of which can be found easily in one afternoon (weather permitting, of course). There are additional sites to visit for those who plan to spend more time in the area, including Gold Lake Bog (1 mile hike).

### Post-Post-Meeting Trip?

Anyone interested in looking for *Aeshna walkeri* (Walker's

Darner) and/or *Stylurus olivaceus* (Olive Clubtail) before or after the above events (after will be better timing for both) can be directed to locations where each can be found. *Aeshna walkeri* is at a couple sites in southern Oregon along Hwy 66 between Klamath Falls and Ashland. *Stylurus olivaceus* is on the Columbia River in Portland.

Feel free to call or write Jim Johnson (<jt\_johnson@comcast.net>; 360-608-9558) or Steve Valley (<svalley2@comcast.net>; 541-223-3667) if you have any questions or if you are looking for any species not mentioned above. 


## Plans Underway for the Northeast Regional Meeting of the DSA, in the Northern Adirondacks and St. Lawrence Valley of New York, 26–29 June 2008

**Jan Trybula** and **Erin White**, (JT) <trybulj@potdam.edu>, Biology Department, SUNY Potsdam, 44 Pierrepont Avenue, Potsdam, NY 13676; (EW) <elwhite@gw.dec.state.ny.us>, New York Natural Heritage Program, 625 Broadway, 5th Floor, Albany, NY 12233-4757

Folks have begun to sign up for the 2008 Northeast Regional meeting of the DSA, which will be held in Malone, New York, situated between the Adirondack Park and the St. Lawrence River. The plan is to visit the St. Lawrence River near Massena, New York and to visit the Visitor Interpretive Center at Paul Smiths in the Adirondacks. Nick Donnelly has also agreed to lead some folks to a bog near Paul Smiths. We hope to also explore rocky streams in the Adirondacks.

Franklin and neighboring counties have over 125 species of odonates—something for everyone! This will be peek time in the region for many odonates including various spring Corduliids, five species of *Leucorrhinea*, three species of *Cordulegaster*, and numerous Gomphids such as *Gomphus borealis*, *G. descriptus*, *G. vastus*, *Ophiogomphus anomalus*, and *O. aspersus*. And, if the season holds, we may still be able to find *Arigomphus cornutus*, which is seen throughout June in northern New York.

Meeting registration and attendance is free. You only need to pay for your lodging, food, and transportation. Primary lodging will be at the Malone EconoLodge, which is holding a block of rooms until 13 June. For reservations, call the EconoLodge at (1-800-607-7449) and mention that you want to reserve one of the rooms held by Trybula for the dragonfly meeting. Seniors, AAA, and AARP members receive 10% off the room rate. Information about other hotels, B & Bs, and campgrounds will be on the event web site by April.

If you have any questions, please contact Jan Trybula at the e-mail or address listed above. Also, please let Jan know if you are planning on attending and when you have made your lodging reservations. More information will be posted at the meeting web site, <<http://www2.potsdam.edu/trybulj/NEDSA/>>. 

## CalOdes/DSA West Dragonfly Blitz IV

**Kathy and Dave Biggs**, Sebastopol, CA <bigsnest@sonic.net>

All Californians, and any other folks who are interested in our western fauna are invited to the 4th Annual CalOdes/DSA West Dragonfly Blitz!

Our plans are to hold the Blitz immediately after the DSA Annual Meeting's Post-trip in Oregon (DSA July 31-August 4, then post trip).

Our Blitzes take place in different areas within Califor-

nia each year. This is our year to blitz the north. We have one county in Northern California that is terribly under-censused: it's also a gorgeous forested and infrequently visited area—Trinity County.

Trinity County is a "hole" in many of the California species' distribution maps, and also a place with many of the beautiful species not found in more Southern (or Eastern) climes. We will add species to the Trinity County list, get


better acquainted with the mountain species, and have fun! There would even be a slight chance of finding a state record, but that won't be the main focus. Some of us will have been studying the Darners and such that occur just north of California in Oregon at the DSA meeting.

Plans are centering on the weekend of 9–10 August, staying in the Weaverville area where we can access the Trinity River, the lagoons of Lewiston and Claire Engle Lakes, and nearby creeks and ponds. Some folks will be arriving a day early and some will be staying a day late. Those who stay late might want to head further north into Siskiyou County to look for darners, or further south in Trinity Co. along the Trinity River to the Mad River. Plans are still forming.

We haven't decided exactly where we'll meet or stay yet, but that news will be forthcoming and will be e-mailed

to the CalOdes group and anyone who sends an e-mail to Kathy Biggs <bigsnest@sonic.net> saying they are interested. Typically the group has camped out, with a few members choosing to stay in the "luxury" of a nearby motel.

We *should* be able to find *lots* of whitefaces, emeralds (Ringed!), darners, meadowhawks and some of the mountain skimmers and clubtails, such as Chalk-fronted Corporal (*Ladona julia*) (it'd be a new county record but is surely there) and Sinuous Snaketail (*Ophiogomphus occidentis*), and some of the mountain damselflies, but part of the fun is always the surprises! At the same time, we'll be adding to our knowledge of California Odonata distribution.

Please let us know if you're considering coming. Prior Blitzes have been a *lot* of fun, and it's wonderful to get to put faces with names. 

## Report on NymphFest 2008

**Bryan Pfeiffer** <bryan@wingsenvironmental.com>

NymphFest 2008 was a titanic success despite being about dragonflies instead of debauchery.

More than 60 people, from as far as Ohio, converged on Athol, Massachusetts, 9 and 10 February. We heard lectures on nymphology. We studied and traded exuviae. We ate amazing local donuts. And we generally enjoy dragonflies the only way we know how at our latitude in winter.

Our model was simple: two days, morning lectures, and afternoon workshops. Day One was devoted to basics, including morphology, collecting and curating, and keying to family. Day Two included more advanced topics, including keying out *Aeshna*, rearing nymphs to adults, and the finer points of northeastern *Stylurus*.

NymphFest was sponsored by the Northeast chapter of the Dragonfly Society of the Americas, the Athol Bird and Nature Club, and the Massachusetts Natural Heritage and Endangered Species Program, which provided a generous donation to support the event.

Attendees and presenters offered a diverse mix of interests and knowledge. In one presentation, Linda Gilbert, naturalist at Geauga Park District in northeastern Ohio, chronicled in meticulous detail her rearing of two *Aeshna tuberculifera* (Black-tipped Darner) from egg to adult. In another, Nick Donnelly offered indispensable advice on identifying northeastern *Ophiogomphus* larvae and some critical differences between *Gomphus lividus* (Ashy Clubtail) and *Gomphus desertus* (Harpoon Clubtail).






spending quality time at a bridge abutment on the Millers River in Athol, found skins of *Boyeria vinosa* (Fawn Darner), *Macromia illinoensis* (Swift River Cruiser) and *Neurocordulia yamaskanensis* (Stygian Shadowdragon), a species of special concern in Massachusetts, demonstrating that it's never too late (or early) to find exuviae. And Chad Edgar of the Lake County (Ohio) Soil and Water Conservation District presented on innovative work on headwaters protection, including nice video of an ovipositing *Cordulegaster erronea* (Tiger Spiketail), which can be seen on YouTube at <<http://www.youtube.com/watch?v=gl0TBPQN3JQ>>.

Meanwhile, Maria Aliberti (soon to be Dr. Aliberti), the resident Aeshnidae and Libellulidae specialist at the University of Rhode Island and beyond, offered novel and insightful approaches to keying out *Aeshna*. Mike Blust, professor of biology at Vermont's Green Mountain College, hauled down and discussed his impressive tiered larval rearing system (with flowing water). Vici and Stephen Diehl, of Antwerp, New York, braved lake-effect snowstorms to demonstrate their flatbed scanning technique on exuviae. And Michael Veit, who chases rare dragonflies in Massachusetts and beyond, managed to pull off three workshops on keying to genus thanks in large part to his amazing skills, a roomful of stereoscopes, and the ability to put larvae on television (NymphFest's idea of reality television).

Lynn Harper, Habitat Protection Specialist for the Massachusetts Natural Heritage and Endangered Species Program, inspired us with a presentation on rare riverine odonates. Only a couple days before NymphFest, Lynn,

The show-and-tell award went to New York odonatologist Kevin Hemeon, who created a hands-on display, with charts, circles and arrows, on keying out northeastern *Stylurus*. And the inimitable Dave Allen Fitch, treasurer of the Worldwide Dragonfly Association and designer of some nifty homemade larval scooping devices, got the entire weekend started with a rousing presentation on larval morphology and field techniques.

Our unending gratitude goes to Dave Small and the Millers River Environmental Center, as good a duo for hosting NymphFests and related events as you'll find anywhere in the region. This was actually the third northeastern NymphFest in recent memory. We hold them in election years. So mark your calendar for 2012. In the meantime, a few presentations and some photos are online at <<http://www.odes.millersriver.net/nymphfest2008.htm>>. 

## Nymphal Habitat of *Somatochlora ensigera* Martin (Plains Emerald)

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Adults of *Somatochlora ensigera* Martin (Plains Emerald) have been found with some regularity at a variety of streams throughout their north-central range in the United States (central Colorado to western Ohio and north through North Dakota and into southern Manitoba [Donnelly, 2004]). They are known from mountain torrents to low-gradient forested or open streams and ditches and are most common in smaller, low-gradient streams

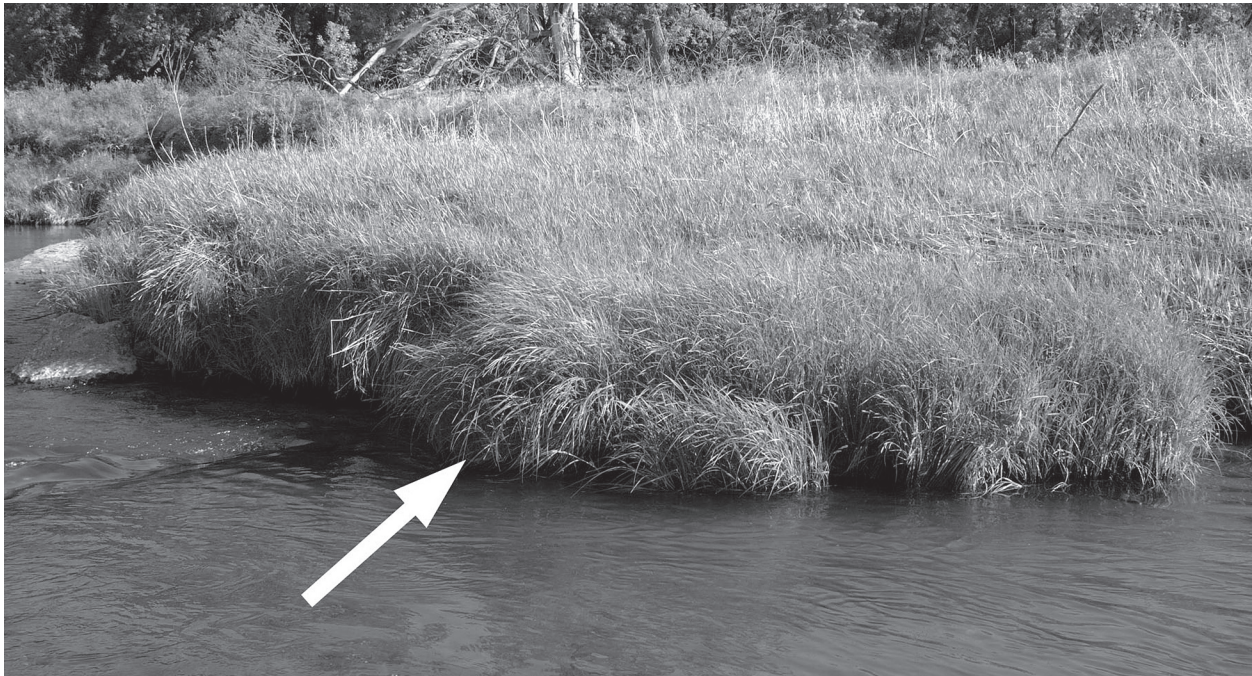
(brief summary by Beckemeyer, 1998). However, little has been reported about the nymphal habitat. On 16 May 2007, we searched for nymphs of *Somatochlora ensigera* in the Turtle River, near Arvilla, Grand Forks County, North Dakota. This area is where Alby (1968) had frequently encountered the species, and where Daigle (1987) found males to be very common in late July 1986. Huggins (1983) reported collecting three nymphs from Cart Creek,

a small intermittent stream in Pembina County, North Dakota, which is only about 80 km north of our collection sites. He described the habitat as “debris deposited along a gravel shelf bordering a shallow pool area below a short riffle of gravel and rubble.” At the time of Huggins’ collections, the water was very turbid and apparently higher than normal summer levels.

