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# THE DRAGONFLY SOCIETY OF THE AMERICAS

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

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

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

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The **BULLETIN OF AMERICAN ODONATOLOGY** is available by a separate subscription at \$15 for members and \$18.75 for non-members and institutions.

Front cover: Is it a species or isn't it? The most sought-after dragonfly at the **DSA** meeting was *Cordulegaster deserticola* (or *C. dorsalis deserticola*). Image by Steve Valley.





## MINTER J. WESTFALL, JR. PASSES AWAY

Ken Tennessen

One of the saddest moments to befall the Odonatological world, and particularly the DSA in its 14 years of existence, a moment we were all hoping would be postponed for a long time, has now come to be. Minter Jackson Westfall, Jr. died peacefully at his home in Gainesville, Georgia on July 20, 2003, at the age of 87. With Minter's passing, a chapter in the history of Odonatology is closed. His name will be revered along with the likes of other great 20<sup>th</sup> century Odonatologists before him, such as Calvert, Walker, Williamson and Lieftinck, to name just a few. He touched the lives and careers of nearly all members of DSA and also of the entire world dragonfly community. His strength faded only in the last couple of years. The last time most of us saw him was at Cades Cove, when at age 85 he came to help inventory the Odonata of the Smoky Mountains National Park. To say Minter was devoted to dragonfly study is an understatement, but he was even more devoted to his family and his Christian faith. He is survived by his son David, daughters Carol and Holly, and numerous grandchildren. Our condolences to each of them.

Minter's dear wife, Margaret, passed away three years ago [see M. May, *ARGIA* 12(1):4-5]. Their son David said that in his words, his father was "ready to go join Margaret." Through their years together, they graced many national and international symposia on Odonata and traveled on collecting trips to many parts of the world. They made lasting friendships wherever they went because they cared about people. Throughout his career, from his first publication on Odonata at age 25 (1941, *Notes on Florida Odonata*, *Entomol. News* 52:15-18,31-34) until his last in 2000 (*Dragonflies of North America*, Revised Edition), Minter was respected and renowned by hundreds of Odonatologists. For those who did not get the chance to meet him, his books, papers, and letters nourished all.

Minter was a natural teacher, beginning at a very early age teaching nature study to boy scouts in North Carolina, all the while slipping in facts about dragonflies. One of his favorite stories came from this happy time. He had told the scouts about the primitive-looking dragonfly, *Tachopteryx thoreyi*, and whoever caught one would earn extra credit. One day they were hiking a trail when a fine male landed on one boy's cap. Minter yelled the boy's name and said, "On your head, a *Tachopteryx*!" He then told how he could just see the boy's mind working. All of sudden, the boy plopped his net down over his head and trapped the *Tachopteryx*! Another favorite of his was Jerrell Daigle's famous

saga concerning a Wisconsin black bear (*ARGIA* 14(1):15): "I was running down the road, with Dr. Westfall right on my heels; we were trying to net a slow flying *Somatochlora kennedyi* overhead, when I happened to glance back over my shoulder and laid saucer eyes upon an upcoming black bear loping along right towards us! If the episode were ever to be made into a motion picture called Ungentle Ben our ensuing conversation might be used for the script, and went something like: (me) "Minter! Look out! Bear!, Bear!", (Dr. Westfall) "Where? Where?", (me) "There, There! Right behind us!", (Dr. Westfall) "Oh! Oh!", (me) "Run! Run!", We did about 100 yards in what was probably Olympic class time, and - - when we looked back (fortunately for the bear) he had decided he couldn't stand any more of our dialogue and turned off into the bushes and trotted away."

Early on, Minter was greatly influenced by Edward M. Davis and James G. Needham, both of whom steered him toward dragonfly study. He completed his Ph.D. at Cornell in 1947 and found a teaching position at the University of Florida. His career in Zoology there spanned 38 years. Throughout that time, he gave undivided attention to every student who sought help, biology major or not, however long it took. At times his devotion to students took valuable time from his research on Odonata. At other times, he was responding to letters from around the world posing difficult questions on odonate taxonomy. He still had to find time for attending staff meetings, counseling graduate students, refereeing papers, and preparing the newsletter SELYSIA. All in all he authored or coauthored over 50 refereed journal papers and book chapters on dragonflies, plus he contributed many notes concerning Odonata and Odonatologists in society newsletters. In hindsight, I think his greatest professional contributions were the help he gave to others who were interested in studying dragonflies (he was so generous with his knowledge and time, it often meant delaying work on his own papers), and secondly his use of larvae to clarify taxonomic relationships.

Minter introduced 16 new taxa of Odonata to science, namely the genus *Elasmothemis* (1988), and 15 species and one subspecies: *Enallagma davisii* (1943), *Libellula needhami* (1943), *Macromia margarita* (1947), *Celithemis berthaleonora* (1952), *Gomphus (Gomphurus) septima* (1956), *Philogenia leonora* (1956, and *Philogenia zeteki* (1956, with R. B. Cumming), *Telebasis byersi* (1957), *Protoneura viridis* (1964), *Gomphus (Gomphurus) ozarkensis* (1975), *Protoneura sanguinipes* (1987), *Micrathyria divergens*, *M. dunklei*, *M. occipita*, and *M. pseudeximia* (1992), and lastly, *Erythrodiplax bromeliicola* (2000).



One of Minter's favorite subjects for study was the larval stage. He reared and described too many to list here, but most notable were his papers on larval Gomphidae and Zygoptera. When he discovered the larva of *Elasmothemis cannacrioides*, which was so different from the larvae of *Dythemis*, it convinced him that the group deserved generic rank.

When he left the Florida State Collection of Arthropods in Gainesville, Florida in 1996 to move close to his son David in Gainesville, Georgia, he left a file drawer with several unfinished manuscripts and drawings on temperate and tropical Odonata larvae.

The respect and admiration other Odonatologists had for Minter Westfall is evidenced by the nine taxa that have been named for him: *Metaleptobasis westfalli* Cumming (1954), *Enallagma westfalli* Donnelly (1964), *Hetaerina westfalli* Ráčenis (1968), *Ophiogomphus westfalli* Cook & Daigle (1985), *Epigomphus westfalli* Donnelly (1986), *Philogenia minteri* Dunkle (1986), *Gomphus westfalli* Carle & May (1987), *Epipleoneura westfalli* Machado (1986), *Argia westfalli* Garrison (1996).

Minter was awarded the Membership of Honor in S.I.O. (Societas Internationalis Odonatologica) in Ste. Therese, Canada in 1979. In 1986 the same society paid tribute to him on his 70<sup>th</sup> birthday by devoting an entire issue of the journal *Odonatologica* to him. Less than a year ago [see *ARGIA* 14(3):4], Minter was bestowed an Honorary Membership in the Dragonfly Society of the Americas, proposed by one of his students, Dr. Sidney W. Dunkle. Many other honors and tributes were conferred upon him over the years.

I first met Dr. Minter Westfall in 1968 when I went to Gainesville to attend the University of Florida and begin pursuit of a Master's degree in Entomology. It didn't take long to know I was in the right place. Minter put me to work right away researching damselfly taxonomy for his forthcoming Zygoptera manual, which much later (1996), with the tremendous collaboration of Dr. Mike May, became the sequel to the famous 1955 Anisoptera Manual that Minter had coauthored with James G. Needham. The Anisoptera Manual has also been revised (2000), again with Mike's help, and together these two books serve as the foundation for identification of North American Odonata.

Through the 35 years I knew him, three of Minter's qualities really got through to me, though I'm not sure he consciously taught these things. These are: 1) study the entire biology of dragonflies if you want to understand their true nature, 2) take great

care that you have it right before you publish (or edit and re-edit), and 3) persevere. I have never met another person more tenacious in their approach to furthering scientific knowledge. When on a seemingly impossible bibliographic search, he was a bloodhound. And watching him dredge all day with that cumbersome steel Needham scraper is etched in my mind forever. I think I am going to miss him in more ways than I realize right now.

I'm feeling a bit numb, writing this obituary the day after Minter's death. On my desk is a stainless steel letter opener with an embossed leather handle, a Ph. D. graduation gift from him in August of 1975. There is another memento; before I left Gainesville that fall, he gave me an already well-aged Swift 10X hand lens that he had used for many years. It is now badly worn, and I have put it away for safekeeping; I've decided it has seen its last days of fieldwork. With heavy heart, these are the tangible objects I will have to always rekindle thoughts of a great Odonatologist, mentor and friend. But I also feel rich in a way, for having known Minter Westfall gives me great inspiration to continue pursuing knowledge of the Odonata.

[For biographic details of Dr. Minter J. Westfall, Jr., and a bibliography up to 1985, see *Odonatologica* 15:5-17]

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Minter's death wasn't exactly a shock. I knew he was 87 and not in great health. But it is a little hard to realize, especially at the height of dragonfly season, with *Anax* and *Libellula* on the ponds and *Macromia* whipping by me along sandy roads, just out of net reach, that he's gone.

