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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. 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

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 <www.odonatacentral.com/dsa1/submission_guidelines.htm>. **ARGIA** submissions should be sent to John Abbott, Section of Integrative Biology, C0930, University of Texas, Austin TX, USA 78712, <jcabbott@mail.utexas.edu>; BAO submissions should be sent to Ken Tennessen, P.O. Box 585, Wautoma, WI, USA 54982, <ktennessen@centurytel.net>.

Front cover: *Ophiogomphus acuminatus* (Acuminate Snaketail) taken 31 May 2006 at Montgomery Bell State Park, Dickson County, Tennessee, by Richard Connors.

In This Issue

There are a lot of meetings and events coming up this spring and summer so mark your calendars! In addition to several regional meetings, there is of course the DSA Annual meeting in Springerville, Arizona, 27–31 July. I want to remind everyone that Ken Tennesen started a tradition last year in Kentucky where everyone who collects dragonflies, would bring Carl Cook a gomphid specimen. If you weren't there last year, Ken told a great story about Carl and why he thought this was a worthy tradition to begin. Perhaps he can re-tell the story in Springerville. A number of us are also heading to Swakopmund, Namibia for the 5th International Congress of Odonatology in April.

Dave McShaffrey takes us through his journey in search of James Needham's aerial net. I have not seen this net that now rests at the Archbold station in Lake Placid, Florida, but I will certainly make an attempt to do so in the future. Thanks Dave for sharing this neat story with us.


I am including an article Nick Donnelly wrote sometime ago for Bryan Pfeiffer's Boghaunter about rearing elusive clubtails. I am an aquatic entomologist and I don't do enough rearing, but Nick drives home how important and useful this can be to finding those rare, sought after species. Maybe his article will serve as inspiration for many of us.

Chris Hill follows up several articles on the usefulness of DNA in the last issue of ARGIA with a request to collectors to collect for the purposes of genetic analyses. Sue and John Gregoire contribute two articles in this issue. The first details the impressive emergence of *Celithemis elisa* (Calico Pennant) in the Fingerlake Highlands of New York (see the back cover photo). The second is their study

of *Anax longipes* (Comet Darner) emergence and realization that this species is expanding its breeding range.

Jerrell Daigle continues his work in the Florida Keys and provides an account of his most recent trip that involved a survey of Middle Torch Key where he found *Orthemis schmidtii* among other things. We have two contributions from the artistic side of odonatology. Ken Tennesen shares a poem he wrote and Jerry Hatfield recounts a song about dragonflies.

Doug Danforth whets our appetites for what we can expect at the DSA Annual Meeting, summarizing the new and unusual discoveries from Arizona in 2006. A number of states add species to their known faunas in this issue. Alan Myrup has started looking at the Utah fauna and has found several interesting records including *Perithemis intensa* (Mexican Amberwing) which is new for the state. John Muddeman found *Erythemis vesiculosa* (Great Pondhawk) on two different trips to the Galápagos Islands. These are apparently the first confirmed records of this species in that archipelago. Richard Connors reports *Somatochlora elongata* (Ski-tipped Emerald) and *Enallagma durum* (Big Bluet) from Tennessee, both representing new species for the state. Jeff Lubchansky reports the first record of *Enallagma basidens* (Double-striped Bluet) in Nevada. And finally Ann Johnson recounts several new county records for Iowa.

I review Giff Beaton's new book on "The Dragonflies and Damselflies of Georgia and the Southeast." This is a must buy for anyone living in or planning on visiting the region. It fills a large gap in the coverage of available field guides. I also briefly mention several other books that have recently been published. 

Calendar of Events for 2007

For additional information, see <<http://www.odonatacentral.com/dsa1/meetings.htm>>.


Event	Date	Location	Contact
WDA International Congress	16–20 Apr	Swakopmund, Namibia	< http://wda2007.tu-bs.de/ >
Dragonfly Days	17–20 May	Weslaco, Texas	< http://www.valleynaturecenter.org/ >
NE Regional	21–24 Jun	Sussex Co., New Jersey	< http://www.njodes.com/DSA/default.htm >
SE Regional	5–8 Jul	southwest Georgia	Giff Beaton < giffbeaton@mindspring.com >
DSA Annual	27–31 Jul	Springerville, Arizona	Jerrell Daigle < jdaigle@nettally.com >
CalOdes Blitz III	11–12 Aug	Owens Valley, California	Kathy Biggs < biggsnest@sonic.net >
Aeshna Blitz	24–26 Aug	McKenzie Pass, Oregon	Steve Valley < svalley2@comcast.net >

2007 Northeast Regional DSA Meeting, 21–24 June

Ann Johnson, Norwalk, IA 50211, <aj@hologrambirds.com>

The bug watchers of New Jersey are pleased to be hosting the 2007 Northeast Regional meeting of the Dragonfly Society of the Americas 21–24 June. After a bit of a false start, the details seem to be falling in place for the meeting which will be held in Newton, New Jersey. Sussex County holds the longest list of Odonata of any county in the country and currently stands at 145. Field trips to various locations and habitats will focus on finding as many of these as possible. Who knows—maybe this fine group can help add a new one.

In order to have a meeting room for any presentations, we encourage people to reserve their lodging from a block of rooms being held at the EconoLodge of Newton, the headquarters for the meeting. These rooms will be held until 30 May, although the motel is asking that participants register ASAP so they will have the correct room type for you.