Armed with this information, we began our dip netting at a section of stream inside Turtle River State Park, focusing on areas of reduced flow similar to that described by Huggins. The water level appeared to be about average for the season and was not turbid. Initial sampling produced no nymphs, but when we dug at the edge of a riffle underneath an undercut bank overhung with grasses, we found our first nymph. We then broadened our sampling to include undercut bank areas near swifter flow, but continued to sample slower areas as well. After about an hour of sampling a variety of habitats we had taken three more nymphs, and all had come from deeper (1 to 2 feet deep), undercut bank areas with overhanging grasses near substantial flow (unmeasured but estimated to be 1 to 2 feet/sec). To sample these areas, we vigorously kicked under the banks as deeply as we could and either held our nets just downstream of the area disturbed or scooped around under the bank simultaneously with the kicking. We suspect that we missed many more nymphs than we collected. Nymphs may have been in deeper areas as well, but our ability to vigorously sample deep areas was hampered by our having only hip-high boots. This site had forested banks but was not heavily canopied, and stream width ranged from about 12 feet to about 30 feet (mean estimated at about

20 feet). We then sampled a section of the Turtle River where it crosses Co. Rd. 2, east of the park. This area was a bit more open than the first site, and we again focused primarily on similar undercut bank areas near moderate to swift flow. We took ten more nymphs, all in the same type of habitat using the same collection technique. The best areas tended to be narrower riffle edges where flow was constricted, and therefore faster. Bottom substrates in the stream as a whole were largely sand, with some cobble, gravel and silt, but the undercut bank areas where the nymphs were found were sheltered from the swifter flow nearby and had finer substrate materials.

Of the 14 nymphs we took, 12 were F-0 and two were F-3. Ten nymphs were preserved in 70% ethanol and we attempted to rear four of the F-0 nymphs in aquaria. All four reared nymphs fed vigorously on black worms and three emerged within 6 weeks (one was killed by another nymph after five weeks). All of the preserved nymphs were similar to the reared exuviae and we determined all of them to be *S. ensigera*. *S. ensigera* appears to have a two year life cycle in the Turtle River based on the bimodal distribution of the stadia. Because only two F-3 nymphs were collected, it is possible that less mature nymphs prefer a different habitat. However, because many other habitat types were sampled (although less intensely) and younger nymphs were only found in the same undercut bank areas as the mature nymphs, we believe the younger nymphs also prefer undercut bank habitats and attribute our difficulty in collecting them to the inefficiency of our methodology. Other species of Odonata nymphs also collected at the two sites included *Calopteryx aequabilis*



Say (River Jewelwing), *Aeshna umbrosa* Walker (Shadow Darner), *Gomphus externus* Hagen (Plains Clubtail), *Gomphus graslinellus* Walsh (Pronghorn Clubtail), and *Libellula pulchella* Drury (Twelve-spotted Skimmer).


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## Odonata of a Rare Habitat in New York City

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As development gobbles up the last remaining green spaces in New York City, public parks become essential to the continued survival of local wildlife species. The 110-acre Ocean Breeze Park, located in the borough of Staten Island, is a unique natural area that supports a high diversity of Odonata (dragonflies and damselflies). Located in the residential neighborhood of South Beach near the Atlantic shore, the park is a complex mosaic of seasonal and semi-permanent freshwater wetlands in a sandy upland matrix. This coastal plain-type ecosystem, which developed after the site's original salt marsh was filled, is unusual in New York City, and host to a wide variety of wildlife and plants.

Ocean Breeze Park provides habitat for many different species of invertebrates, especially Odonata, as well as field and grassland birds and a robust population of *Bufo fowleri* (Fowler's toad). The odonate species count for 2007, the first survey year, was 24. This is the second highest diversity of any site in New York City, and the highest species count within city limits for any one year in recent times. Those found were a mix of state-listed rare, uncommon, common, and migrant species. New York State-rare odonates include *Ischnura hastata* (Citrine Forktail), *Ischnura ramburii* (Rambur's Forktail), and *Libellula needhami* (Needham's Skimmer). *I. hastata* is a southern species last recorded on Staten Island in 1902 (Davis, 1913). The last record of *I. ramburii* on the island was 1913 (Davis, 1913), while *L. needhami* is known from only a few other locations in the borough (Davis, 1913; Lederer, 1998; Creveling, 2003). Both *I. ramburii* and *L. needhami* are associated with coastal plain pond habitats.

Another Zygoptera (damselfly) not common in New York City, *Nehalennia irene* (Sedge Sprite) was recorded at Ocean Breeze Park. This species may be vulnerable to urbanization, as it is found commonly in marshes and coastal plain ponds in other areas of the northeast. Also not common on city lands are two species of small pennants *Celithemis elisa* (Calico Pennant) and *C. eponina* (Halloween Pennant), both seen at the ponds and in the surrounding meadows. Large feeding swarms of darners and *Tramea* (saddlebags) were present high above the grassy areas as well. *Lestes rectangularis* (Slender spreadwing) are common, and one was observed ovipositing in a broken stalk of *Phragmites australis* (Common Reed). The migrant *Pantala flavescens* (Wandering Glider) was seen throughout the summer and early fall.

Knowledge of Ocean Breeze Park's history is essential to understanding the landscape seen today. Originally the area was an estuarine salt marsh with two creeks flowing into it; Perinne's Creek ran diagonally across the site, formed from two freshwater tributaries flowing out of Staten Island's interior, one from the west and one from the north. Old Town Creek ran parallel to the shore from north to south, combining with Perrine's Creek south of the current park, in what are now grounds of a local hospital. The site was filled in with sandy dredge spoil during the late 1960s. However, unlike many filled marshes in New York City, nothing was constructed on the site. Since that time, freshwater wetlands have developed there, formed by the remnants of the two creeks, and from rainfall that collects in the sandy depressions.


The variation in wetland vegetation at Ocean Breeze is a result of differences in hydroperiod. The largest pond has a substrate of sand covered by a thin layer of mud and muck and vegetated with *Ludwigia palustris* (Marsh Seedbox), *Cephalanthus occidentalis* (Buttonbush), and emergent sedges such as *Schoenoplectus americanus* (American Three Square). A sparse band of *P. australis* borders this pond. Another pond close by, also surrounded by *P. australis* and retaining water for a longer period, is dominated by an emergent *Polygonum* species. Difficult to classify due to their secondary nature, these wetlands share similarities with coastal plain pond and shallow emergent marsh communities. Although not formed by glacial processes (as are true coastal plain ponds), those at Ocean Breeze are similarly characterized by a sandy substrate and water levels which fluctuate both within and among years. This complex of wetlands lies within a larger wet meadow with tall grasses, sedges, and wildflowers, spreading north and east of the ponds. The northeastern portion of the site contains vernal ponds shaded by wetland shrubs and trees, wet meadows, and deeper-water, semi-permanent ponds and ditches.

True coastal plain ponds are found on nearby Long Island, supporting three state-threatened *Enallagma* species, *E. pictum* (Scarlet Bluet), *E. minusculum* (Little Bluet), and *E. recurvatum* (Pine Barrens Bluet). Due to its proximity and similar habitat, Ocean Breeze Park should be surveyed for these threatened species in upcoming seasons. Although the park faces degradation due to dumping, illegal ATV use, and runoff from impervious surfaces, the ponds remain of high quality. The potential exists for the discovery of additional odonate species at Ocean Breeze, as the park has a more diverse landscape than other sites with similarly high species counts. Currently, Blue Heron Pond Park in southern Staten Island has the record (30 species) for the greatest diversity of Odonata in New York City. However, with surveys performed in future years, it is possible that the number of odonate species at Ocean Breeze Park may equal or surpass the present record.

## Ocean Breeze Park Odonate Species List 2007

Halloween Pennant	<i>Celithemis eponia</i>
Calico Pennant	<i>Celithemis elisa</i>
Cherry-Faced Meadowhawk	<i>Sympetrum internum</i>
Eastern Pondhawk	<i>Erythemis simplicicollis</i>
Wandering Glider	<i>Pantala flavescens</i>
Black Saddlebags	<i>Tramea lacerata</i>
Carolina Saddlebags	<i>Tramea carolina</i>
Common Green Darner	<i>Anax junius</i>
Swamp Darner	<i>Epiaeschna heros</i>
Eastern Amberwings	<i>Perithemis tenera</i>
Common Whitetail	<i>Libellula lydia</i>
Twelve-Spotted Skimmer	<i>Libellula pulchella</i>
Needham's Skimmer	<i>Libellula needhami</i>
Painted Skimmer	<i>Libellula semifasciata</i>
Blue Dasher	<i>Pachydiplax longipennis</i>
Slender Spreadwings	<i>Lestes rectangularis</i>
Orange Bluet	<i>Enallagma signatum</i>
Familiar Bluet	<i>Enallagma civile</i>
Azure Bluet	<i>Enallagma aspersum</i>
Citrine Forktail	<i>Ischnura bastata</i>
Rambur's Forktail	<i>Ischnura ramburii</i>
Eastern Forktail	<i>Ischnura verticalis</i>
Slender Forktail	<i>Ischnura posita</i>
Sedge Sprite	<i>Nehalennia irene</i>

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## Lake Darners and Variable Darners Swarming over a Herd of Wood Bison and Feeding on Horse Flies

Paul M. Catling and Brenda Kostiuk <catlingp@agr.gc.ca>

The Lake Darner (*Aeshna eremita*) sometimes gleans biting insects from humans resulting in substantial relief (Catling et al., 2004). Corbet (1999, p. 381) relates a story about field surveyors on the Canadian tundra. When exposed to intense swarms of biting mosquitoes, they tethered dragonflies to their hats. The activity of the dragonfly would then discourage the mosquitoes, reducing the

level of discomfort. Modern repellents, rubber gloves, and effective clothing make such use of dragonflies unnecessary today. They may be more effective without tethering anyway. However, dragonfly predation on biting insects is not only important to people, it is likely a significant phenomenon as far as other large animals are concerned. By providing a degree of relief it may reduce loss of energy

resulting from avoidance and may also reduce wasteful reactions and displacement activities related to stress, as well as reducing the number of bites. It is conceivable that large mammals select open places, not only to avoid predation, but also to reduce impact of biting insects by locating themselves in areas with increased wind and increased numbers of dragonflies.

On 28 July 2007, in late afternoon (around 7:00 PM) we encountered a herd of 20 wood bison (*Bison bison athabascae*) in a wet meadow on hwy 3 NE of Fort Providence, Northwest Territories (at 61.6545° N, 117.1189° W). Unlike a few other herds and individuals that we had passed earlier in drier areas, this herd was accompanied by a huge swarm of horse flies (locally known as bulldogs, family Tabanidae). With binoculars, we estimated 300–600 flies on and flying within a meter of each animal (several calves, one large bull, a few smaller bulls, and many females). Collection of a sample at the edges of the swarm (15 m from the herd) suggested that swarm was dominated by 3 species of *Hybomitra* (*H. astuta* [Osten Sacken], *H. epistates* Osten Sacken, and *H. frontalis* Walker). These are all common species in northern Canada (Teskey, 1990).

Flying between 0.5 and 5 m among the herd were approximately 550 large dragonflies, all apparently species of *Aeshna*. About 50 dragonflies were present outside the herd (beyond 15 m) at any time. A sample of these from the edge of the swarm and observations through binoculars indicated that the dragonfly swarm was comprised mostly of *Aeshna*

*interrupta lineata* (Variable Darner) and to a lesser extent by *Aeshna eremita* (Lake Darner). The dragonflies were concentrated near the bison and seem to glean flies from the sides, back and legs of the bison, and also appeared to be catching flies in the air. After gleaning successfully, as suggested by nearly landing or hovering for a moment near an animal, a dragonfly would often leave the swarm flying more slowly in a steady direction 1–2 m above ground. Dragonflies were captured as they left the swarm. Ten *A. interrupta lineata* so captured were holding and or eating horseflies of which two were identified as *Hybomitra astuta*, two as *H. epistates* and one as *H. frontalis* and five others had the heads already eaten and were not identifiable. One *A. eremita* held an *H. epistates* and another held a headless fly apparently referable to *H. epistates*. The herd was not moving and half the animals were sitting. The approximate number of flies and dragonflies remained stable for at least 45 minutes (7:00–7:45 PM) when our observation concluded. Considering that dragonflies were leaving the swarm, new individuals must have been joining the swarm otherwise the approximate number of 550 would not have been maintained. Consequently the actual number of dragonflies associated with the herd was likely between 700 and a thousand over the 45 minute period.