I'd known Minter since I was eight years old. That's when we moved to Gainesville, a block down 7<sup>th</sup> Place from the Westfalls. Not that Minter was a really easy person for an eight year-old to get to know, but his son, David, was a schoolmate and good friend. One of the best things about living on that block was that sometimes we got to look through the drawers of mounted insects stored in their carport. Later, in junior high, Minter tried, with limited success, to teach us what the heck our biology teacher was talking about in the section of photosynthesis, and in 9<sup>th</sup> grade drove us down to Lakeland for the state science fair; that trip was when I learned, to my surprise, that Minter had quite a lot to say when you got him going.

I guess I could go on for a while telling Minter stories, but I'll just do one more, because I've always thought of it as a real personal turning point. I'd come back to Gainesville after a semester at grad. school that had convinced me I wanted to be a field biologist rather than a bench scientist, and I





Minter Westfall in 1998 – photo by John Heppner

Minter Westfall was instrumental in my acquiring an interest in Odonata and also was the one who encourage me to go to college. He further encouraged me to relocate to Gainesville Fl to help with the IORI and the FSCA collections. I continue to run the IORI with great pleasure and fulfillment as a volunteer in the area of Odonate research. All of his publications and books will be a constant reminder to me of his contributions in the field of Odonatology. Minter will always be highly respected and remembered.

Bill Mauffray

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**2003 DSA ANNUAL MEETING IN WILLIAMS, CA AND POST-MEETING TRIP TO OWENS VALLEY, JUNE 19-25**

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Collecting equipment, check....photo equipment, check....camping equipment, check....clothes, check. Looking around at the piles in my living room, I know I am forgetting something. No way this is all going to fit, I think desperately! My mind wanders and I imagine this same scene being played out all around the country as old friends and new ones prepare for the 2003 Dragonfly Society of



the Americas Annual Meeting in California. I look at the clock.... midnight....and Jim Johnson will be picking me up at 9:00 for the first leg of our trip to Williams. We plan on collecting, exploring and camping in southwestern Oregon along the way. Tuesday morning 4:00 AM, I am up and paring down, OK, this will fit, I only really need 1 clean pair of socks, etc. per day. 8:30, I am finally ready, but there is still that nagging feeling I am forgetting something....

That afternoon, 79.5 miles into our trip, standing knee-deep in a road side marsh, peering through my hand-lens at a *Lestes* trying to determine if it is *dryas* or *stultus*, I finally remember....I forgot my microscope! Well, at least that nagging feeling is gone. Our plan is to check the major rivers and streams (North and South Umpqua, Rogue and Illinois Rivers) along our route south, to see what is flying. On Wednesday, we take a side trip into the mountains to look at known *Tanypteryx hageni* sites and perhaps discover some new ones. Southwest of Grants Pass, we explored the area between Eight Dollar Mountain and the Illinois River and located a number of *Darlingtonia* bogs that all had a few *T. hageni* flying, but it appeared that we were at the beginning of their flight season in this region. After a bit more exploring and collecting Thursday morning we make a dash in the afternoon for Williams, CA, where the DSA meeting will be held. (Jim and I added 18 new county records for OR on the round trip to CA).

There was no mistaking that we were at the right place when we pulled into the Granzellas parking lot. It was full of clusters of people talking, gesturing, hugging, shaking hands (a very odd collection, I can tell you). We spotted a dozen old friends right away. This is perhaps the most enduring tradition of DSA, "the parking lot meeting". More information about the science of Odonatology is exchanged there than any other forum I can think of. We soon joined the throng, drifting from cluster to cluster, greeting old friends, meeting new ones, catching up on the past year, showing off new equipment, finding out who would be on which field trip the next day, telling jokes and stories, but most of all....having fun! Anyone watching us must have thought we were about the strangest bunch they had ever seen.

The field trips were split, with groups going west to Bear Creek on Highway 20, led by Dave and Kathy Biggs, and Pope Creek and Cold Canyon led by Andy Rehn. Another group headed northeast to the Chico area, Bidwell Park and into the mountains to Cherry Hill, led by Tim Manolis. On Saturday, the groups switched destinations.

At Bear Creek, in Colusa County, the following 31 species were seen, collected or photographed, \* indicates new county records: *Hetaerina americana*, *Archilestes grandis*\*, *Argia agrioides*, *Argia emma*, *Argia lugens*, *Argia vivida*, *Enallagma carunculatum*, *Enallagma boreale*, *Enallagma civile*, *Enallagma cyathigerum*, *Ischnura cervula*, *Ischnura Perparva*, *Ischnura barberi*\*, *Erpetogomphus compositus*, *Progomphus borealis*, *Aeshna californica*\*, *Aeshna multicolor*, *Anax walsinghami*, *Macromia magnifica*, *Epiheca canis*\*, *Brechmorhoga mendax*, *Erythemis collocata*, *Libellula forensis*, *Libellula luctuosa*, *Libellula lydia*, *Libellula saturata*, *Pachydiplax longipennis*, *Sympetrum corruptum*, *Sympetrum madidum*, and *Tramea lacerata*. *A. walsinghami* was a real highlight for me. It was the first time I was in net range of them and also the first time to see the monster larvae, which Ken Tennessen dredged up.

At Pope Creek, in Napa County, 15 species were seen, collected or photographed: *A. agrioides*, *A. vivida*, *E. carunculatum*, *E. praevarum*, *Telebasis salva*, *Gomphus kurilis*, *M. magnifica*, *Cordulegaster dorsalis*, *B. mendax*, *E. collocata*, *Libellula comanche*, *L. luctuosa*, *L. saturata*, *P. longipennis*, *T. lacerata*. A few collectors visited a *Tanypteryx hageni* site near Lake Berryessa, but it was apparently too late in the season and none were seen there.

At Guenoc Pond, on Butts Canyon Road, between Pope and Bear Creek, in Lake County, 5 new county records were found: *Archilestes californica*\*, *Telebasis salva*\*, *Anax junius*\*, *E. compositus*\*, and *Sympetrum occidentale*\*.

Putah Creek, on the Yolo/Solano county line, was a good spot to get *Zoniagrion exclamationis*, along with *Argia agrioides*, *Enallagma cyathigerum* and *Ischnura cervula*.

At Big Chico Creek, Bidwell Park, in Butte County, 16 species were reported: *H. americana*, *A. agrioides*, *A. emma*, *A. lugens*, *A. vivida*, *Enallagma civile*, *E. cyathigerum*, *G. kurilis*, *Ophiogomphus bison*, *Ophiogomphus occidentis*, *M. magnifica*, *B. mendax*, *L. saturata*, *Paltothemis lineatipes*, *Pantala hymenaea*, and *T. lacerata*.

At Horseshoe Lake in Bidwell Park we added: *Ischnura cervula*, *I. denticollis*, *I. perparva*, *T. salva*, *Aeshna multicolor*, *A. junius*, *E. compositus*, *Libellula forensis*, *L. luctuosa*,

*Libellula lydia*, *Libellula pulchella*, and *P. longipennis*.

Near the Cherry Hill Campground, along Butte Creek, in northern Butte County, we visited a really great *Tanypteryx hageni* site. The large hillside bog at an elevation of about 4700 feet was one of the largest *Tanypteryx* habitats I have ever seen. The upper part had *Darlingtonia* growing, but most of it was made up of a sheet-flow bog covered with moss, wildflowers and grasses. Cop pairs, ovipositing females, territorial males, burrows with larvae and exuviae were found in abundance. It was amazing to see photographers lining up to shoot a cop pair, and they sat patiently, as one after another captured their image. Ken Tennessen found *Cordulegaster dorsalis* exuviae on a roadside trickle below the bog and Jerrell Daigle captured an adult. *Amphiagrion abbreviatum* and *Argia vivida* were also common. *Libellula nodisticta* and *Sympetrum corruptum* were found in a clearing near the road.

The evening meetings were presided over by our President, Dennis Paulson. Friday evening, Dennis efficiently led us through the DSA business meeting, where we heard Jerrell Daigle's Treasurer's Report and DSA Incorporation Report. Jerrell passed out the traditional DSA Meeting Buttons. This one sported an image of *Zoniagrion exclamatoris*. We also discussed future meetings and after a presentation by Steve and Marcia Hummel, chose Iowa for the 2004 DSA meeting. Kathy Biggs and the CalOdes Group honored Dennis Paulson and Rosser Garrison as the "Fathers of California Dragonflies" for their 1977 paper on Pacific Coast Odonata, with a special button. (It is hard to believe we are all getting that old). We chose Steve Krotzer as our President-elect, to assume that position in 2005 and Steve Hummel was chosen as a regular member of the Executive Council, for the next 6 years, replacing Paul Brunelle. All other DSA officers will retain their positions.

The meeting lasted for a little more than an hour and after it was adjourned, many of us headed for our rooms to process specimens, host or attend late night gab sessions (parties), some of which lasted until the wee hours of the morning. (The motel management did ask us to close the door to our room because we were a little noisy, but the rooms seemed to be exceptionally well insulated.)

The Saturday night meeting was reserved for presentations related to odonatology rather than DSA business. Rosser Garrison gave a presentation about his studies of *Hetaerina* and *Mnesarete* and

also his projects to create keys for New World Odonata. Another subject he covered had to do with the issue of *Triacanthagyna* / *Gynacantha* and suppressing an earlier name. Steve and Mary Jane Krotzer gave us a very nice musical interlude with Steve's excellent dragonfly photographs. Heath Ogden gave a report on his projects involving Molecular Systematics of Odonata. Ken Tennessen gave a talk about Larval Sampling and showed us his latest generation of larvae grabbers, including his slick new "Brush-Tipped Tennessen Scraper, Model 2003". He also gave us tips on efficient design and construction.

At the end of the meeting, Dennis Paulson passed the gavel to the new DSA President, Roy Beckemeyer. Thank you Dennis, for the great job over the past 2 years!

On Sunday morning, after a more abbreviated night of revelry, we said our good byes to those who were not going on the post meeting safari to the Owens Valley area around Bishop. It is about a 6 hour drive from Williams to Bishop for everyone but odonatists. The route over the Sierras passes many streams, marshes and lakes, and a dragonfly hunter cannot resist the temptation to check them out.

On New York Creek, surrounded by a residential neighborhood, on the eastern outskirts of Sacramento, Ken Tennessen was able to dredge up a couple *Octogomphus specularis* larvae, but the adults were not to be seen on this trip. Many of us stopped along Hwy. 50, on the side of a cliff, to take in the spectacular view of the Upper Truckee River Valley, more than 1000 feet below. Breathtaking and scary! At Grass Lake, along Hwy. 89, in El Dorado County, *Somatochlora semicircularis* was emerging and *Coenagrion resolutum* and *Leucorrhinia hudsonica* were collected.

In Alpine County, at Markleeville, a *Libellula saturata* escaped the net, but *Amphiagrion abbreviatum* and *Enallagma boreale* were collected. At Monitor Pass, on 2 small grass lakes, *Ischnura cervula*, *I. perparva* and *Leucorrhinia intacta* were collected, for new county records and *Lestes dryas*, *Leucorrhinia hudsonica* and *Libellula quadrimaculata* were also collected. *A. abbreviatum* and *E. anna* were collected in Mono County.

The post-meeting expedition was headquartered in various motels at Bishop, in Inyo County. Monday morning saw nets swinging at every wet spot within 30 miles. The species that were seen or collected in

Inyo County were: *Amphiagrion abbreviatum*, *Argia alberta*, *Argia emma*, *Argia sedula*, *Argia vivida*, *Enallagma anna*, *Enallagma carunculatum*, *Hetaerina americana*, *Ischnura barberi*, *Ischnura cervula*, *Ischnura denticollis*, *Ischnura perparva*, *Telebasis salva*, *Aeshna multicolor*, *Anax junius*, *Erythemis collocata*, *Libellula composita*, *Libellula forensis*, *Libellula nodisticta*, *Libellula quadrimaculata*, *Libellula saturata*, *Libellula subornata*, *Ophiogomphus morrisoni*, *Pachydiplax longipennis*, *Pantala flavescens*, *Pantala hymenaea*, *Progomphus borealis*, *Sympetrum corruptum*, *Sympetrum corruptum*, *Sympetrum occidentale*, *Tramea lacerata*, and *Tramea onusta*.

Most of the collectors also made the trek over the White Mountains on the steep and curvy Hwy 168, to Deep Springs Valley. Some also visited the ancient Bristle-cone Pines that are growing in the mountains. One of the few known *Cordulegaster deserticola* sites is Antelope Springs, on the north side of Deep Springs Valley. Many specimens of this beautiful species were photographed and collected. Larvae were collected by Ken Tennessen, and he reports several morphological differences between *C. deserticola* and the closely related *C. dorsalis*. Adults were also seen flying and many exuviae were collected at Batchelder Springs.

At last count there were 65 people and one dog, from 16 states and Argentina, in attendance at the 2003 DSA Meeting: Ken Tennessen, Steve & Mary Jane Krotzer from Alabama, Natalie von Ellenrieder from Argentina, Doug Danforth & Rich Bailowitz from Arizona, George & Phoebe Harp from Arkansas, Andy Lazere, Andy Rehn, Bob Behrstock, Bob Parks, Bruce Deuel, Bruce Webb, Chris Anderson, Don Mitchell, Douglas Vaughn, Doris Kreschmer, Heather Hacking and friend, Kathy & Dave Biggs, Kathy & Kit Crump, Liz Cooper, Ray & Steven Bruun, Rod Miller, Rosser & Jo Garrison, Sandra Huwe, Lois Taylor, Steve Lindley, Terri Gallion & Jenna (her guide dog), Tim Manolis, Tom & Jo Heindel all from California, Jerrell Daigle from Florida, Steve & Marcia Hummel from Indiana, Roy Beckemeyer from Kansas, Blair Nikula & David Allan Fitch from Massachusetts, Mike May from New Jersey, Nick & Ailsa Donnelly from New York, Duncan Cuyler from North Carolina, Jim Johnson, Ron Lyons & Steve Valley from Oregon, John Abbott, John Morse, Linda Sharp and husband, Omar Bocanegra, Ryan Caesar & Sid Dunkle all from Texas, Erik Pilgrim & Heath Ogden from Utah, Dennis Paulson, Molly Hukari, Mike Kasprzak, Betty & Jessica Williams from Washington.

I think the meeting was judged a success by all those who attended. Some species that were hoped for, were not seen, but almost everyone saw some new ones. Stories that are told and re-told always come out of these meetings. My favorite from this one is about Jerrell Daigle, who navigating for Ken Tennessen on their drive west, invented a new unit of measurement, "the Double Knuckle", for estimating distances on a map. No one is sure how many miles a double knuckle represents, but navigating has been redefined as "Daigleing".

We owe a special thanks to Dave and Kathy Biggs, Tim Manolis and Andy Rehn for organizing and hosting the 2003 DSA Meeting. They did a great job!

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**2003 EGLIN AFB, FLORIDA MEETING**

**Jerrell J. Daigle and Theresa Thom**  
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Last year the 2002 Southeast Regional Meeting was held at Eglin Air Force Base in Niceville, Florida (See ARGIA 14:2). It went very well, and we decided to have it again this year (April 11-12) after the MOAB (Massive Ordinance Air Burst) bombing tests!

Attendees included Theresa Thom (our host), Don Ray, Frank Butera, Johnny Richardson, Emily Springer, Mike Heyn, Manny Pescador, Andy Rasmussen, and Jerrell J. Daigle from Florida. Carl Cook came down from Kentucky. Steve Krotzer, Paul Miliotis, and Ken Tennessen followed him from Alabama. This year's snowbirds were Ailsa and Nick Donnelly plus Peggy and Fred Sibley from New York, and Dan Bogar from Pennsylvania. Jim Johnson traveled from way out west in Washington! We had a much larger turn out than last year, and everyone was eager for new Eglin adventures!

Our main goal was to help Theresa, the base aquatic biologist, with her ongoing invertebrate species level inventory for Eglin AFB. For the weekend we were focused on Odonata, with our senses especially tuned to look for adults of the new Florida *Ophiogomphus*. We were able to double last year's species total, add new species records and verify collected specimens including *Gomphaeschna antilope*, *Nannothemis bella*, *Helocordulia selysii*, *Libellula flavida*, *L. semifasciata*, *Enallagma dubium*, *E. weewa*, *Nehalennia gracilis*, and *Argia bipunctulata*.



We enjoyed good weather, and an amazing landscape including the largest contiguous old-growth longleaf pine (*Pinus palustris*) ecosystem left in the Southeast! We sampled near streams like Turkey Creek, which provides habitat to the federally endangered Okaloosa Darter (*Etheostoma okaloosae*). The ecosystem management on Eglin has helped protect and maintain habitat for many state and federally threatened and endangered species as well as rare species including dragonflies like *Ophiogomphus* and *Cordulegaster*. Which reminds me, Dan Bogar informed me he got the rare *Cordulegaster sayi* in the nearby Blackwater State Forest after the meeting.