Predation by dragonflies may not lead to noticeable reduction of prey in most cases (Corbet, 1999, p. 379), because when prey becomes scarce, they switch to new sources. However, predation by dragonflies can sometimes have a substantial impact as shown by impacts on honey bees in bee yards. Regardless of

whether or not the number of biting insects in a local area is substantially reduced by dragonflies, the important impact may be in changing the behavior of the biting insects. The dragonflies may have been substantially reducing the number of bites as a result of keeping the biting flies in the air.

In a photograph of the scene (Figure 1), light specs are dragonflies with wings backlit by the late afternoon sun. Most were not backlit or blended into light parts of the background, but still at least 100 dragonflies are apparent.

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Figure 1. Five wood bison resting in a moist meadow with over 100 dragonflies flying overhead, their wings backlit by the later afternoon sun and contrasting with the darker treed area in the background.

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## Veracruz, Mexico, Dragonfly Migration

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During the period 17–25 Oct 2007, I was on a birding tour to central and southern Veracruz State, Mexico, organized by the Mexican Audubon Society and Pronatura, a private Mexican conservation organization. One of our stops was Pronatura's hawk-watch tower in the small town of Chichicaxtle, which we visited on 19 Oct. At midday we watched awesome swarm after swarm of thousands of mostly Turkey Vultures and Swainson's Hawks wheeling high in the thermals, then gliding south to the next thermal as the famous "river of raptors." The raptors were migrating ahead of an approaching northern cold front, providing a strong tailwind toward the south.

After some time of watching the high-flying raptors, I happened to focus my binoculars closer and became aware of thousands of dragonflies streaming by at a lower altitude, but 50 m or more up, well beyond the reach of a hand net, even from the top of the hawk-watch tower. The dragonflies were about 0.5 m apart and flying fast, straight, and steady toward the south. Through binoculars they looked like a steady, dark, driving horizontal rain. All I could think was WOW, WOW, and WOW! The bullet-like speed and steady purposeful flight with no gliding were unlike other accounts I have read of dragonfly migrations.

What species were the dragonflies? Unfortunately, I can't say for sure, but I suspect most if not all were Red Saddlebags (*Tamea onusta*), as they seemed to be *Tameas* with restricted black at the wing base, although backlit against the sky I could see no red coloration. All of the

few dragonflies feeding lower around the tower were of that species, and indeed so were nearly all the dragonflies seen on the birding tour. I think Black Saddlebags (*T. lacerata*), with their larger dark area in the hindwings, would have been noticeable, as would the larger size of Common Green Darners (*Anax junius*), and pale bodies of Wandering Gliders (*Pantala flavescens*). I saw no Black Saddlebags, and few Common Green Darners or Wandering Gliders on the whole tour.

Why such a massive migration of birds and dragonflies (and at times, butterflies) at Chichicaxtle? This small town is located 11 km inland (west) of the small city of Cardel near the Caribbean coast. A hotel rooftop in downtown Cardel is the other main raptor-watching site that Pronatura has established. I did not see a dragonfly (or raptor) migration there. Near these locations, the already narrow coastal plain of Veracruz is constricted by an extension of the eastern end of the transvolcanic mountains, funneling migrating animals through a channel relatively few km wide. Pronatura's counters routinely count over 5 million raptors passing the two count sites each fall season, the highest such count anywhere in the world.

Although Pronatura volunteers have made some preliminary counts, the truly awesome dragonfly migration recounted here cries for more study. And as far as I know, the destination of these dragonflies is unknown, and if or how they return north is not understood. 

## Update on *Celithemis elisa* (Calico Pennant) Emergence in New York State

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Last year we presented the results of our 2nd annual count of emerging *Celithemis elisa* from our 35 × 40 m study pond here in the Finger Lakes Highlands of New York State (ARGIA 19[1]: 10). For those of you who missed it or more likely have forgotten, the totals from our once-daily count over the entire emergence period were a respectable 2,455 in 2005 and an astounding 10,944 in 2006. Predict-

ably we were in place and ready when they began emerging in 2007.

Right on target they began to emerge on 1 June. As in 2005 and 2006 the first few days were the most productive. Only 32 on the 1st, 475 on the 2nd, then . . . ignition! 1,328 on the 3rd, 2,355 on the 4th and 655 on the 5th. After




those very busy days emergence slowed, following the pattern set the two previous years. This time they topped out at 6,497. Again, although we counted only those we saw as we did our once-a-day survey, emergence continued all day long, adding more to the total.

It would seem nothing stops this colorful species. We saw them emerge in pouring rain, strong winds, near freezing temperatures, desiccating drought and in the face of snapping bird beaks. Later some will fly, mate and oviposit during light rain or cloudy weather, cool or hot. Their presence is constant over a lengthy flight period, the longest here so far being from 13 June to 1 September.

Weather was once again extreme this year but seemed to play a small role in activity. While 2005 was very hot and dry and 2006 was very cool and wet, we hoped for something “normal” in 2007. We were disappointed by an early

and persistent drought that resulted in a 1-meter stretch of barren bank between the water and surrounding vegetation before emergence even began. Crossing that “desert” profoundly increased the vulnerability of exposed larvae but, surprisingly, no birds caught on.

The 2007 total was lower than the year before, but so were numbers of all other species as well. Temporary ponds dried early, wiping out many dependent on that habitat while permanent ponds were pretty quiet, with thin populations. We suspect the low numbers overall were the result of good flight weather the year before.

As with any study, variables add to the mix of events to consider, so it will be many more years before we feel we have much more to say about this species. Meanwhile we will continue to watch and enjoy them, and will keep you posted. 

## Eastern Amberwings (*Perithemis tenera*) Non-existent at Eutrophic Covered Ponds?

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### Introduction

Eastern Amberwings, *Perithemis tenera*, probably have a number of preferences for their habitats. Jacobs (1955) noted lentic sites with a log or stick projecting from the water, or small patches of *Potamogeton*, as males prefer to perch on all of these structures. He also reported that new arrival males displayed an “examination behavior” as they surveyed potential habitats. Jacobs further summarized that some “dark form” individuals of *P. tenera* might have preferences for breeding where *Potamogeton* and algae are scarce. Site preferences for oviposition and mating of *P. tenera* have also been noted. Sticks, floating plants, and clumps of algae have been identified in preferential sites (Switzer, 1997).

Vision of *P. tenera* has also been studied. The relationship between vision, territory and intruder detection has been noted (Switzer & Eason, 2000). Polarized light is a factor for certain dragonflies’ habitat selection (Bernath et al., 2002).

### Preliminary Observations

During the summer of 2007, I observed that three highly eutrophic ponds that were entirely covered by Duckweed, *Lemna minor*, had no *P. tenera*. This was very perplexing since all other ponds in the area did have *Perithemis*.

Three locations were observed: Sears Pond 1, Hanover County, Virginia, off State Route 623; Talley Pond, Hanover County, Virginia, off State Route 615; and Spiers Pond, Hanover County, Virginia, off State Route 605

The Sears Pond 1 had extensive Duckweed and no *P. tenera*, but 300 m west at a larger pond, Sears Pond 2, there were numerous *P. tenera*. Sears Pond 1 is located in the northwestern end of a cattle field with considerable access of cattle to the pond and observable cattle feces present around the edges. Sears Pond 1 is clearly impacted by non-point source pollution from the cattle. But this pond also had a very large and active population of other dragonfly species. Sears Pond 2 also had the same diversity of dragonflies as Pond 1 with the addition of *P. tenera*.

Similar sized ponds in Hanover County did have *P. tenera*. The observed ponds with or without this species had variations of surrounding vegetation, with no defining conditions in the littoral zone. Only the presence or absence of excessive amounts of Duckweed seemed to be correlated with the occurrence of *P. tenera*.

The excessive Duckweed ponds were so covered with the plant that water surfaces were not observable. One might question if this condition presents an unfavorable factor for *P. tenera* selection of mating and oviposition locations. Is it possible that this dragonfly species will not select ponds entirely covered by floating aquatic plant species?

Does the inability of viewing a polarized water surface impact *Perithemis* and cause this dragonfly to avoid such a habitat? “Glistening surfaces” seem to attract territorial *P. tenera* males (Jacobs, 1955).

### Planned Research

Subject to funding and time, I plan to test the hypothesis that *P. tenera* will not select eutrophic ponds that are excessively covered by floating aquatic plant species. Conversations with Dr. Paul Switzer, the most prolific researcher of *Perithemis tenera*, encourage me that this might be worth investigating.

The implications of this hypothesis might have consequences on richness and abundance of *P. tenera*, particularly as eutrophic ponds become more numerous.

Any thoughts and suggestions from The Dragonfly Society of Americas membership would be appreciated.

## Anomalous Tandem Registered in *Telebasis dominicanum* (Selys, 1857) (Zygoptera: Coenagrionidae)

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Tandem is considered to be the first physical contact between conspecifics of Odonata, after visual recognition. According to Corbet (1999), an anomalous tandem may consist of:


1. a heterosexual heterospecific tandem (MF/HS).
2. a homosexual tandem involving two heterospecific (MM/HS) or conspecific males (MM/CS).
3. three conspecific males (triple connection) (MMM).

On 8 December 2007, two males of *Telebasis dominicanum* (Selys, 1857) were spotted forming a tandem, while perching on a *Cyperus rotundus* Linn. leaf petioles at 1025 hrs. The location was an artificial 20 m<sup>2</sup> pond, approximately 5.5 km down the main road (North Santiago de Cuba).

The tandem lasted 22 minutes. The pair was exposed to the sun the entire time and the tandem was only broken when the fore male flew away. Two couples from the same species were recorded in the surroundings of this tandem, one of which was already copulating, while another seven males were flying around or perching.

It appears this tandem took place because of the high percentage of males to females in the population. Only two female *T. dominicanum* were actually spotted during the survey. The


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probable causes are related with the species territorial behavior; the temporal arrival patterns of males and females to water bodies, i.e. a few seconds' MM/CS tandem of *Ischnura elegans* was recorded very early in the morning (Miller, 1987); and with the high male density (Corbet, 1999).

The sexually dimorphic *T. dominicanum* is the second most abundant species of damselfly present in the study site, after *Enallagma coecum* (Hagen, 1876) (Antillean Bluet). It's widely distributed in the Cuban archipelago, usually inhabiting lentic water bodies with profuse aquatic vegetation cover (Trapero & Naranjo, 2003).

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## Lucifer Damsel (*Chrysobasis lucifer*) Rediscovered During Southern Florida Expedition

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Netta Smith and I spent 9–15 December in far southern Florida. From Fort Lauderdale we drove all the way to Key West, spending a day and a half in the Keys. We then stayed two nights in Florida City, with a day trip to Everglades National Park, all the way to Flamingo. Next day we drove out the Tamiami Trail, around the Loop Road, and up highway 29 to Copeland, then west on the W. J. Janes Scenic Drive through the Fakahatchee Strand Preserve and out on Everglades Boulevard through the Picayune Strand State Forest to highway 846 to Immokalee. The next day we visited Corkscrew Swamp Sanctuary in the morning and Sanibel Island in the afternoon. The following day was spent at Collier Seminole State Park at ponds along highway 41 and on roads north of Ochopee into the Big Cypress. We then overnights in Everglades City, a quaint coastal town. The last day we spent more time around Carnestown and Ochopee and drove back to Fort Lauderdale via the Loop Road and Tamiami Trail.

We saw odonates just about everywhere we went, finally tallying 37 species of them, somewhat surprising for midwinter and about half the 69 species known from far southern Florida, south of the southern end of Lake Okeechobee.

We spent time on as many trails and boardwalks through hammocks and cypress swamps as we could, as such habitats are usually productive for odonates, whether associated with wetlands or not. There were good numbers of tropical species, presumably spending the dry season as adults in hammocks on the Upper Keys and lower mainland, including *Nehalennia pallidula* (Everglades Sprite), *Gynacantha nervosa* (Twilight Darner), *Triacanthogyna trifida* (Phantom Darner), *Erythemis vesiculosa* (Great Pondhawk), and *Erythrodiplax umbrata* (Band-winged Dragonlet).

Southern Florida nature trails that we visited which could be interesting for odonates at any time include the trail through woodland at Long Key State Park in the Keys, as well as the nature trails on Big Pine Key and the trail through the Key West Botanical Garden on Stock Island, both previously discussed in the pages of this newsletter; Gumbo Limbo Trail at Royal Palm Range Station, Everglades National Park, and the dirt road through the extensive hammock there; Tree Snail Nature Trail, 8 miles west of Forty Mile Bend on the Loop Road; Big Cypress Boardwalk, 7 miles west of Carnestown; and the boardwalk at Corkscrew Swamp Sanctuary.

A brief commentary on invasive species is appropriate for a Florida trip. The canals and lakes are full of introduced fish, mostly cichlids. It's an aquarist's dream, but no one has figured out how to get the fish back in the aquaria. They must be having a profound effect on the ecology of south Florida wetlands. The famous Blue Hole on Big Pine Key now has only one small alligator, but it's full of non-native Red-eared Sliders, which I hadn't seen there before, and native Florida Red-bellied Turtles, also introduced there. It's apparently the "dump" for anyone's aquatic pet. It also had a barracuda and a tarpon in it, which was very cool and may be indicative of its increased salinity (at least the former).

Everywhere we went, Brown Anoles were abundant, and native lizards scarce. That species is now more common than all other lizards put together in Florida, and its effects must also be profound. Is it competing with odonates for small insects? The only snakes we saw were a briefly glimpsed Indigo and a road-killed Burmese Python 8 feet long.

Finally, one of the most common birds in Florida is now the Eurasian Collared-Dove, not native but perhaps naturally invaded from Europe by way of the Bahamas. We saw no introduced mammals except cows. I should add that one native species, the Alligator, seems abundant and way out of proportion for a large predator. There are now apparently thousands of 6- to 8-foot Alligators scattered across southern Florida, rather intimidating for a wetlands naturalist. If the gators don't getcha, the pythons will!

Here are notes on some individual species.

*Lestes spumarius* (Antillean Spreadwing). A single female was found at a small buttonwood swamp off Watson Nature Trail on Big Pine Key, but much search in similar habitats produced no additional individuals. I followed her around to get photos, and she finally landed on a 3-centimeter buttonwood trunk about 1 meter above the shallow water and inserted several eggs between her legs, then flew on and I lost her. Noteworthy was oviposition into a woody substrate well above the water and without the accompaniment of a male. The life histories of neotropical *Lestes* are little known, but my speculation is that the eggs would not hatch until the summer rainy season.

*Chrysobasis lucifer* (Lucifer Damsel). This Middle American species was discovered in Florida by Geraldo Ihssen and Wulf and Eva Kappes in March 1991, but its presence

was unknown to American odonatologists until January 2000, when we found a male in the Fakahatchee Strand State Preserve, Collier County (Paulson, 2001). Since then, Nick Donnelly looked for the species in the same area in April 2000, Jerrell Daigle and Ken Tennessen in February 2004, and Netta and I again in April 2005, all with no luck. We tried again on this trip and again could not find the species. I wasn't surprised, as I had low expectations.

However, we wanted to visit Corkscrew Swamp Sanctuary, about 25 miles to the northwest, as it is always an interesting place, and I had fantasies that *Chrysobasis* might be in that swamp as well. It was partly cloudy when we started out on the boardwalk around 09:30, and when we got to a little side spur with a plaque dedicated to Ed Carlson, the sun finally came out in full, bathing the dense forest understory with light. At around 10:00, Netta said "there's a damselfly," and I finally saw it flying slowly through an open area at head height, thus well above the ground. It had an orange-tipped abdomen!!!! (Thanks to Jerrell Daigle for the use of exclamation points.) It was a male Lucifer Damsel, as welcome a sight as I could imagine. [See photo on back cover. Ed.]

We stayed at this spot for about 40 minutes and saw approximately 3 individuals of each sex. One would appear as if out of nowhere, drifting leisurely among ferns and bromeliads and strangler fig branches, checking leaves and twigs for prey, and then move out of our sight. They were usually too far away for decent photos (we were well above the ground and couldn't leave the boardwalk), but at least two individuals of each sex eventually came close enough for photos. They seemed most likely to land after capturing a tiny prey item. Clouds built up while we were there, the sun disappeared, and we saw no more except for another male quite a bit farther around the boardwalk. Presumably they are widespread in that cypress swamp and doubtless elsewhere in the area.

As I wrote earlier (Paulson, 2000), males in Florida have orange-tipped abdomens, unlike their relatives in Costa Rica in which the abdomen tip is yellow. I am hoping that specimens can be taken from the Corkscrew population to determine whether females differ in any way. We didn't have the time to arrange permits with the sanctuary managers.

Parenthetically, to clear up a long-standing confusion about a name, Lucifer ("light-bearer") as originally used in the Bible referred to the morning star, Venus, and had nothing to do with Satan. The original Hebrew word was Helal ("day star"), referring to a fallen king of Babylon, not a fallen angel. Later Christians apparently got this confused, and Lucifer found its way into the Bible as a name for Satan. So the name of our damselfly should have no negative connotations, no matter what your credo.

*Nehalennia pallidula* (Everglades Sprite). Single individuals of this species were seen deep in a sinkhole at Pineland Trail, ENP; in the forest at Royal Palm Range Station, ENP; and in the forest at Tree Snail Nature Trail. The species is often found in herbaceous vegetation at the edge of marshes during the dry season, but at least some individuals spend that season well within forest, perhaps breeding at small sinkholes there as *N. minuta* (Tropical Sprite) does on Big Pine Key. Perhaps most *pallidula* breed in open marshes, e.g., the Everglades. We looked long and hard for *Nehalennia* on Big Pine Key, and a single small brown damselfly seen briefly there by Netta could have been either species.

*Coryphaeschna viriditas* (Mangrove Darner). I was surprised to see no individuals of this species in the Keys, where I had found it common in January 2000. But I saw at least three feeding over the road through the hammock at Royal Palm Ranger Station and photographed a mature male and female hanging in the sun at the edge of the road at head height. These are the first Florida individuals known to me at some distance from the coastal mangrove fringe.

*Epithea* sp. (Baskettail). A single individual of this genus, surely either *E. sepia* (Sepia Baskettail) or *E. stella* (Florida Baskettail), flew low and rapidly back and forth over the open water of a cypress slough south of Monroe Station, Collier County, on the afternoon of 15 December. Neither species has been recorded in December (Dunkle, 1992).

*Erythemis vesiculosa* (Great Pondhawk). Individuals of this species were fairly common along trails inside the forest at Long Key and Royal Palm Ranger Station but were seen nowhere else. They were noteworthy in that they always perched in the shade even though there were nearby sun flecks, seemingly a true forest dragonfly. Presumably many of them spend at least part, if not all, of the dry season away from the water in this manner.

*Erythrodiplax umbrata* (Band-winged Dragonlet). This species was more common and widespread in forests than *Erythemis vesiculosa* and all were immature individuals. It was equally noteworthy that these almost always perched in the sun and, significantly, was often clumped in small groups. They are either somewhat gregarious or merely have strong microhabitat preferences. I favor the former, as these small groups were found in situations that looked no different from anywhere else along the trails. I have seen the same phenomenon in *Uracis* species in tropical rain forests. We also saw several mature males on territory at shallow wetlands.

*Idiataphe cubensis* (Metallic Pennant). Males were common at and near the water at Sisal Pond, a relatively new rock pit in Everglades National Park, and at Monument Lake and Burns Lake, both north of the Tamiami Trail in Collier

County. This is a new record for this county, and this species will probably spread northward, as it seems to be characteristic of artificial wetlands such as rock pits, which are now scattered like giant bomb craters all over Florida.

*Miathyria marcella* (Hyacinth Glider). Only a few individuals were seen—a small group over a canal choked with *Hydrilla* (no hyacinths) in Picayune Strand State Forest and one at Monument Lake, a few hundred meters from a canal with the only small patch of water hyacinths that we saw on the entire trip. Hyacinth Gliders are surely much less common in Florida than they were a half-century ago (Paulson, 1999), when water hyacinths were everywhere. I suspect this species has declined everywhere in North America with present-day control measures for that invasive plant.

*Orthemis* sp. A few males were seen at ponds on Stock Island and Big Pine Key, and immature individuals were common in open areas on Stock Island. There is clearly a large population of this tropical species in the Lower Keys, and there are populations in the Miami area as well. The population at Eco Pond, at Flamingo in Everglades National Park, was presumably wiped out when Hurricane Wilma in 2005 turned Eco Pond into a lifeless saline desert. I have yet to see any in the Upper Keys, where there is so little fresh water, but apparently there is a population at a freshwater pond on Key Vaca (Jerrell Daigle, pers. comm.). As Jerrell has pointed out, this species is very similar to the South and Central American *O. schmidti* and may well be the same species.

*Tramea* spp. (Saddlebags). The rarity of *Tramea* on the Lower Keys, in comparison with January 2000, was striking. We saw only a few *T. onusta* (Red Saddlebags, more common in 2000) and no *T. insularis* (Antillean Saddlebags, fairly common in 2000), *T. calverti* (Striped Saddlebags, at least two in 2000), or *T. lacerata* (Black Saddlebags, one in 2000). There may be a correlation with the relatively drier conditions in December 2007.

#### Midwinter Species: Presence And Absence

Certain widespread and common species truly seem to be absent as adults from southern Florida, as elsewhere in North America, in midwinter; for example, *Coryphaeschna ingens* (Regal Darner) and *Pantala hymenaea* (Spot-winged Glider). Others that are abundant in summer are quite scarce in winter; for example, *Erythemis simplicicollis* (Eastern Pondhawk) and *Tramea carolina* (Carolina Saddlebags). But still others are present in some numbers, at least in midwinter; a total of 47 species were seen on our two visits at that time. The entire list I have compiled for southern Florida south of Lake Okeechobee totals 78 species, so 60% of the species fly during the winter/dry season.

Table 1. Species observed at the southern tip of Florida in January 2000 and December 2007. “Com” status may refer only to a single locality, with other species so labeled overall more common and widespread.

Species	Jan 2000	Dec 2007
<i>Lestes spumarius</i> , Antillean Spreadwing	0	1
<i>Argia sedula</i> , Blue-ringed Dancer	1	1
<i>Chrysobasis lucifer</i> , Lucifer Damsel	1	few
<i>Enallagma cardenium</i> , Purple Bluet	com	few
<i>E. pollutum</i> , Florida Bluet	com	few
<i>Ischnura hastata</i> , Citrine Forktail	com	few
<i>I. posita</i> , Fragile Forktail	com	few
<i>I. prognata</i> , Furtive Forktail	com	few
<i>I. ramburii</i> , Rambur's Forktail	com	com
<i>Nehalennia minuta</i> , Tropical Sprite	1	0
<i>N. pallidula</i> , Everglades Sprite	0	4
<i>Anax junius</i> , Common Green Darner	few	few
<i>Coryphaeschna adnexa</i> , Blue-faced Darner	0	few
<i>C. viriditas</i> , Mangrove Darner	few	few
<i>Gynacantha nervosa</i> , Twilight Darner	com	com
<i>Nasiaeschna pentacantha</i> , Cyano Darner	3	8
<i>Triacanthagyna trifida</i> , Phantom Darner	com	com
<i>Epithea sepia</i> , Sepia Baskettail	few	1?
<i>E. stella</i> , Florida Baskettail	com	1?
<i>Brachymeria furcata</i> , Red-tailed Pennant	few	few
<i>B. gravida</i> , Four-spotted Pennant	5	few
<i>Celithemis eponina</i> , Halloween Pennant	few	few
<i>Crocothemis servilia</i> , Scarlet Skimmer	1	few
<i>Erythemis plebeja</i> , Pin-tailed Pondhawk	0	few
<i>E. simplicicollis</i> , Eastern Pondhawk	few	2
<i>E. vesiculosa</i> , Great Pondhawk	com	com
<i>Erythrodiplax berenice</i> , Seaside Dragonlet	1	few
<i>E. minuscula</i> , Little Blue Dragonlet	com	few
<i>E. umbrata</i> , Band-winged Dragonlet	com	com
<i>Idiataphe cubensis</i> , Metallic Pennant	3	com
<i>Libellula incesta</i> , Slaty Skimmer	1?	0
<i>L. needhami</i> , Needham's Skimmer	2	1
<i>Macrodiplax balteata</i> , Marl Pennant	0	1
<i>Miathyria marcella</i> , Hyacinth Glider	com	few
<i>Micrathyria aequalis</i> , Spot-tailed Dasher	1	0
<i>M. didyma</i> , Three-striped Dasher	1	0
<i>Orthemis ferruginea</i> , Roseate Skimmer	com	few
<i>O. sp.</i> , “Antillean Skimmer”	com	com
<i>Pachydiplax longipennis</i> , Blue Dasher	com	few
<i>Pantala flavescens</i> , Wandering Glider	few	few
<i>Perithemis tenera</i> , Eastern Amberwing	2	few
<i>Tbolyms citrina</i> , Evening Skimmer	few	0
<i>Tramea calverti</i> , Striped Saddlebags	few	0
<i>T. carolina</i> , Carolina Saddlebags	few	3
<i>T. insularis</i> , Antillean Saddlebags	few	0
<i>T. lacerata</i> , Black Saddlebags	1	1
<i>T. onusta</i> , Red Saddlebags	few	few
Total Species	42	39

## Comparison Of Two Visits

Our visits in January 2000 (Paulson, 2001) and the present visit were very similar, both lasting a week and both visiting mostly the same locations. The assemblages of species were basically similar on the two visits (Table 1), with smaller numbers of some species in 2007 perhaps explainable by lower water levels generally. A few unique locations were visited on each trip, which may explain some of the differences in the odonates found. Also, species that are relatively rare would be less likely detected on both visits even with no change in status.