We went back to a good site for *Ophiogomphus* larvae. The habitat is sandy oak and pine uplands with the small sandy clear seepage streams averaging about 18 degrees Centigrade. The larvae were found in areas of pea-sized quartz gravel, the gravel having a slight greenish tinge. We were able to dredge and return many *Ophiogomphus* larvae. Jerrell earned the "Ophiogomphus of the Year Award" as he collected a mature female adult in the field, the only one seen. We were evidently too early or too late in the year to find them swarming but we will try again next year. Luckily, Theresa had reared a few adults in the lab so we had several specimens to compare. It appears to be related to an undescribed *Ophiogomphus* species found in southern Alabama, but we are still studying the specimens.

During our weekend adventure, we were lucky enough to explore a beautiful seepage slope with several species of pitcher plants (*Sarracenia leucophylla*, *S. flava*, *S. purpurea*, *S. rubra*), other carnivorous plants (*Drosera intermedia*, *D. tracyi*, *D. brevifolia*) and some terrestrial orchids. We found *Libellula flavida*, *L. semifasciata*, and *Argia bipunctulata*. Steve Krotzer got a glimpse of a possible *Cordulegaster sayi* but it got away. We also discovered a slender glass lizard (*Ophisaurus attenuatus*), which complimented our Eastern glass lizard (*O. ventralis*) sighting at Anderson Pond last year.

Of course, a Dragonfly Society Meeting wouldn't be complete without mentioning local cuisine. We dined at a local Mexican Restaurant one night, and the following evening we ate at Theresa's favorite, Nida's International Cuisine, which specializes in Thai food – although they make fantastic apple pie! While we discussed the day's events over dinner, Carl Cook informed us that he would like to host the 2004 Southeast Regional meeting in Kentucky at Mammoth Caves State Park. He said he would

make the official proposal at the 2003 SE Regional meeting in LaFayette, Georgia in May.

All in all, it was a great trip! We saw new habitats, added another *Ophiogomphus* site, and met new friends! Although we couldn't get anyone to swim in the hotel pool, our trip overall was a success. Our thanks go to Theresa Thom for organizing the survey and for guiding us on Eglin. We plan to help again next year amidst swarms of *Ophiogomphus* and *Cordulegaster*!

Aloha! See you all next year!

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2003 SE MEETING AT LAFAYETTE,  
GEORGIA

Jerrell J. Daigle, Bill Mauffray, and Giff Beaton

The 2003 Southeast Regional Meeting was held at the Key West Inn in LaFayette, Georgia, from May 23-24. It was followed by a sidetrip to northern Georgia led by Giff Beaton on May 25. Despite cool temperatures and heavy rains earlier in the week that raised the stream levels, we were very successful in our collecting efforts and we all had a great time!

Attendees included Giff Beaton (our pilot host and guide) and Marion Dobbs from Georgia plus Bill Mauffray, Jeff Biller, and Jerrell J. Daigle from Florida. Carl Cook came down from Kentucky, followed by Sandy Garrett and Dave Wagner of Tennessee. Pamela Bryer burned the midnight oil driving from South Carolina! Happy camper Jason Bried came from Mississippi. Steve and Mary Jane Krotzer drove over from nearby Alabama. But the real snowbird was Mike Thomas from snowy Connecticut! He was followed by the Birdman of California, Bob Behrstock! A truly great group of enthusiasts, all ready for aerial adventures!

The purpose of our trip was to help Giff, Bill, and the Georgia Dragonfly Survey group conduct a species level inventory for 3 sparsely surveyed counties in extreme northwest Georgia. We were able to add 11 new records for Chattooga County, 19 records for Dade County, and 38 records for Walker County! At the same spot, two new state records (*Arigomphus villosipes* and *Lestes eurus*) were collected by our merry band! Second state records included *Sympetrum semicinctum*, *Calopteryx angustipennis*, and *Gomphus lineatifrons*. Other notable species included *Enallagma dubium*, *Gomphus consanguis*, and *Libellula axilena*.

Friday morning dawned cool and cloudy which is not a great start, but after a quick breakfast in a very smoky Huddle House, the weather didn't seem so bad. Our plan was to split the group for the morning with most of the people going to a known *G. consanguis* site in Chattooga County and the rest hitting a part of southern Walker Co fairly close by. It was still cool but the clouds were beginning to clear as we hit the first spot, Teloga Creek, and we eventually located a number of teneral *G. consanguis* along with a few other species. As we were leaving, we stopped at a nice stream crossing right at the Walker County line and Bill snagged GA's second *G. lineatifrons*, the first adult ever. The Walker people had some success in Johns Mountain WMA that morning, including a couple of county records.

After the group met to compare notes, we headed farther into Walker County to Cloudland Canyon State Park, which offered another high elevation stream and pond for diversity. The stream didn't really produce much, still very high from several days of rain, but the pond was a bonanza! After Bill alertly realized there was an *Arigomphus* cruising around, knowing that only *A. pallidus* was recorded from GA but shouldn't be here, we pretty much circled this small pond with nets. Mike finally nabbed it and we realized it was a first for GA *A. villosipes*. Giff snagged the *L. eurinus* here also, another first for GA. Yet another great find was *E. dubium* by Jerrell, way out of its normal range. We had about 29 species here, many of them county records.

We then headed west to Lookout Creek in Dade County (counties are small here!) and found several more *G. lineatifrons*, including one very cooperative male photographed by many. Steve also found a female *Calopteryx angustipennis*, GA's second record. On the way back to LaFayette we stopped at a lake up in Walker but didn't find anything significant. Totals for the day were 21 damselflies and 19 dragons.

On Saturday we decided to spend the day in Walker County, and split to start again. One group went south to look for *G. consanguis* in that county (unsuccessfully) but found many good species at a new site consisting of several fertile ponds and a small river. The best find was by Sandy and Jerrell who collected several teneral *S. semicinctorum*, GA's second records. We also found teneral *Stylogomphus albistylus* and *Celithemis verna* here. Meanwhile, the other group did find several *G. consanguis* for Walker, and then we all met at Pilcher Ponds back in Johns Mt WMA. In a scene eerily reminiscent of yesterday, we found two *Anax*

*longipes* cruising a tiny pond, and ringed the pond with nets in a futile attempt to catch one (much to the amusement of the observers). To Bill's surprise, we also had several *L. axilena* here, a good find for this part of the state.

We then all went to yet another stream and found more *G. consanguis* and *G. lineatifrons* along with a fairly irate landowner carrying heavy artillery. We beat a hasty retreat from there but stopped by a lake and a couple of ponds without really getting anything noteworthy. The totals for the day were 19 damselflies and 30 dragons.

On Sunday, most folks had to start heading home, but Giff, Mike and Pam headed east to Murray County to check out the Conasauga River. We found many more *C. angustipennis* and some other notable species like *Tachopteryx thoreyi*, *S. albistylus*, *Cordulegaster bilineata*, and *Helocordulia uhleri*. The morning's totals were 6 damselflies and 12 dragons, giving us a weekend total of 25 damselflies and 35 dragonflies.

We ate at the Italian restaurant one night, and a fancy family restaurant the other. Bill even sang a duet with the blond torch singer. Earlier in the evening, we heard Carl Cook present his proposal for the 2004 SE Regional meeting. It will be held at Mammoth Caverns State Park in central Kentucky sometime in June. The dates have not been set, but it will not conflict with the early July National DSA meeting in Iowa. Needless to say, we all voted and accepted Carl's proposal!

All in all, it was a great trip! We saw beautiful forests, rare odonates, and made new friends with shared interests! Our thanks go to Giff Beaton and Bill Mauffray for organizing the survey and acting as guides. We hope to help them again in the future, especially to document seasonal changes.

Aloha! See you'll at the SE meeting in Kentucky next year!

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## **DRAGONFLY DAYS, 16 - 19 May 2003**

**Joshua S. Rose**, Duke University Department of Biology

Dragonfly Days was, as usual, lots of fun! I arrived Friday evening at the Valley Nature Center in Weslaco. The ode highlight of the weekend was already there waiting for me! Within minutes of my arrival, VNC naturalist Martin Hagne showed me a great digital photo he had taken at the VNC's artificial seep-pond of a male Amberwing. We went

out and saw two of them, patrolling and fencing for territory in the shade, which is not usual for Eastern Amberwing. Eventually Sid Dunkle arrived and confirmed that at least one of the critters was a Slough Amberwing (*Perithemis domitia*)!

I gave the opening talk, on tips for odonate identification and gender differences in the Odonata, and we all spent some time socializing. We also checked out the silent auction, which included an odonate DVD and poster, a Southwest Airlines trip, and various other goodies. The next morning we gathered at 8 AM for the field trips to begin; we started by filing out behind the VNC and showing everyone the Amberwings, and discussing how to distinguish Slough from Eastern.

Then we headed to Llano Grande, the tract formerly known as the Mercedes Tract of the Lower Rio Grande Valley National Wildlife Refuge. It was cloudy and breezy, and as cool as 90-plus degrees can ever get, so odes were thinner than usual. There were lots of Eastern Amberwings (*P. tenera*) of both genders lurking in the grass, along with several female/immature Blue Dashers (*Pachydiplax longipennis*). We had a nice comparison of a Hyacinth Glider (*Miathyria marcella*) with a Red Saddlebags (*Tramea onusta*) as both foraged on the downwind side of a large isolated mesquite tree. A few Roseate Skimmers (*Orthemis ferruginea*) and Red-tailed Pennants (*Brachymesia furcata*) patrolled the edges of the pond. We scared lots of damsels out of the long grass, all apparently either Familiar Bluet (*Enallagma civile*) or Rambur's Forktail (*Ischnura ramburii*), and we observed mating pairs of both. Perhaps the most exciting insect wasn't even an odonate, but an ode-like Owlfly (order Neuroptera, family Ascalaphidae) on a dead weed stem, doing its best impression of a thorn! We also saw some good birds, a Green Kingfisher and Yellow-crowned Night Heron along the pond, and a trio of American White Pelicans soaring overhead.

Next stop was the Edinburgh Scenic Wetlands. We were invited in to the new World Birding Center building there, which was beautiful! Exhibits, a gift shop, fish tanks; banners with the Edinburgh official city bird, flower, butterfly, and yes, even dragonfly! And huge windows looking out on feeders, wetlands, and butterfly plantings. The plantings are young, but the whole place promises to be spectacular in 2-3 years. And the WBC had constructed a dragonfly pond, which was swarming with activity! More dashers and Roseates, all three pondhawks (*Erythemis simplicicollis*, *plebeja*, and *vesiculosa*), Four-spotted Pennants (*B. gravida*), and the always-popular Thornbush Dasher

(*Micrathyria hageni*). The only negative was that there were SO many dragonflies, they were constantly chasing each other, it was difficult to isolate or point out to others any one individual!

We returned to the VNC that afternoon for a series of talks. First up, we all watched Dustin Huntington's video, "Dragonflies of New Mexico", which had lots of drool-inducing shots of a variety of species, many of which also occur in the LRGV: <http://www.imunu.com/> Terry Fuller followed up with a slide show on damselflies of the LRGV, including a highly detailed review of odonate anatomy, right down to the different pleural sutures, and dazzling photos of all the local species. Carrie Cate closed the afternoon session with a talk that expanded the topics into birds, mammals, reptiles, and her specialty the spiders. And, after the festival banquet, Sid Dunkle delivered the keynote talk, including some jaw-dropping photos of naiads of several species!

The last day of the festival opened at 8 AM again, at which point we all drove over to Anzalduas County Park. We immediately started spotting clubtails, and continued to do so our whole time there; one area of riverside trees had dozens of them in the treetops! And astonishingly, the most common species appeared to be Five-striped Leaf-tail (*Phyllogomphoides albrighti*)! We also saw several Russet-tipped Clubtails (*Stylurus plagiatus*), including a mating pair, and a few Narrow-striped Force-tails (*Aphylla protracta*), and I netted one critter that Sid confirmed in the hand as a Broad-striped Force-tail (*A. augustifolia*). A couple of Prince Basket-tails (*Epi-theca princeps*) cruised over our heads. The low brush and reeds along the river was well populated with Black Setwings (*Dythemis nigrescens*) with a few Needham's Skimmers (*Libellula needhami*) and American Rubyspots (*Hetaerina americana*), while the shorter mowed grass higher up harbored Powdered and Blue-ringed Dancers (*Argia moesta* and *A. sedula*). A couple of Smoky Rubyspots (*H. titia*) lurked in some riverside woods; the edge of these woods provided our only Dusky Dancer (*A. translata*) of the weekend, while a leafless tree in the sun down the river a bit added a pair of Marl Pennants (*Macrodiplax balteata*).

Our last field trip spot was Santa Ana NWR, but we had so much fun at Anzalduas that we arrived at SANWR late and had little time to look around. It was enough time to add one new species to our list, though: Chalky Spreadwing (*Lestes sigma*), lurking in the grass along the irrigation ditch.



Billy and Sue Snider had to cancel their "Pond Talk" on short notice due to a family emergency, but a local landscaper filled the last-second void by fielding lots of questions and displaying several books on construction and maintenance of backyard ponds, streams, seeps, waterfalls, and even bogs. And Mike Hannisian closed the festival with a review and critique of current odonate videos, and some discussion of technological advances and suggestions for the future.

I had a few hours to kill after the festival. My first stop was the new Weslaco Thicket, operated by Frontera Audubon, but this was closed. I headed instead to the Rio Rico Bluffs, along the Rio Grande southeast of Weslaco, where I found huge shoals of Water Hyacinth and commensurately large numbers of Hyacinth Gliders, mostly feeding along bluff-top roadside trees. I also had a Prince Baskettail perch on a branch below me as I stood on an irrigation ditch retaining wall; not the view you usually get of this species. I finished by visiting a reservoir near Feria and driving down Cannon Road through a large area of NWR tracts; no new odonates along here, but I did enjoy beautiful views of three different White-tailed Kites.

One of the biggest surprises of this year's festival was the upgrades to the Valley Nature Center. I wound up spending over \$100 in the gift shop, as they not only had the Dunkle and Stokes guides, but Jill Silsby's "Dragonflies of the World", both Tim Manolis' and Kathy Biggs' California guides, and one I'd never seen before, "A Guide to Common Freshwater Invertebrates of North America" by J. Reese Voshell Jr. (I also couldn't resist "Field Guide to the Grasses, Sedges, and Rushes of the United States" by Edward Knobel). Their displays looked cleaner and more interesting; even the air conditioning seemed to work better. They've also upgraded their website: <http://www.valleynaturecenter.org/index.html> And, in addition to having Slough Amberwings outside, the lone Yellow-crowned Night Heron nest from two years ago has grown to a rookery of 8 nests!

The VNC has already formed a committee to organize next year's Dragonfly Days festival, so hopefully the events will be scheduled and advertised much further in advance. I'm already looking forward to it... Joshua S. Rose (Zoology, R.I.P.)

**THIRD ANNUAL DRAGONFLY FESTIVAL,  
ROSWELL NM, 23-24 AUG 2003**

Information on the third annual dragonfly festival in New Mexico can be found at their website: <http://www.rt66.com/~kjherman/fbl/df.html>

**DOWN UNDER AGAIN -- DROUGHT,  
DRAGONFLIES, AND WDA**

**Dennis Paulson**

Having spent a wonderfully productive month for dragonflies in Australia in 1998, I might not have returned to the same haunts within four years except that the Worldwide Dragonfly Association had its third international symposium there in January 2003, and the chance to attend the symposium and see so many friends and colleagues as well as get in some more time in one of our favorite countries couldn't be ignored.

Netta and I knew before we came that Australia was in the grips of an almost unprecedented drought, with bush fires and drying wetlands featured in the daily news. I e-mailed several of our destinations in mid December and learned that the rains still hadn't come, bad news for dragonflyers, but we were committed to the trip and soon lofted across the Pacific.

Our first stop out of Cairns was at the Clohesy River, where the normally flowing river was reduced to isolated pools. Few odonates were in evidence, but *Rhyothemis braganza*, a species of which we had seen only two individuals in 1998, was present in little feeding swarms over the river. It remained common over a large area in Queensland where we hadn't seen it on the previous trip, perhaps a sign of the end of the dry season (the rains were on time and in abundance four years earlier). The condition of the river was discouraging, yet on our very next stop, at Granite Creek in Mareeba, the creek was full to its banks and the odonates were diverse and abundant (in fact, our largest species list - 19 - of the whole Cairns area). Granite Creek proved to be the exception, as most of the other spots we revisited were depauperate in comparison with 1998, with fewer species and distinctly fewer individuals. Most of the previously flooded swamps and marshes where we had found many interesting odonates were dry. Both the ongoing drought and lack of this season's rains played their parts.

Mount Lewis, near Julatten, was one of our favorite localities in 1998, when we found 11 species there with only moderately good weather. This year again we had similar weather, but instead we found only three species. In 1998, we saw a small variety

of Anisoptera (including the spectacular *Petalura ingentissima* and *Austroaeschna weiskei* and the new species *Eusynthemis netta*), but this year we saw not a single member of this suborder except one corduliid that flitted by. We explored one new stream, quite picturesque and rich-looking, but it had only *Diphlebia hybridoides* and *Lestoidea lewisiana*. These are two lovely damselfly, don't get me wrong, but we had seen plenty of them in 1998, and rarer species that we sought just didn't show themselves.