## My Fondest Wishes

It is a real shame that there are so few odonate enthusiasts in Florida, as this state is one of the frontiers for tropical dragonflies colonizing the US from the West Indies, a quantifiable effect of global warming. It would be so good

## Key West and South Florida Survey

Jerrell J. Daigle <jdaigle@nettally.com>

It was time for another October survey of the Florida Keys. I was joined by fellow DSA members and snowbirds Ed Lam and Fabrice de Lacour from New York. While waiting for them to arrive, I went ahead and surveyed Big Pine Key for *Lestes spumarius* (Antillean Spreadwing) and *Nehalennia minuta* (Tropical Sprite). I found the *Lestes* at its usual habitats, but I did not find any *N. minuta* at its known sites. Most of these places were covered with about 3 inches of water since there were heavy rains in the Florida Keys the week before. That night, I checked in with George Tegzes on Middle Torch Key and found out he is leaving for Panama soon to seek work there. I want to thank him for all of his help and we are going to miss him. The search for a new caretaker for the research huts is now underway.

The next day, I met Ed and Fabrice at the famous Blue Hole tourist attraction on Big Pine Key. We saw and got several *Tramea insularis* (Antillean Glider) males for Ed to scan for his new book. Later, we went to some new ponds that Ed found on No Name Key this spring. We got some *Orthemis schmidtii* and *Tramea onusta* (Red-mantled Glider) here. We wrapped up the day by collecting some *O. schmidtii* and *Brachymesia furcata* (Red-tailed Pennant) at several sites on Big Pine Key.

The following day, we drove to the Key West Botanical Gardens on Stock Island and collected a good series of *Orthemis schmidtii* females which were compared with the holotype female at FSCA. As we were leaving, we found


if we could increase field work on the Florida peninsula, just as is happening at the other tropical frontier along the southwestern border.

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out that e-mail/written permission is now needed to collect there. The nearby Golf Course requires only verbal permission and one could do just as well there as it is better for collecting dragonflies than the Gardens anyway.

One day was spent on Marathon Key at the Crane Point Botanical Gardens. We were really lucky while walking in this beautiful tropical hardwood forest. We saw a strange brown dragonfly which we did not recognize cruising up the trail. I swung and got it. Wow, it was a nice female *Tholymis citrina* (Evening Skimmer)! A new record for Marathon Key and one of the very few ever found in the Keys and South Florida. A really good catch! Alas, we did not see any more here, but we did get *Lestes spumarius*, *Orthemis schmidtii*, and *Erythemis vesiculosa* (Great Pondhawk) at the big forested freshwater pool there.

South Florida was next, and we headed for Florida City. While Ed and Fabrice checked out Tropical Park in Miami again, I went to the Everglades National Park to see if anything was flying at the big limestone lake at the Long Pine Key campground. Despite sunny, hot weather, very little was flying here. I saw mostly *Celithemis eponina* (Halloween Pennant), a few *Idiataphe cubensis* (Metallic Pennant), and no *Orthemis schmidtii* at all. On the way back to the motel, I stopped outside the park at the C-111 canal at Hwy. 9336. Wow! This canal was fantastic! It was loaded with many dashing, black *Erythemis plebeja* (Black Pondhawk), purple *Orthemis ferruginea* (Roseate Skimmer), *Micrathyrina*

*aequalis* (Spot-tailed Skimmer), brilliant red *Crocothemis servilia* (Scarlet Skimmer), *Idiataphe cubensis* (Metallic Pennant), and some other common species. I saw other exotic animals like armored catfish, and basilisk lizards running across the clear water when I spooked them. I got several males and females of *Erythemis plebeja* which Ed scanned. Also, it was kind of odd for me to see *Micrathyria aequalis*, a species common in Guadeloupe, but not here in south Florida. I was a little unsettled, but I quickly recovered and got some of the little devils.

Later that night, Ed and Fabrice told me they did pretty well at Tropical Park and other Miami sites, catching *Idiataphe cubensis*, *Brachymesia herbida* (Tawny Pennant), *Crocothemis servilia*, and *Dythemis velox* (Swift Setwing). The next day, I had to leave, but they stayed for a few more days and went over to the western Everglades for a spell. Here is what they had to say.

From Ed Lam . . .

After you left, Fabrice and I went out to Cope-land and saw 3 or 4 *Coryphaeschna adnexa* (Blue-faced Darner) flying at the canal. They were all males and we only managed to catch one. They were tough to catch because the banks are steep and it gets deep quick.

We headed into Fakahatchee State Park and walked the road and trail. We flushed up dozens of *Gynacantha nervosa* (Twilight Darner) but most of them were pretty young. You could catch all you wanted but I only found a few that were hard. Found a handful of *Triacanthagyna trifida* (Phantom Darner), caught a nice male and a couple of females.

We did try Crandon Park in Miami for *Micrathyria*


*didyma* (Three-striped Skimmer). The habitat looked nice there, lots of ponds, but we didn't see any *Micrathyria* of any kind. We then paid \$20 each to get into Fairchild Tropical Gardens, but couldn't find any there either. We did see a red *Orthemis schmidti*-like male along with an ovipositing female, but we couldn't catch them. We weren't supposed to net anything there, but there was hardly anyone walking around in the heat.

On our last day we went back to Tropical Park and saw females of *Micrathyria aequalis* and *Idiataphe cubensis* but failed to catch either. I think the trick is to get there early in the morning because we didn't see any others after it got hotter.

Anyway, that's it for dragonflies for me this year. See you next year and thanks! - Ed

Species seen on the Florida Keys:

*Orthemis schmidti*—abundant  
*Tramea insularis* (Antillean Saddlebags)—fairly common  
*T. onusta* (Red Saddlebags)—uncommon  
*Brachymesia furcata* (Red-tailed Pennant)—uncommon  
*Macrodiplax balteata* (Marl Pennant)—uncommon  
*Erythrodiplax berenice* (Seaside Dragonlet)—scarce  
*E. umbrata* (Band-winged Dragonlet)—scarce  
*Erythemis vesiculosa* (Great Pondhawk)—scarce  
*Tholymis citrina* (Evening Skimmer)—1 female  
*Lestes spumarius* (Antillean Spreadwing)—rare

My thanks to Skip Lazell and George Tegzes for accommodations on Middle Torch Key, refuge manager Anne Morkill for the Key Deer NWR permit, and the folks at the Key West and Crane Point Botanical Gardens for permission to survey their grounds. 

## A Windy February in Florida

### Tim Manolis

The following observations, made during a two-week vacation to southern Florida from 10–23 February 2008, may be of interest to ARGIA readers:

We (my wife, Annette, and I) were in the Florida Keys from the 10th through the 13th. It was very windy for nearly the entire period, with occasional rain showers, and nearly all grassy swales were completely dry, so odonate numbers were somewhat depressed. Damselflies were particularly scarce, with only Rambur's Forktail (*Ischnura ramburii*) to be found at a few spots on Key West, Big Pine Key and

Summerland Key. A walk around the Crane Point Nature Center on Marathon Key on the windy afternoon of the 10th produced but a single Great Pondhawk (*Erythemis vesiculosa*), a handful of Seaside (*Erythrodiplax berenice*) and Band-winged (*Erythrodiplax umbrata*) Dragonlets, a Wandering Glider (*Pantala flavescens*), a few *Tramea* spp?, and a fly-by of an unidentified darner.

February 11th was spent on Big Pine and No Name Keys, where we received permission to collect on the Key Deer National Wildlife Refuge under Jerrell Daigle's permit. There

were few odonates to collect on this sunny but blustery day, however. I did manage to net one of two male *Orthemis* spp. (Possibly *O. schmidti*) patrolling a small puddle in a dirt road on No Name Key. The greatest variety of odonates seen on the day was at the Blue Hole on Big Pine Key, where collecting proved impractical because of the heavy tourist traffic and a large alligator. Seen there, however, were more “Antillean” Skimmers, a Metallic Pennant (*Idiataphe cubensis*), and a few Marl (*Macrodiplax balteata*) and Red-tailed (*Brachymesia furcata*) Pennants. Modest numbers of *Tramea* were seen in the area at a variety of spots but could not be netted; these appeared to be Red (*Tramea onusta*) and Antillean (*Tramea insularis*) Saddlebags, but might also have included *T. carolina* or *T. abdominalis*. Carolina Saddlebags proved to be the most common and widely dispersed *Tramea* on the rest of our trip (e.g., in Highlands and Sarasota counties).

A trip to Key West on February 12th found us arriving simultaneously with a heavy downpour. As the rain let up, we visited the Key West Botanical Gardens on Stock Island, and despite strong winds and overcast skies, we found a few “Antillean” Skimmers and Band-wing Dragonlets along the trails through the gardens. Perhaps our most interesting discovery on Key West itself was the Sonny McCoy Indigenous Park at the corner of Atlantic Boulevard and White Street. This small park has free admission and a small freshwater pond. Among the species seen here were more “Antillean” Skimmers, Band-winged Dragonlets, Halloween Pennants (*Celithemis eponina*), Wandering Gliders, a Great Pondhawk, and an apparently pink-and-plum-colored *Orthemis*, glimpsed briefly. Despite its small size and urban environs, this little park is probably worth future scrutiny.

We saw little of interest in our drive out of the Keys on February 13th, but Halloween Pennants (apparently recent emergers) and Seaside Dragonlets were fairly common in grassy areas around brackish ponds on Grassy Key. In the afternoon we arrived at the Everglades National Park Headquarters Visitor Center at the same time as—you guessed it—another torrential downpour. After the rains we headed back to our motel in Florida City, stopping to check a couple of canals along Hwy 9336. The C-111 Canal had about 10 Four-spotted Pennants (*Brachymesia gravida*) while the C-1113 Canal had about the same numbers of Halloween Pennants and Rambur’s Forktails.

February 14th was spent in Everglades National Park (Royal Palm Visitor Center, Paurotis Pond, West Lake, Mrazek Pond, Eco Pond) and at the same canals along Hwy 9336. New for the trip were: Single Black Saddlebags (*Tramea lacerata*) at Eco and Mrazek ponds; Eastern Amberwings (*Perithemis tenera*) at Paurotis Pond and Royal Palm, in good numbers and ovipositing along the Anhinga Trail;

Eastern Pondhawks (*Erythemis simplicicollis*) at Paurotis Pond and Royal Palm; Blue Dashers (*Pachydiplax longipennis*) at Royal Palm, including an ovipositing pair; Florida Bluets (*Enallagma pollutum*), common and ovipositing along the Anhinga Trail; and a single Everglades Sprite (*Nehalennia pallidula*) in a sunny spot on the forest floor along the Gumbo Limbo Trail. A few Scarlet Skimmers (*Crocothemis servilia*) were found at the C-1113 Canal near the end of the day.

On February 15th we spent most of the day driving west across the Everglades towards our next destination, Corkscrew Swamp, making a few stops along the way but seeing little of note, except for a couple more Everglades Sprites in the woods at the Tree Snail Hammock nature trail along the Loop Road through the Big Cypress National Preserve.

On February 16th and 17th we were at Corkscrew Swamp, where we joined Jerrell Daigle, Cary Kerst and Fred Sibley in an intensive quest for Lucifer Damsels (*Chrysobasis lucifer*) found there in December by Dennis Paulson (see Jerrell’s account of this adventure). Amongst other things in the swamp were small numbers of Furtive Forktails (*Ischnura prognata*) and an occasional quick fly-by of a Twilight Darner (*Gynacantha nervosa*). At midday on the 16th a Regal Darner (*Coryphaeschna ingens*) was seen foraging over an open grassy area along the boardwalk trail with a number of Common Green Darners and saddlebags.