Everywhere we went there were fewer odonates than before, and at open-country streams near Mount Carbine, stream species were almost replaced by pond species using the disconnected pools. One thing I learned was that *Diphlebia* is the quintessential stream dragonfly of the dry season. At several beautiful forest streams in the Daintree River area and on the Atherton Tablelands, *Diphlebia euphaeoides* (a damselfly looking like a blue, black-winged gomphid) was the only odonate evident, although fairly common. Without doubt, *Diphlebia* ought to be the Australian national insect!

The Atherton Tablelands is one of the garden spots of northern Queensland but one that we still haven't adequately sampled for Odonata. On our previous visit, we had bad weather, and this year, although the weather was good, our karma wasn't. Some of the good-looking forest streams we visited there were entirely lacking in odonates, a new experience for me. The dry country west of the tablelands was much better, and Archer Creek was another good locality, with much diversity of both stream and pond species. One interesting spot was Innot Hot Springs well to the west of the tablelands, where common species such as *Diplacodes haematodes* and *Orthetrum caledonicum* were not only flying over water too hot for me to walk in but also ovipositing in it.

As we visited numerous wetlands in several areas, it became obvious that the Northern Queensland species fell roughly in two groups: (1) widespread open-country species that were about as common as they had been in 1998, and (2) rain-forest species most of which were absent. It seemed clear that either the latter group were away from the water and waiting for the rains, or - worse - that the drought had diminished populations of many of them. Only time and future visits will tell.

Our best dragonflying in Queensland came when we flew to Bamaga, at the tip of the Cape York Peninsula. We had always wanted to visit this fabled finger of Australia pointing straight at New

Guinea's underbelly, and our excitement was tempered only by the continued tardiness of the rainy season. Our hotel, the Resort Bamaga, was right on the shore of a large dam (dammed stream), so odonates were a constant feature of our stay there. The first thing I saw when I walked to the water was that the iridescent blue-winged *Rhyothemis resplendens* was the most common dragonfly, males at the tip of branch after branch along the shore. This was *Rhyothemis* heaven, in fact, with *R. graphiptera*, *R. phyllis*, and *R. princeps* also present. The dam and its outlet stream produced 31 species in the three days we stayed there, and other nearby wetlands added others, including numerous species I hadn't seen before. Each evening the dusk-fliers came out - *Tholymis tillarga*, *Zyxomma elgneri*, and *Z. petiolatum* - sorely taxing our netting ability as they rocketed along the shore in the dim light. I was fascinated by the variable wingtip color of the *Zyxomma*, from clear to spotted, and finally saw the odd twisting oviposition behavior of *T. tillarga*.

After a disappointing start in the Cairns area, we finally found some unexpected species at Bamaga. I discovered that what looked like a pruinose blue *Orthetrum sabina* was in fact another species, *O. balteatum*, and I quickly named it "Elusive Skimmer" because I was not able to capture one, try and try as I might, until just before we left the hotel. When I went back to the water for one last attempt, two males flew by in quick succession, both netted! What was my problem before?

At a small stream through sandy woodland, bordered by *Nepenthes* pitcher plants, we found two tiny red dragonflies that keyed to the smallest anisopteran, *Nannophya pygmaea*. Unknown from Queensland, it had been reported from the Northern Territory, and I was satisfied with the identification until I added them to my collection with the other *N. pygmaea* and immediately realized they were quite different and clearly no described species. Correspondence with Günther Theischinger resulted in his discovering that the Northern Territory "*pygmaea*" in the Australian National Insect Collection were of the same species. With much more abundant material, he will be describing it, just in time for the new Australian Odonata guide. A dark little protonetid, *Nososticta fraterna*, was abundant at a clear sandy stream called "Blue Hole" south of town, another new record for Queensland.

We ended up collecting specimens of 80 species of dragonflies, not so bad but a come-down after finding 136 species on our previous trip, when I felt we had fabulous luck everywhere we went.

After Bamaga, we flew to Sydney and drove to Deniliquin, in dry western New South Wales, where we spent a day with the legendary Phil Maher, a guide who took us out for one of the best birding days I've ever had. A special thrill was seeing our first owl-nightjar and three new species of shorebirds, including the nocturnal and elusive Plains Wanderer. We showed Phil a few dragonflies, including a presumed migratory assemblage of *Hemicordulia tau*, and encouraged his desire to learn more about the group.

We then drove to Beechworth, in northeastern Victoria, where the WDA symposium was just starting on the campus of La Trobe University. I spent six days there, one of which was an all-day field trip, and reveled in dragonfly discussions day in and day out. Meeting attendance (about 60 participants) was limited by the distance of Australia from the centers of odonatologist abundance in western Europe, Japan, and eastern North America, but there were people from all continents except the richest (South America) and the poorest (Antarctica) for dragonflies. One of the most delightful things about the campus was the little garden pool at our hotel that always had a half-dozen odonate species hanging around it and usually about that many photographers.

Presentations at the meeting were all interesting and informative, with paper sessions on adult behavior and physiology, Australian and African biodiversity and conservation, larval ecology and behavior, landscape ecology and odonates, and phylogeny and morphology. The plenary session chaired by Philip Corbet dealt with the very different subjects of ecological partitioning of Odonata along a watercourse and affinities among Gondwanaland relict Odonata. Ecological partitioning generated a spirited discussion of exceptions, resulting in Philip asking that we please focus back on the "rules." The Gondwana discussion led to questions about exactly what groups make up that fauna.

Among the papers I found most interesting were Andrea Worthington's and Rob Olberg's discussion of prey-object size selection in foraging adult dragonflies; Andreas Martens' and Frank Suhling's account of odonate assemblages of temporary desert ponds in Namibia; Adolfo Cordero's work with female color morphs of *Ischnura elegans*; and the accounts by several Dutch workers of the admirable levels of research going into the understanding of their fauna and its ecological and conservation needs. Richard Rowe's video of aggressive behavior in some Australian damselflies

was merely quite amazing - and we think the adults are territorial!

Serious business intruded on the fun occasionally, and the presidency of WDA passed from Philip Corbet to our own Mike May during this meeting. The Odonata Specialist Group met several times, and the chairmanship passed from Jan van Tol to Viola Clausnitzer. The latest OSG report on regional Odonata conservation issues and strategies will hopefully be published by WDA within the year.

The future looks exciting, with planned WDA symposia at Vigo, Spain, in 2005, and Windhoek, Namibia, in 2007. The post-meeting field trip for Namibia would be a fantastic experience, and there are even some dragonflies to be seen. Hope you can make one or both!

I'll have to say the only painful part of the trip for me was Netta's leaving Beechworth and going off on her own expedition toward the Victorian Alps and coast. She had bad weather in the Alps, but it cleared up on the coast, and she managed to find easily one of the colonies of *Hemiphysalis mirabilis* in Wilson's Promontory National Park. My not being able to see this fabled and presumably relict species was the cause of considerable anguish, and we may have to return to southern Australia just for *Hemiphysalis*. At least I got to enjoy this little gem of a damselfly vicariously from her photos of it.

After the meeting, we headed quickly back to Sydney for our flight home, with one final stop to enjoy Aussie dragonflies on a small stream where I wondered if I was seeing my last *Synlestes* and *Xanthagrion*. But I think it's a matter of when, rather than if, we will return to this most exotic continent.

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## NORTHERN GREAT PLAINS - A SIDE TRIP ON THE WAY TO CALIFORNIA

### Nick Donnelly

Having decided to attend the California meeting (which was a huge success for us!), Ailsa and I planned our trip so that we could visit a cousin in Manitoba, and a son's family in Wisconsin. This mandated a northern route, instead of the more southerly routes selected by the other participants.

This was another moist year, and you could have fed the world just from Manitoba and North Dakota alone. Or so it seemed. But wheat fields are poor places to look for dragonflies.



We departed North Dakota at what is called Turtle Mountain, which is right on the border with Manitoba. In the northern plains, a "mountain" is a mesa rising a hundred feet or so above the fertile plain. Turtle Mountain has few farms and is an upland with marshy ponds surrounded by birch trees. (Very picturesque!) Having arrived early in the morning at a roadside pond, I was finding many *Coenagrion angulatum* and *Leucorrhinia borealis* (both new for me), and Ailsa was finding large yellow lady slippers which had been missed by the road-side mowing machines. A North Dakota patrol car pulled up behind us – an ominous sign. The policeman, however, thought we might have stopped for car trouble. When I showed him what we were doing, he told us that it would be far better a mile or so further, where a dirt road led to a wildlife management area. We gladly took his advice and had a wonderful few hours finding more of these northern species.

One of my objectives had been to find *Leucorrhinia proxima*, confusingly named the red-waisted white-face. To us in the east, this species is never red, but a pruinulent gray with a yellow base to the abdomen peeking beneath the frosty gray. I wanted to see what geographically intermediate specimens looked like. Ailsa took a mating pair, and I was pleased to see that the male was orange red at the abdomen base and not pruinulent at all; in other words, it seemed intermediate between the eastern and western forms. We also found *Leucorrhinia intacta*, and, later, *hudsonica*. Females of all four species seemed to show their mandibles readily, whereas the males kept their mouths tight shut. Have you noticed that the mandible tips of female *Leucorrhinia* are a brilliant red? I had never noticed this. Now why would you have red-tipped mandibles? Another question for someone to work on . . .