On the morning of February 18th, Cary Kerst joined us on a trip south to Copeland and the Fakahatchee Strand. Along a canal at the abandoned gas station site on the east side of highway 29 in Copeland, we found Purple (*Enallagma cardenium*) and Florida bluets, Fragile Forktails (*Ischnura posita*) and Eastern Amberwings. The scenic drive through the strand was devoid of much activity, despite good-looking habitat. The occasional darner or saddlebags breezed by along the road, but, once again, it was partly cloudy and windy.

We headed north to Highlands County, where we stopped at the Archbold Biological Station and received permission from Mark Deyrup to check out Lake Annie. Cary and I also took time to photograph each other holding “Needham’s Net.” Little was flying at the lake that afternoon, but we decided to come back the next day at midday.

On the 19th we started at Lake Annie, but again little was flying. I did net the only Ornate Pennant (*Celithemis ornata*) I saw on our trip, a teneral female in sedges along the lakeshore. A few Halloween Pennants, Little Blue Dragonlets (*Erythrodiplax minuscula*), Variable Dancers (*Argia fumipennis*), and Rambur’s Forktails were hanging out near the lake. The biggest source of frustration




were occasional quick fly-bys along trails through the scrub habitat by what appeared to be cruisers (*Didymops floridensis*, if so), but they moved so fast it was hard to tell what they were!

Our next stop was Windy Point Park on the western shore of Lake Istokpoga, where Cary had seen a nice variety of things a week earlier. Around a small, shallow grass-bordered pond were three bluet species, Florida, Big (*Enallagma durum*), and Atlantic (*Enallagma doubledayi*), plus Eastern Pondhawks, Scarlet Skimmers, Little Blue Dragonlets, and Halloween Pennants. At an adjacent deeper pond with cattails and a boardwalk were a few Common Green Darners, Hyacinth Glider (*Miathyria marcella*), Roseate Skimmer (*Orthemis ferruginea*), and a patrolling baskettail, probably *Epiheba stella*. Our last stop of the afternoon was Lake June-in-Winter Scrub State Park, a relatively new nature preserve tucked away in the less-heavily-developed southwest corner of the lake. We had this little gem virtually all to ourselves. In a large open area leading down to the lakeshore were good numbers of Sandhill Clubtails (*Gomphus cavillaris*), perched on the ground or flitting about at ankle-height.

On the 20th Annette and I headed for Sarasota, doing more bird-watching than dragonfly-watching along the way. That night we had dinner with Pete Carmichael, noted nature photographer and spider enthusiast and our host and guide for the next few days, at the Sarasota Brewing Company (nice selection of hand-crafted beers), planning our activities for our last two full days in Florida. The Sarasota area has hundreds of nice aquatic sites, including a number of nice, new parks and some "old classics." On the 21st and 22nd Pete took us to Myakka River and Oscar Sherer State Parks, Sleeping Turtles Preserve, Red Bug Slough, and a few other spots. Despite windy weather and partly-cloudy-to-overcast skies

(yes, again) we found some interesting things. A bit unexpected was the discovery of two species, very familiar (no pun intended) to me from my backyard in California, which are apparently previously unrecorded from Sarasota County—a Variegated Meadowhawk (*Sympetrum corruptum*) seen well in open scrub some distance from any water at Oscar Sherer State Park, and a male Familiar Bluet (*Enallagma civile*), collected at a small created wetland in Twin Lakes County Park. Patrolling male Prince Baskettails (*Epiheba princeps*) at Osprey Lake in Oscar Sherer State Park and along Red Bug Slough seemed to be flying a bit early in the season for this species. Certainly the best variety of odonates observed was at the Red Bug Slough County Nature Preserve (access along Beneva Road between Proctor and Clark roads). A "rainbow" of odonates along a marshy drain and lake-like sections of the slough there included Little Blue Dragonlets and Blue Dashers, green and blue Eastern Pondhawks, Citrine (*Ischnura hastata*), Fragile, and Rambur's Forktails, Eastern Amberwings, Florida Bluets, Roseate and Scarlet Skimmers, Blue-ringed (*Argia sedula*) and Variable Dancers, and dashing black Pin-tailed Pondhawks (*Erythemis plebeja*).


Following Jerrell Daigle's example of pointing out good spots to eat, I would suggest breakfast (muffins, bagels, croissants, etc., and good coffee) at Cristiano's Café along Highway 1 in Marathon; they also serve a nice jerk chicken lunch on Sundays only. The Barracuda Grill, also in Marathon, is a bit pricey but very good, plus they had Sierra Nevada Pale Ale, which we could only find at one other eatery on our Florida trip, the Ale House in Sarasota (near northeast corner of Bee Ridge and Cattlemen roads). In the "Land of Bud," the very concept of pale ale (or good beers in general) seemed unheard of at most places. The food at the Ale House was so-so; I would recommend you quaff a Sierra Nevada there and then head right next door to the Bella Cucina Italian Buffet, which serves very good food at great prices. 

## Have a Look in Your Kitchen First: A Short Christmas Story from Venezuela

Juerg De Marmels <demarmjc@gmail.com>

It was already about 6 PM on 23 December 2007, when I turned on the light in the kitchen. Immediately I spotted a small damsel fluttering against the light tube above the sink, and then settling down on the wall behind. I thought: Oh, well, another *Leptobasis vacillans*. Single specimens of this species are often seen in yards and corridors during the dry season. I caught it by its wings to have a closer look at it, but: big surprise! I was looking at a pair of bright red eyes. No way could that be a *Leptobasis*!

A second glance revealed that I had caught a male *Protoneura*, but of a species I had never seen before, either

live or dead. I then mailed two pictures of it to Rosser Garrison, who identified the specimen provisionally as *Protoneura paucinervis* Selys. Later comparison with the original description proved him to be right. I have no idea where my specimen might have come from. There are no streams in the neighborhood, especially no permanent ones. All published records of *P. paucinervis* are from the Amazon region of Ecuador, Peru and Brazil. This one is the first from Venezuela (El Limón, 430 m a.s.l., Maracay, Aragua State). The southern slope of this portion of the Coastal Cordillera drains to Lake Valencia, far away from the Amazon. 

## *Somatochlora hudsonica* (Hudsonian Emerald) from the Uinta Mountains of Northeastern Utah

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Standing near a small sedge pond at 10,200 ft. in elevation in the Uinta Mountains of northeastern Utah, I carefully examined the dark, medium-sized dragonfly in my hand, admiring its stunning, electric green eyes. Those eyes have always reminded me of the green-nosed alien spaceships from the old movie *War of the Worlds*. The thorax reflected metallic green with diffuse yellow markings. As I scanned along the abdomen, I suddenly noticed the thin, white rings between the segments. My eyes widened and I gasped! This was different from the familiar *Somatochlora semicircularis* (Mountain Emerald) I had netted a few minutes earlier. Unlike the curved, “earwig-like” cerci of *semicircularis*, these were “bent,” more like a pair of wire-cutting electrical pliers, ending with tiny upturned curls. At first, I thought it might be *Somatochlora albicincta* (Ringed Emerald), but realized this locality might be a little too far from its known range in the Pacific Northwest.

Upon my return home, I consulted the descriptions and photographs in the “Bible” of dragonfly taxonomy, *Dragonflies of North America Revised Edition* (Needham et al., 2000). Under the microscope, the lateral thoracic spots were a dull yellow, not as distinct as in *semicircularis*, and unlike the white, diamond-shaped thoracic markings of *albicincta*. After checking the range maps of the three “white-ringed” *Somatochlora* (Dunkle, 2000; Donnelly, 2004), I concluded the dragonfly was likely *Somatochlora hudsonica* (Hudsonian Emerald). Two specimens had fallen victim to my net; one I sent to Dennis Paulson for confirmation along with several other species collected at the site, including *Leucorrhinia hudsonica* (Hudsonian Whiteface), *L. borealis* (Boreal Whiteface), *Aeshna juncea* (Sedge Darner), and *Somatochlora semicircularis* (Mountain Emerald). He confirmed my identifications including the *Somatochlora hudsonica*, a new state record for Utah. Many thanks to Dennis Paulson for his help with the identifications.

The Uinta Mountains with its breathtaking scenery of high peaks, evergreen forests, lush meadows, blue lakes and clear streams have become my favorite place on earth. Ranging in elevation from 7,000 ft. at the bases to over 13,000 ft. atop the highest peaks, this beautiful east-west mountain range stretches for over 100 miles. Ancient glaciers have carved out dozens of cirques, moraines, and wide U-shaped valleys from billion-year-old Precambrian Uinta Mountain Quartzite leaving behind depressions that filled with water. Hundreds of ponds, lakes and bogs

scattered throughout the higher elevations, many covered with bright, yellow lily pads or lined with sedges provide excellent habitat for at least twenty-four species of dragonflies and damselflies (See preliminary list below). Dozens of cold, rushing streams carrying water from winter snows and summer thunderstorms drain into the Duchesne River (south slope) and Green River (north slope), major tributaries in the Colorado River System. At the far western end of the “Uintas,” the Provo, Weber and Bear Rivers drain into the Great Basin and eventually into the Great Salt Lake. Two highways traverse the range, UT 150 on the western end and US 191 on the eastern end. Few roads penetrate the wilderness in between, leaving visitors with only two options: travel in by horseback or on foot. I suspect that very few areas in the Uinta Mountains have ever seen an odonate collector. I have spent many summers backpacking deep into the high basins to fish the dozens of trout-filled streams and lakes. Unfortunately, although I collected many boreal butterflies on these trips, I had not yet taken up dragonflies.

Over the past two summers I have also collected in many other mountain ranges throughout Utah, areas neglected by earlier odonate collectors, obtaining records that extend southward the ranges of several boreal dragonfly species. In central Utah, atop the Wasatch Plateau, I was able to obtain new county records for *Leucorrhinia proxima* (Belted Whiteface), *Cordulia shurtleffii* (American Emerald), and *Somatochlora semicircularis* (Mountain Emerald), a southward range extension in Utah of over 100 miles for the first two of these species. Another 100 miles farther south, I collected *Somatochlora semicircularis* at Cyclone Lake in the Boulder Mountains of Garfield County and at a small pond near Brian Head ski resort in Iron County, both well into southern Utah and over 200 miles south of the Uinta Mountains of northern Utah. Data for these are listed below. I also checked out the location of a little known historical record for *Somatochlora semicircularis* from southeastern Utah at Geyser Pass (10,400 ft.) in the La Sal Mountains of San Juan County. The dragonfly (BYU collection) was collected by V.M. Tanner, but the label only gives the location without a collection date. Judging from other specimens collected by V.M. Tanner, the dragonfly was likely collected during the 1930s. On 16 June 2007, I visited Geyser Pass and found a small sedge pond about one mile east of the pass where I collected one teneral *Libellula quadrimaculata* (Four-spotted Skimmer) and several *Coenagrion resolutum*

(Taiga Bluet). Many of the Taiga Bluets were also teneral and were released. Although the pond certainly looked like excellent *Somatochlora* habitat, it appeared to be too early in the season for *Somatochlora semicircularis*.

Four new county records for the beautiful blue-green boreal damselfly *Coenagrion resolutum* were also collected during 2007 and are listed below. There are many other isolated mountain ranges scattered throughout the state, "islands" of boreal habitat yet to be visited. These are targets, waiting to be explored over the next few summers.

Note: Another specimen of *Somatochlora hudsonica* was recently added to the BYU collection by Robert Mower. As Utah County's Mosquito Abatement Director, Mower usually spends his days dipping for mosquito larvae and his nights collecting tiger moths with his mega light traps. Occasionally, he will carry an aerial net and take a swat at a dragonfly or other insect that crosses his path. In July of 2004, while backpacking with his Boy Scout troop in the Wind River Mountains in central Wyoming, he managed to collect *Somatochlora hudsonica*, *Somatochlora semicircularis*, and *Leucorrhinia hudsonica*.

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#### Collection Data

*Somatochlora hudsonica* (Hagen) 1871 in Selys (Hudsonian Emerald)

Utah, Daggett Co., Uinta Mts., sedge pond, east of Spirit Lake dam, 21 miles west of UT 44; el. 10,200 ft., 11 July 2007, A.R. Myrup

Wyoming, Sublette County, Wind River Mts., Trapper Lake, NW of Fremont Lake trailhead, (43° 04.91' N, 109° 46.87' W); El. 9,732 ft., 27–30 July 2004, R.C. Mower

*Somatochlora semicircularis* (Selys) 1871 (Mountain Emerald)

Utah, Daggett Co., Uinta Mts., sedge pond, east of Spirit Lake dam, 21 miles west of UT 44; el. 10,200 ft., 11 July 2007, A.R. Myrup

Utah, Emery County, Wasatch Plateau, Potters Pond, south of SR 31 on Miller Flat Road; el. 8,900 ft., 7 July 2006, A.R. Myrup

Utah, Garfield County, Boulder Mts., Cyclone Lake, N of Escalante; el. 9,850 ft., 30 June 2006, A.R. Myrup

Utah, Iron County, Brian Head, SR 143, south of Parowan; el. 10,200 ft., 30 June 2007, A.R. Myrup

Utah, San Juan County, La Sal Mts., Geysers Pass, V.M. Tanner

Utah, Sanpete County, Wasatch Plateau, off SR 31, south of Miller Flat Reservoir on Miller Flat Road, small sedge-filled pond; el. 8,700 ft., 7 July 2006, A.R. Myrup

Utah, Wasatch County, Soapstone Basin Road, Piuta Camp off SR 35 east of Woodland, pond; el. 8,850 ft., 25 July 2006, A.R. Myrup

Wyoming, Sublette County, Wind River Mts., Trapper Lake, NW of Fremont Lake trailhead, (43° 04.91' N, 109° 46.87' W), el. 9,732 ft., 27–30 July 2004, R.C. Mower

*Cordulia shurtleffii* Scudder 1866 (American Emerald)

Utah, Emery County, Wasatch Plateau, Potters Pond, south of SR 31 on Miller Flat Road; el. 8,900 ft., 7 July 2006, A.R. Myrup

Utah, Sanpete County, Wasatch Plateau, west of Joes Valley Reservoir; off FR 8, Soup Bowl nr. Pete's Hole; el. 9,000 ft., 21 July 2006, A.R. Myrup

*Leucorrhinia borealis* (Hagen) 1890 (Boreal Whiteface)

Utah, Daggett Co., Uinta Mts., sedge pond, east of Spirit Lake dam, 21 miles west of UT 44; el. 10,200 ft., 11 July 2007, A.R. Myrup

Utah, Duchesne Co., Uinta Mts., Elkhorn Loop Rd., ponds 1.2 mi. S of Pole Creek Lake Cg; el. 10,000 ft., 1 Aug. 2005, A.R. Myrup

*Leucorrhinia hudsonica* (Selys) 1850 (Hudsonian Whiteface)

UT, Daggett Co., Uinta Mts., sedge pond, east of Spirit Lake dam, 21 miles west of UT 44; el. 10,200 ft., 11 July 2007, A.R. Myrup

Utah, Garfield County, Dixie National Forest, Posey Lake, 16 miles north of Escalante; el. 8,700 ft., 15–16 July 2000, C.R. Nelson, # 7084

Wyoming, Sublette County, Wind River Mts., Trapper Lake, NW of Fremont Lake trailhead, (43° 04.91' N, 109° 46.87' W), el. 9,732 ft., 27–30 July 2004, R.C. Mower

*Leucorrhinia proxima* Calvert 1890 (Red-waisted Whiteface)

Utah, Summit County, Uinta Mts., Little Lyman Lake (40° 56' N 110° 38' W); el. 9,300 ft., 8 July 2005, R.W. Baumann

Utah, Sanpete County, Ephraim Canyon, Lake Hill Campground; el. 9,000 ft., 21 July 2006, A.R. Myrup

*Aeshna juncea* (Linnaeus) 1758 (Sedge Darner)

UT, Daggett Co., Uinta Mts., sedge pond, east of Spirit Lake dam, 21 miles west of UT 44; el. 10,200 ft., 11 July 2007, A.R. Myrup

UT, Summit Co., Uinta Mts., UT 150, Lily Lakes, near Crystal Lake Trail Head; el. 10,000 ft., 5 Sept. 2005, A.R. Myrup

*Coenagrion resolutum* (Hagen) 1876 (Taiga Bluet)

Utah, Beaver County, Anderson Meadow Lake (pond below dam), E of Beaver (SR 153), Kent's Lake Rd. (FR 137), el. 9,000 ft., 29 June 2007, A.R. Myrup

Utah, Daggett County, Uinta Mts., pond along SR 44 9.5 miles NW of jct. US 191, el. 8,100 ft., 11 July 2007, A.R. Myrup

Utah, San Juan County, La Sal Mts., SE of Moab, 1 mile SE of Geyser Pass, sedge pond, el. 10,400 ft., 16 June 2007, A.R. Myrup

Utah, Sevier County, 1 mile S of Fish Lake, sedge marshes, el. 9,000 ft., 22 June 2007, A.R. Myrup

## Preliminary List of Damselfly and Dragonfly Species of the Uinta Mountains (BYU Collection)

Records are from Uinta Mountain locations in Daggett, Duchesne, Summit, Uintah and Wasatch Counties.

*Lestes disjunctus* Selys, 1862 (Common Spreadwing)

*Lestes dryas* Kirby, 1890 (Emerald Spreadwing)

*Amphiagrion abbreviatum* (Selys, 1876) (Western Red Damsel)

*Coenagrion resolutum* (Hagen, 1876) (Taiga Bluet)

*Enallagma annexum* (Hagen, 1861) (Northern Bluet)

*Ischnura cervula* Selys 1876 (Pacific Forktail)

*Ischnura perparva* Selys, 1876 (Western Forktail)

*Aeshna eremita* Scudder, 1866 (Lake Darner)

*Aeshna interrupta* Walker, 1908 (Variable Darner)

*Aeshna juncea* (Linnaeus, 1758) (Sedge Darner)

*Aeshna palmata* Hagen, 1856 (Paddle-tailed Darner)

*Aeshna sitchensis* Hagen, 1861 (Zigzag Darner)

*Aeshna umbrosa* Walker, 1908 (Shadow Darner)

*Cordulia shurtleffii* Scudder, 1866 (American Emerald)

*Somatochlora semicircularis* (Selys, 1871) (Mountain Emerald)

*Somatochlora hudsonica* (Hagen in Selys, 1871) (Hudsonian Emerald)

*Leucorrhinia intacta* (Hagen, 1861) (Dot-tailed Whiteface)

*Leucorrhinia proxima* Calvert, 1890 (Red-waisted Whiteface)


*Leucorrhinia hudsonica* (Selys, 1850) (Hudsonian Whiteface)

*Leucorrhinia borealis* Hagen, 1890 (Boreal Whiteface)

*Libellula quadrimaculata* Linnaeus, 1758 (Four-spotted Skimmer)

*Sympetrum pallipes* (Hagen, 1874) (Striped Meadowhawk)

*Sympetrum danae* (Sulzer, 1776) (Black Meadowhawk)

*Sympetrum corruptum* (Hagen, 1861) (Variegated Meadowhawk) 

## New Records for Tamaulipas and Colima States in Mexico

George L. Harp <glharp@astate.edu>

Norman Lavers, now an emeritus professor of English at Arkansas State University, who also is a good personal friend, in 1984 proposed that we visit Mexico for the purpose of birding and chasing dragonflies. He said he spoke Spanish and that, therefore, would not be a problem. That actually could be the subject of another article. Norman is a naturalist and helped me greatly in the late 1970s and 1980s to develop a better understanding of Arkansas' dragonflies. He still notices the odonates but has since worked with moths and is now partnered with Herschel Raney in studying the wonderful world of robber flies.

But I digress. At Norman's instigation, in May 1984, he and I set out for northeastern Mexico. After spending a night in Bentsen-Rio Grande State Park, we crossed into Mexico south of Pharr, dispensing largess to each outstretched hand. We stayed in Ciudad Victoria for a few days where each night in a three-star motel we battled quite large cockroaches for territorial rights. Later, we traveled to Tampico, then west to Ciudad Valles before finally turning north toward Victoria. Several stops were made to observe birds as well as to chase dragons.

Because I was introduced to so many new odonates, keys to identification were few (or unknown to me), and I had a salaried job that took priority, it was 1990 before I began to realize how fruitful the trip had been. The DSA had been founded the year before in Johnson City, Tennessee. Phoebe and I hosted the first official meeting of this new organization, since several members were interested in photographing and collecting *Ophiogomphus westfalli* in the Arkansas Ozark Mts. During that meeting, Jerrell Daigle and Sid Dunkle looked through my specimens from Mexico and found individuals of two species that they were describing and which they subsequently listed among the paratypes (Daigle, 1991; Dunkle, 1992). The article by Behrstock et al. (2007) finally stimulated me to see if any unreported records remained from that 1984 trip. Some did and these are listed below.

*Epithecina princeps* Hagen: Tamaulipas, Rio Corona, Fed Hwy 101, 23 May 1984, 3♂, 1♀. This is a new record for Mexico, as well as Tamaulipas.

*Celithemis eponina* (Drury): Same data as above, 1♀. This appears to be only the second record for this species in Mexico (Paulson and González, 1994).

*Enallagma signatum* (Hagen): Same data as above, 2 pr. in cop. This is a new record for Mexico, as well as Tamaulipas.

*Tramea calverti* Muttkowski: Tamaulipas, Fed Hwy 85 1.4 mi N of La Morita, or 6.4 mi N of Gomez Farias turn-off, roadside ditch, 24 May 1984, 1♂, 1♀.

*Ischnura posita* (Hagen): Same data as above, Norman Lavers, 1♂. While Behrstock et al. (2007) reported this species from Tamaulipas, Dennis Paulson noted that it was a form intermediate between *Ischnura posita posita* and *Ischnura posita azteca*, as described by Novelo-Gutiérrez and Peña-Olmedo in 1989. The specimen reported herein is a typical *I. posita posita*, as there is no blue coloration on the top of abdominal segment 9.

In 1996 I was granted a sabbatical leave by Arkansas State University. The March–April period was spent in Costa Rica, surveying dragonflies in the Area de Conservacion Guanacaste, followed by a June–July period at the UNAM Chamela Biological Station, assisting Enrique González Soriano. New records of Odonata species for Chamela (Jalisco State) were published in González-Soriano et al. (2004). On the return trip to Ciudad Mexico, we stayed a few days in Colima State. Enrique has a manuscript updating the list for Colima, but apparently he did not remember one of the species I collected on that occasion. I therefore take this opportunity to report it.

*Hetaerina cruentata* (Rambur): Colima, Arroyo El Salto, at a recreation area 3 mi S of Minatitlan, adjacent to Fed Hwy 98, 28 July 1996, 2♂.

I thank Dennis Paulson for confirming the identification of the specimens from Tamaulipas and Enrique González Soriano for identifying the Colima specimens.

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## 2007 Summary of Odonate Research in Georgia

**Giff Beaton** and **Marion Dobbs**, (GB) 320 Willow Glen Dr, Marietta, GA 30068 <[giffbeaton@mindspring.com](mailto:giffbeaton@mindspring.com)>, (MD) 9 Bridlewood Lane, Rome, GA, 30165 <[pond\\_damsel@comcast.net](mailto:pond_damsel@comcast.net)>

The known status and distribution of Georgia Odonata has recently been summarized in Mauffray and Beaton (2005), Beaton and Dobbs (2006), and Beaton and Dobbs (2007). This article will summarize the additional work done in Georgia during 2007. At the end of 2006, there were 4110 county records from Georgia (159 counties) and 167 new records were added in 2007 for a new total of 4277. County record maps for each species are available thanks to the continuing hard work of Dobbs at <<http://www.mamomi.net/>>.

The bulk of the records added during the year were again collected by Beaton or Dobbs, who made numerous trips across the state, both independently and together. A DSA Regional meeting was held in southwest Georgia in July (what *were* we thinking?) which resulted in new county records in Decatur (7), Early (5), and Seminole (4) Counties for a total of 16 new records (Beaton, 2007). And we had a great time! Beaton and R. Steve Krotzer also conducted several days of collecting larvae, both independently and together, in different parts of the state, and the determinations by Krotzer resulted in several new records. A few others contributed a small number of additional records. The brutal drought continued, resulting in a total loss of habitat at many small ponds, marshes, and streams.

The best finds were new state records for *Gomphus cavillaris* (Sandhill Clubtail) and *Progomphus alachuensis* (Tawny Sanddragon). See below for details, but these additions raise the state list to 178 taxa comprising 175 species. Of these, 53 species (55 taxa) are Zygoptera and 122 species (123 taxa) are Anisoptera.

Following is a summary of new records for species with fewer than ten county records:

*Calopteryx angustipennis* (Appalachian Jewelwing): Found in Floyd, Gordon, and Whitfield Counties for a new total of eight county records.

*Lestes congener* (Spotted Spreadwing): Dobbs found this species at a new site in Walker County, for only the second known location in the state (both in Walker).

*Gomphus (Gomphurus) consanguis* (Cherokee Clubtail): Two new county records in Catoosa and Whitfield for the fifth and sixth county records. Extensive survey work for this species in 2007 raised the number of known streams from eight to ten in northwest Georgia.