We headed into Manitoba and down off the not-very-precipitous mountain. Going north we passed through Riding Mountain National Park – a lovely forested mesa of much larger size. Reaching our cousin's house near Roblyn, we planned a day or so at Duck Mountain (another "mountain"!) Provincial Park, for which I had secured a collecting permit. The park was richly forested with several lakes and marshes, and we found more of the previous North Dakota species. *Cordulia shurtleffi* was abundant and was landing on the dirt roads, possibly another case of seeking warmth. But it was over 70 degrees (ours, not theirs), and the necessity for warmth did not seem very great. We also took *Epitheca canis* and *spinigera* along the road, along with a female of *Somatochlora kennedyi* that Ailsa found (we

were just at the beginning of the *Somatochlora* season).

We found two surprises in the park. One was *Ischnura damula*, which I had not realized is such a northerly species (this was nearly 52°). In fact, *I. cervula* and *I. damula* are the two most northerly *Ischnura* in the New World.

The second surprise was *Coenagrion interrogatum*, which I had seen singly several times previously, but never in the numbers we now found them. They were in a roadside ditch flying with *resolutum*, which was less common. A trip with three *Coenagrion* (all of which I photographed) ain't half bad!

We left through southeast Saskatchewan, where wheat fields gave over to strip mined coal. There were some good bugs at Moose Mountain Provincial Park, and I am certain we only scratched the surface.

The northern Great Plains are a seriously understudied part of North America. I urge any of you to visit this area, where, on both sides of the border, there are fine habitats interspersed with all that wheat. And it is a great place for birds. But that's another story.

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#### GATHERING USEFUL INFORMATION ABOUT THE SEASONAL ECOLOGY OF *ANAX JUNIUS*

Mike May and Philip Corbet

A large question mark hangs over the movements and destination of adults of *Anax junius* after they fly southwards from southern Canada and northern states of the US in fall. Likewise, little is known about the northernmost latitude in North America at which resident populations of larvae can overwinter. It is likely to take a very long time if such information is going to be accumulated solely by chance observations. Much better that a planned survey could be undertaken that offers a high likelihood of early success.

The knowledge that some populations of *Anax junius* (occupying the same pond) have two components, one resident and one migratory, derives from a classic study by Robert Trottier in southern Ontario (Trottier 1971). This elegant, quantitative study left no doubt that two components, differing in larval growth rate and adult behaviour were coexisting. A large factor in the success of this study (apart from Trottier's skill

and industry) was the suitability of the study site for this kind of work. It is highly significant that Trottier delayed starting his field work for a worryingly long time (worrying for his supervisors as well as for him because it was his PhD project!), on the grounds that it would be fruitless to start unless he found a habitat that was likely to yield the needed information. His judgement in this matter was fully vindicated. As every field ecologist knows, the choice of a suitable habitat is crucial to the success of an investigation.

A habitat suitable for the elucidation of the seasonal ecology of *A. junius* should contain a resident (overwintering) population of larvae and be susceptible to regular sampling for larvae and F-0 exuviae. Such a habitat would reveal the existence of a migratory population if one existed there. The main differences between resident and migratory populations (based on the southern Ontario study) are as follows: The resident population overwinters as half-grown larvae and completes larval development in about 11 months, between mid July of one calendar year and late June of the next year. After emergence during late June and early July, adults return to the natal habitat to reproduce. In contrast, the migratory population completes larval development in about 3 months, between June and September. After emergence in August and September, adults do not return to the habitat.

Routine sampling of larvae and exuviae might also throw light on an abiding mystery: the appearance of (fresh) F-0 exuviae at some ponds in the northern US in April and the appearance of teneral adults in March. The reasons why these findings are so puzzling, besides being incompatible with Trottier's results are given on page 244 of Corbet's 1999 book. There's no doubt about the reliability of the records from March and April (made by Scott Wissinger and Hal White) but they do imply that a few F-0 larvae have been overwintering and that they have been able to complete metamorphosis at atypically low temperatures in early spring.

We see great promise in taking this project forward if suitable habitats, at different latitudes, and each associated with a keen observer, can be identified. Anyone who can help with this enterprise is asked to communicate with Mike May at [mimay@rci.rutgers.edu](mailto:mimay@rci.rutgers.edu), or John Abbot at [jcabbott@mail.utexas.edu](mailto:jcabbott@mail.utexas.edu). It would be gratifying indeed if, after so many years, the seasonal ecology of one of North America's best-known dragonflies could be elucidated.

## Reference

Trottier, R. 1971. Effect of temperature on the life-cycle of *Anax junius* (Odonata: Aeshnidae) in Canada. *Canadian Entomologist* 103: 1671-1683.

Note by MLM: Most of the preceding was written about a year ago by Philip (you'll recognize that inimitable Cambridge style), despite his having put my name first. I'd just like to add, on the basis of work last year and this spring, that the situation is probably complicated by year-to-year differences in *Anax* populations. This is accentuated by the fact that *Anax* do best in relatively small, fish-free ponds that are inherently unstable. I.e., they're prone to dry up completely or nearly completely during droughts and may be more subject to temperature fluctuations (which affect development) than large water bodies. Also, during cold, rainy springs like the one we've had this year in the Northeast, northbound migrants may have a hard time of it, so larval populations of migrants might fluctuate markedly for that reason. All this makes it harder to identify ponds that are consistently useful, and that fact makes it important to have a number of sites being surveyed. I've tentatively identified a site in MD (at Patuxent Refuge, where Richard Orr has been working for years) and another in FL that may be workable, but both are a bit iffy for various reasons. John Matthews, who is a student of John Abbot's at the U. of Texas, is currently looking ponds in Ontario, where Trottier worked, and in Texas. This approach has a lot of potential, despite its difficulties. I'm pretty sure that no one has studied the life history of any odonate species over a latitudinal and climatic range as great as that of *A. junius*, and no one has tied in phenology over such a range with migratory behavior. There's a chance to do something pretty unique here, if people can help us find additional suitable sites or even, if you're really interested and like working in mucky places on baking hot and miserably cold days, helping with

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## SHORT-TERM ECONOMIC TROUBLES AND THE POTENTIAL DESTRUCTION OF IRREPLACEABLE TAXONOMIC AND BIODIVERSITY TREASURES: THE UNIVERSITY OF NEBRASKA-LINCOLN CATASTROPHE

### Roy Beckemeyer

Catastrophe is looming in the heart of the country. In response to budget shortfalls, the Chancellor of the University of Nebraska has made a number of major cuts, including the scrapping of all research





single pursuit, showing it could combine different types of motion camouflage.

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**DIGITAL ODONATOLOGY IMAGING –  
WHAT MIGHT THE FUTURE HOLD?**

Roy Beckemeyer

Digital imaging has already impacted Odonatology significantly. Witness the Digital Dragonflies Web Site, and the great digital macrophotographs of odonates that are seen in increasing numbers. Canon and Nikon are both finally producing (almost reasonably-priced) digital camera bodies that will accept their 35 mm film format lens systems so that slide photographers are beginning to go straight to digital rather than scanning their slides.

At the risk of joining the ranks of the hundreds of writers who put out those forecasts of what our lives will be like in the future that prove to be so devastatingly inaccurate (remember the Sunday supplement and "Popular Mechanics" articles that predicted robots in the kitchen and automated cars that drove themselves?), I thought it might be interesting to speculate on where digital image technology might take Odonatology.

There are (currently very expensive) imaging systems on the market today that attach to a microscope and that can take pictures that are montages of separately focused images that result in a totally in-focus image of the subject. The system controls the fine-focus of the scope and uses image processing and automatic focusing technology to identify and merge successive in-focus portions of the image into one final picture. The results look very much like those scanning electron microscope pictures of insects - but much better, since they are in color and the subjects don't have to be specially coated. These systems can also be set up to provide dimensions of the object - that is, a set of numbers that give the three-dimensional coordinates of the object imaged. This allows you to build one of those three-dimensional computer-aided design (CAD) three-d images that can then be digitally manipulated on a computer screen. You can use your mouse to turn the image around and look at it from all sides and directions, digitally spinning it around. (Search the internet for virtual three dimensional images - the technique is used quite a bit in vertebrate paleontology to look at dinosaur skulls, for example.)