*Gomphus (Gomphus) cavillaris* (Sandhill Clubtail): Dobbs discovered a pristine little sand-bottomed pond near St George in Charlton County. On 26 Mar she photographed a male of this species for a new state record. A subsequent visit on 28 Mar by Beaton, Krotzer, and Ed Lam provided voucher specimens.

*Ophiogomphus incurvatus* (Appalachian Snaketail): Found in another new county (Harris) based on larvae determined by Krotzer, for a total of five counties.

*Ophiogomphus* sp. One adult *Ophiogomphus* species has been found in Early County in 2005 and 2006, but it can't be assigned to any known species or subspecies based on current knowledge. In early April of this year, Beaton, Jerrell Daigle, Dobbs, Krotzer, and Lam also caught several more adults, still unidentified. See a web page at <<http://www.giffbeaton.com/Ophio.htm>> for more details, close-up photos of the specimens and appendages, and further discussion.

*Ophiogomphus edmundo* (Edmund's Snaketail): One adult was seen but not vouchered in White County along the Chattahoochee River. This site will be surveyed extensively again in 2008 for exuviae and adults, and will provide a new site but not a new county for this species.

*Ophiogomphus mainensis* (Maine Snaketail): On 23 Apr, while surveying for *O edmundo*, Beaton found eight

emerging adults in Murray County. This is the same river from which the lone previous adult specimen for Georgia and numerous exuviae records have come.

*Progomphus alachuensis* (Tawny Sanddragon): While visiting the St George pond in Charlton County mentioned above, Krotzer found some *Progomphus* larvae that he determined to be this species for a new state record. Later visits by Beaton and others confirmed a small breeding population that was on the wing for a surprisingly long time, from 29 June to 11 October. This exceeds the known late date for this species by six weeks.

*Neurocordulia virginiana* (Cinnamon Shadowdragon): One exuvia of this species was collected in Harris County for the fourth county record, determined by Krotzer.

*Macrodiplex balteata* (Marl Pennant): Several males of this species were found at the St George pond in Charlton County mentioned above for the second county record and only known breeding population. Previously known in the state only from one female found away from any breeding habitat in 2006.

*Sympetrum corruptum* (Variegated Meadowhawk): Two county records were made of this western species in Georgia: On 28 Oct Dan Vickers found and photographed one in Stewart County, and then on 16 Dec Earl Horn found and photographed one in McIntosh County. These records represent the seventh and eighth records.

A few other records notable for some other reason, in species with more than ten county records:

*Aphylla williamsoni* (Two-striped Forceptail): A new record from Floyd County, as the species continues to march north. This is all the way up in the northwest corner of the state.

*Gomphus (Hylogomphus) apomyius* (Banner Clubtail): Harris County became the 12th county, based on larvae determined by Steve Krotzer.

*Cordulegaster obliqua* (Arrowhead Spiketail). Records were added in two far southwestern counties during the DSA meeting for a total of thirteen county records. While these populations are thought to be the more southern subspecies *C. o. fasciata*, it was interesting to note that individuals from the same stream had different eye color, ranging from green to blue-green. This is sometimes listed as a character to use to separate the subspecies of this spiketail, but our findings seem to indicate that it is of limited use.


*Somatochlora tenebrosa* (Clamp-tipped Emerald). Found in Early County during the DSA meeting also, by far the southernmost records in Georgia of this species. It has also been found slightly farther south of here near Tallahassee.

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## Request for Odonata Records from the Delmarva Peninsula

Hal White, 103 Radcliffe Drive, Newark, DE 19711 <halwhite@udel.edu>

I am writing a book on the natural history of the Odonata of the Delmarva Peninsula (Delaware and the Eastern Shore of Maryland and Virginia). In order to be complete as possible, I would appreciate any records from this area.

I also am interested in publication quality photographs of Odonata taken on the Delmarva Peninsula. 

## Dragonfly “Job” Announcement

Jason Bried, The Nature Conservancy, Albany, New York 12205 <jbried@tnc.org>

“Job” in the title is misleading because (1) it implies work, and working with dragonflies is never really work, and (2) it implies you get paid, which unfortunately will not be the case (although this might change).

I’m talking about a study in progress with the following premise: if the conservation community is serious about protecting odonates or using odonates as tools to solve larger conservation problems, then odonatologists must help determine how accessible these animals are to on-the-ground conservation work. The widely cited guidelines for determining a “Representative Spectrum of Odonata” (Schmidt, 1985) at a site are vague and have never been tested, let alone validated. So as a start, we’re after two questions on finding the representative spectrum of adult odonates in lentic habitat: How often should surveys be done? How long should each survey last?

The study kicked off in 2006 (Bried et al., 2007), continued in 2007, and hopes to continue through 2008 and probably beyond. I am very grateful to the roughly 70 people from 24 states and three provinces who responded


to “job” advertisements last year. But the study needs many more study sites. Do you live in North America? Are you good with adult odonates? Can you possibly commit to a 60 minute survey once per week (“weekly” give or take a couple days on average) in 2008 or some other year? If yes, just pick your favorite pond, lake, or wetland and let the work . . . excuse me . . . fun begin.

I’ll give you a “job” if you give me a call or e-mail (518-456-0655 x1221, <jbried@tnc.org>).

Thanks!!

### Literature Cited

Bried, J.T., P. Hunt, and W.B. Worthen. 2007. How often and how long? Studying temporal survey design for adult odonates. *ARGIA* 18(4): 8–11.

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## Recent Articles and Books

### Ontario Odonata, Volume 7

The Toronto Entomologists Association (TEA) announces that the 7th annual summary of Odonata observations in Ontario, Canada is now available for sale. Ontario Odonata Volume 7 (ISBN 0-921631-31-6) is an 8.5” × 11” publication with 226 pages that includes 10 articles, 4 notes, and 8556 observations of Ontario Odonata for the year 2005. The editors and compilers are Paul Catling, Colin Jones and Paul Pratt. See <<http://www.ontarioinsects.org/V7%20Flyer.pdf>> for the title page and table of contents. Cost, including shipping, is \$25 Can. for Canadian addresses and \$28 US for US and overseas addresses. Previous volumes are also available for sale: see <<http://www.ontarioinsects.org>>. To purchase copies, contact Chris Rickard, <[crickard@sympatico.ca](mailto:crickard@sympatico.ca)> or the TEA, <[info@ontarioinsects.org](mailto:info@ontarioinsects.org)>. By mail: TEA, 18 McDonald St. W., Listowel, Ontario, Canada N4W 1K4. Orders must be prepaid. Personal cheques accepted for US or Canadian orders; money or postal orders only for others. Please make cheques or money orders payable to Toronto Entomologists’ Association. Sorry, we do not take credit card orders.

### Bulletin of American Odonatology

Volume 10, Number 2/3 of the Bulletin of American Odonatology was just published. It contains the following articles.

**A Preliminary Checklist of the Odonata of Sonora, Mexico** by Sandy Upson, Doug Danforth, Enrique González-Soriano, Robert A. Behrstock, and Richard A. Bailowitz.

Little detailed information is available on the Odonata of Sonora, which is located in northwestern Mexico. A recent paper (Paulson & González-Soriano, 2006) listed 46 species for the state. We have documented 122 species based on seven years of field work, including two undescribed species (an *Argia* and an *Erpetogomphus*). Species accounts include locality data, flight period and distribution map by municipio (= county). An overview of Sonora’s regional biocommunities is provided, including maps of major watersheds and municipio boundaries.



**A list of the Odonata of Chihuahua State, Mexico, Including New State Records and First Mexican Record of *Argia alberta*, Kennedy, 1918** by Robert A. Behrstock, Doug Danforth, and Sandy Upson.


Twenty-one sites were visited in northwestern Chihuahua from 17 June to 30 September 2005. Based upon these visits, we present 35 records of Odonata (15 Zygoptera and 20 Anisoptera) that have not been reported or confirmed for Chihuahua. The total number of species known from the state is increased to 80. Just over one-half of the new records exhibit broad distributions, living from sea level to moderate altitudes. The remainder inhabit higher elevations. *Argia alberta* Kennedy, 1918, is reported for the first time from Mexico.

**Dragonflies and Damselflies (Odonata) of Texas, Volume 3**, edited by John C. Abbott

Volume 3 of the Odonata Survey of Texas is now out. It contains distributional and seasonal records for all 224

species known from the state up through 2007. In addition it contains the following articles:

Odonata of the Lower Rio Grande Valley: 2007 Summary, J.S. Rose; Dragonflies and Damselflies of Wright Patman Lake, M. Dillon; The Odonata of Kerr County and the Guadalupe River System of Texas, T. Gallucci; and The Odonata of Real County and the Frio-Nueces River System of Texas, T. Gallucci


It can be purchased through Lulu.com, <<http://www.lulu.com/content/2049074>> for the price of \$30.00. 

**Book Review: Dazzling Dragonflies: A Life Cycle Story (Linda Glaser's Classic Creatures)**, Millbrook Press. ISBN 978-0-8225-675-30. Paperback, 32 pp. \$22.60.

Reviewed by **Kurt Mead** <[mndffy@cpinternet.com](mailto:mndffy@cpinternet.com)>

Dazzling Dragonflies, the latest Linda Glaser natural history book for children, nails the basic life-history of dragonflies. This delightful book uses kid-friendly language without compromising the facts. Illustrator Mia Posada's images are gorgeous and rich while still paying attention to the details of these complex insects. Several species are highlighted and there is an "appendix" at the end with answers to frequently asked questions about dragonflies (and info on the closely-related damselflies). Teachers,

naturalists and parents will find this book very useful for introducing young children to the life-cycle of insects with incomplete metamorphosis (plus it's a fun read!). Tops my list for kids' insect books.

The book is available through Amazon, of course, but it is also available straight from the author by e-mailing <[lgla-ser@cpinternet.com](mailto:lgla-ser@cpinternet.com)>. 

#### Renewal Reminder

If you have not already done so, please renew your DSA membership in a timely fashion. If you are unsure of whether you need to renew or not, check the address label on the envelope. If you see "A7" in the upper right corner, it means that your membership has expired. You can find a renewal form at <[http://www.odonatacentral.org/views/pdfs/DSA\\_Membership\\_Form.pdf](http://www.odonatacentral.org/views/pdfs/DSA_Membership_Form.pdf)>. Also remember the PDF-only option now available for ARGIA at a reduced rate.

## ARGIA and BAO Submission Guidelines

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### Articles

All articles and notes are preferably submitted in Word or Rich Text Format, without any figures or tables, or their captions, embedded. Only minimal formatting to facilitate review is needed—single column with paragraph returns and bold/italic type where necessary. Include captions for all figures and tables in a separate document.

Begin the article with title, author name(s), and contact information (especially e-mail) with a line between each. The article or note should follow this information. Paragraphs should be separated by a line and the first line should not be indented. Where possible always refer to the scientific name of a species followed by its official common name in parentheses.

### Figures

Submit figures individually as separate files, named so that each can be easily identified and matched with its caption. Requirements vary depending on the type of graphic.

Photographs and other complex (continuous tone) raster graphics should be submitted as TIFF (preferred) or JPEG files with a minimum of 300 ppi at the intended print size. If unsure about the final print size, keep in mind that oversized graphics can be scaled down without loss of quality, but they cannot be scaled up without loss of quality. The printable area of a page of ARGIA or BAO is 6.5 × 9.0 inches, so no graphics will exceed these dimensions. Do not add any graphic features such as text, arrows, circles, etc. to photographs. If these are necessary, include a note to the Editor with the figure's caption, describing what is needed. The editorial staff will crop, scale, sample, and enhance photographs as deemed necessary and will add graphics requested by the author.

Charts, graphs, diagrams, and other vector graphics (e.g. computer-drawn maps) are best submitted in Illustrator format or EPS. If this is not possible, then submit as raster graphics (PNG or TIFF) with a minimum of 600 ppi at the intended print size. You may be asked to provide the raw data for charts and graphs if submitted graphics are deemed to be unsatisfactory. When charts and graphs are generated in Excel, please submit the Excel document with each chart or graph on a separate sheet and each sheet named appropriately (e.g. "Fig. 1", "Fig. 2", etc.)

### Tables

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**Back cover:** (upper) *Chrysobasis lucifer* (Lucifer Damsel), photographed at Corkscrew Swamp Sanctuary, Florida, in December 2007. Photo by Dennis Paulson. (lower) *Rhinocypha tincta amanda*, photographed near Alo Tau in the northeastern coastal lowlands of Papua New Guinea. Photo by Roy Beckemeyer.