It can't be too far out to imagine this technology eventually being put together into a portable camera that you could take into the field, hand hold, and use to take pictures in which every part of the visual image is in focus, and in addition, to generate a virtual image that can be adjusted by a little button on the camera so that you can look at it from different angles. Combine this with a prerecorded set of images in a catalog, and image processing software, and the dragonfly (or bird, or butterfly, or flower, for that matter) could be automatically identified for you. (For the taxa that are difficult to tell apart without close inspection of genitalia or terminal appendages, a system on your microscope - or a close-up zoom lens on your camera - could do the same thing for critical parts of the dragonfly's anatomy, giving you a virtual image of the cerci, for example, and a comparison with the catalogue values of cerci geometry stored in the camera's memory to identify the specimen to species or subspecies level.)

Of course, all this would also include digital data attached to the images that would include GPS information on locality, including latitude, longitude, and elevation, that would also be tied to a geography catalog that would automatically enter political geographic information such as state and county, and directions on how to get to the place. The temperature, relative humidity, and solar radiation levels would have been attached to the data set by the sensors in the camera as well, and all this information automatically entered into your collection database by wireless transmission to your mainframe computer. Each image would also have little "buttons" which, when your mouse pointer was placed onto them, would produce a visual overlay or an audio pronouncement of the taxonomic information, place of collection, and so on. No need to ever write field notes, as you could have dictated them into the camera as you took the picture.

Well, that's enough prognosticating. Now, why in the heck did those slides I took of *Cordulegaster dorsalis deserticola* at Antelope Springs at the DSA meeting only include one that was focused correctly? Darn! And I thought I had those strobe flash settings figured out - that slide is pretty dark...

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**ILLOTUM THERMOMETER**

Kathy Biggs (from e-mail)

I've been watching the Cardinal Meadowhawks, *Sympetrum illotum*, for 6 years now on my



85 individuals on 28-May and 4-June, respectively. In the surrounding bottomland forests, the Swamp Darner population seemed sparse. Perhaps in the herbaceous ditch and moist-soil units they are taking advantage of the abundant open space resources not found in the enclosed bottomland. Indeed, at mid-morning one day in April I witnessed another Swamp Darner feeding swarm (but with far fewer individuals) along a sunny stretch of dirt road bordered by swamp forest on both sides. These large animals could be taking advantage of the greater space and perhaps higher prey concentration afforded by these open areas. But this still doesn't explain why such a high concentration on a single date. Even if 28-May was their flight season peak, the window of time between sampling visits seemed too narrow (i.e., as close as 6 and 7 days before and after) to account for such variation. Obviously these  $\pm$ 128 Swamp Darners weren't making an effort to avoid intraspecific competition. It seemed more the opposite. Have studies shown competitive facilitation within adult odonate populations? In other words, is there documented proof that individuals within a species work together to perpetuate their own population, such as by finding greater predator protection strength in numbers or by increasing foraging capacity?

Last summer in the delta, I observed a migratory swarm of *Pantala flavescens*, but that was different, though no less spectacular. Although I've limited experience studying the odonates, the high number of *Epiaschna heros* within a localized area seemed like an unusual and interesting occurrence. But I recognize that other people have probably witnessed (or know of someone who has, or, better yet, know of pertinent literature) similar activity, at least for other species, and I'd welcome any info, explanatory or otherwise. I'll be hitting the library in my spare time.

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#### **GENOMIC TISSUE LIBRARY OF ODONATA: A CALL FOR SPECIMENS**

**T. Heath Ogden and Michael Whiting**

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Website: <http://odonata.byu.edu>

Dragonflies and damselflies are among the most ancient of living creatures. Fossil records, representing possible ancestors and closely related groups, date to Carboniferous times (300 million

years ago) and were among the first insects to have taken flight. The majority of these lineages are now extinct and around 6500 species of Odonata survive today. Given the rate at which wetlands are disappearing, we have a unique opportunity to document the present odonate diversity in order to better understand and appreciate odonate and insect evolution.

We have begun an exciting, novel, and much needed project to store preserved specimens of dragonflies and damselflies for current and future molecular research. Our lab has successfully created the largest and most diverse genomic tissue libraries for Ephemeroptera (mayflies), Plecoptera (stoneflies), Dermaptera (earwigs), Grylloblattodea (icebugs), Mantodea (preying mantids), Phasmatodea (walking sticks), Mecoptera (scorpionflies), Siphonaptera (fleas), and Asilidae (robberflies), among other groups. We have facilities to store the tissue samples, extracted DNA template, and specimens for long-term scientific research. The tissues will be made available to other investigators for future studies under collection policies.

Although most odonates are collected and preserved using acetone treatment, we have investigated DNA yield for acetone preserved tissue versus alcohol (ETOH or other) preserved tissues, and our opinion and suggestion is that alcohol is superior for fixation and preserving tissue for DNA extraction. Even though some have shown that DNA work can be done from acetone dried specimens (only successful for multi-copy and/or mitochondrial genes), we want to have tissue that will be useful for all types of DNA analysis, including complete genome sequence recovery. We believe that this will enable all other researchers to have good tissue that may be worked on in future research. Therefore we would suggest that after collection, which can be done in the normal fashion (into envelopes), the specimens be fixed in alcohol as soon as possible. If you run into problems with shipping alcohol, we suggest emptying the container before preparing the package (a cotton ball soaked with alcohol may be placed inside the vial to maintain humidity). If you need any more assistance or would like us to pay the postage, please do not hesitate to contact Heath Ogden.

We have two immediate purposes for the obtained odonate specimens. First we want to investigate the relationships of the basal pterygote lineages (Ephemeroptera, Odonata, and Neoptera). The phylogenetic position of Odonata among the other orders has been controversial, and three main theories exist: (1) placement as sister group to Ephemeroptera (=Paleoptera); (2) placement as the most basal pterygote lineage; and (3) placement as sister to Neoptera. Second, we plan to address the







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Reference:

Donnelly, T. 2002. Dot-map project: patterns of  
diversity are emerging. ARGIA vol. 14, no. 2, pp.  
13-16.

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**BULLETIN OF AMERICAN  
ODONATOLOGY NOTICE: VOLUME 7,  
NUMBER 2:**

**REVISION OF THE ORDER ODONATA IN  
CUBA**

**Adrián Trapero Quintana and Carlos Naranjo  
López**, Departamento de Biología de la  
Universidad de Oriente

**ABSTRACT** An annotated list of 81 Odonata  
species from Cuba is herein presented, including 40  
collected by us (357 specimens) during a period of  
more than 10 years. Specimens are deposited in the  
Charles Ramsden Museum Entomological  
collection of the Universidad de Oriente.  
Ecological data, geographical distribution and new  
localities are included .

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**FREE ODONATA REPRINTS!**

Recently the Biological Society of Washington  
decided to get rid of all its copies of back separates,  
and as a consequence the Entomology Section at  
the National Museum received stacks of some old  
papers. In an effort to get these, and some others  
that have accumulated, into the hands of workers  
that might use them, they are being offered here  
(titles somewhat abbreviated).

Cockerell & Andrews. 1916. Dragon-flies from the  
English Oligocene. Proc. Bio. Soc. Wash,  
29:89-92.

Currie. 1903. The Odonata collected by Schwarz &  
Barber in AZ & NM. Proc. Ent. Soc. Wash,  
5:298-303.

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District of British Columbia. Proc. Ent. Soc.  
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West Indies. Smiths. Contrib. Zoology, 37

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Biol. Soc. Wash, 44:55-60.

Levine. 1957. Anatomy & taxonomy of the naiads  
of Plathemis. Smiths. Misc. Coll, 134.

Needham. 1903. A new genus and species of  
dragonfly from Brazil. Proc. Bio. Soc. Wash,  
16:55-58.

Needham. 1905. A new genus and species of  
Libellulinae from Brazil. Proc. Bio. Soc. Wash,  
18:113-116.

Anyone that would like to obtain a copy of any or  
all of these works should make their desiderata  
known to Oliver Flint by mail, e-mail  
<[flint.oliver@nsmnh.si.edu](mailto:flint.oliver@nsmnh.si.edu)>, or FAX 202-786-  
2894. Be sure to include your mailing address.

Oliver Flint, Entomology - MRC 169, National  
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**Bill Mauffray**, IORI, Gainesville FL, [iori@afn.org](mailto:iori@afn.org)

A new feature has been added to the worldwide e-  
mail directory on the IORI web site. You can now  
add your personal web page to the site. It must be  
Odonata related to be included. Please send me by  
e-mail your web site address. If the Odonata section  
is only part of a larger site, then you must provide  
the link that takes people to the Odonata portion of  
your web site. While you at it, please check to see if  
I have your correct e-mail address in the directory.  
If you have a "bio" page or a photo of yourself on  
the web, send me that link also.

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*Macromia magnifica*. We saw these at the California meeting (Photo by Rod Miller; used with permission)



*Gomphus lineatifrons* – Georgia DSA meeting. (Photo by Giff Beaton; used with permission)