Details and a registration form can be found on the New Jersey Odes Web site, <<http://www.njodes.com/DSA/default.htm>>. 

2007 Southeast Regional DSA Meeting, 5–8 July

Giff Beaton, <giffbeaton@mindspring.com>, (678) 428-2328

The Southeast Regional DSA meeting for 2007 is going to be a really hot meeting . . . as in south Georgia in July! Come on down for some southern charm as we do some mid-summer exploration of this poorly-known area of southwest Georgia from 5–8 July! We will base the meeting in Bainbridge, and will be searching for several species of *Somatochlora* (Emeralds), and anything else we can find. One of the days will be spent at a really nice diverse Nature Conservancy property in nearby Early County, home of the still puzzling *Ophiogomphus* (Snaketails) from the last two years (although they will not be flying when we are there, lots of other species will be). Our lodging

will be The Jameson Inn in south Bainbridge, with details on the location at the Web site <http://www.jamesoninns.com/Hotel_Detail.asp?ID=9>.

Room rates for us are \$67 per room per night, which includes breakfast, and we have a block of rooms reserved under “DSA” so ask for that rate. The reservation number is 1-800-JAMESON (800-526-3766). Please let me know if you are coming, and once you have made your reservation. 

DSA/CalOdes Blitz III: 11–12 August 2007 in the Owens Valley

Kathy Biggs, Sebastopol, CA 95472, <bigsnest@sonic.net>

The third DSA/CalOdes Blitz will be held 11–12 August in the Owens Valley. Most of us will camp near Bishop; but nice and also inexpensive motels are available there too. Some folks will want to be there the 10th through the 12th or beyond. We’ll be working on the eastern edge of California accessing both desert and high mountain climates that are within a half hour of each other in this part of the state.

Highlights will include the desert form of the Pacific Spiketail (*Cordulegaster dorsalis deserticola*), Bleached Skimmers (*Libellula composita*), Desert Whitetail (*Plathemis subornata*) and we hope to add some new mountain species for the counties of Mono and/or Inyo. We also hope to re-find the Blue-ringed Dancer (*Argia sedula*) that

John Abbott found during the DSA Annual Meeting’s post-meeting trip there in 2003. This will be a wonderful opportunity for folks newly into Odes to get to know the species side by side with the “experts.” The Owens River’s water is running. For about 50 years, it was diverted for use Los Angeles. It will be interesting to see what species have found this resource.

Nearby are the White Mts. with their famous ancient Bristlecone Pines and a little further off, Yosemite.

For more information, contact Kathy Biggs <bigsnest@sonic.net> or Doug Aguillard <doug@basiclink.com>. 

Great Lake Odonata Meeting (GLOM)

Bob Glotzhober, Senior Curator, Natural History, Ohio Historical Society, Columbus, Ohio, <bglotzhober@ohiohistory.org>

The 2007 Great Lake Odonata Meeting (GLOM) will be held at Volo Bog State Natural Area from 8–10 June 2007. It is located 45 miles northwest of Chicago in Ingleside, Illinois. To get there I recommend Googling the address. We are located at 28478 W Brandenburg Road, Ingleside, IL 60041. If you are coming in by plane let us know that too so I can arrange for you to be picked up. Please call if you need further assistance at 815-344-1294.

Housing

There are 12 motel double non-smoking rooms reserved for out of town participants at Super 8 Motel in McHenry at the cost of \$44.99 for double occupancy. These rooms will be held until 1 June 2007—after the 1st there is no guarantee. I have reserved these rooms from 7–11 June 2007 and when registering please mention GLOM and talk to Cassandra at 815-344-9200. For other nearby lodging check out Volo Bog's Web site, be careful the less expensive hotels/motels are of lesser quality.


If you're interested in camping, Illinois Beach State Park is the place to be. There are cabins available and reserva-

tions are required; contact Concessions at 847-662-4811, extension 209. Call early, they fill fast.

The Meeting

The sites chosen represent some of the most diverse wetlands in the Chicago Wilderness area. Sites include fen, sedge meadow, bog, and sands. Many of the sites contain state firsts while others are under restoration and show potential.

This year we are combining GLOM with education and are looking for two to three speakers willing to discuss dragonfly basics, habitats or *Somatochlora hineana* (Hine's Emerald), other suggestions are welcome. Our key note speaker this year is Dr. Tim Cashatt PhD, Chair and Curator of Zoology at the Illinois State Museum.

The tentative schedule for Friday night is a discussion of sites and a buffet dinner at Volo Bog. Saturday: breakfast, guest speakers, followed by field trips. Sunday is unknown. The final schedule will be posted 20 May 2007. We look forward to seeing everyone. 

In Search of Needham's Net

Dave McShaffrey, Marietta College, <mcscaffd@marietta.edu>

Dear reader: Please accompany me on this journey into the past, a journey in search of one of the grand icons of the science of odonatology, a relic of the early days of our science and a direct connection to a man whose name is even now whispered among our sect in hushed reverence. Yes, I am talking about the search for Needham's Net—but then you knew that. I suppose the title gave it away. However, as in all great tales of historical scientific intrigue, this one starts far removed from the site of the ultimate discovery; specifically it starts on a hot afternoon in the American Midwest.

In 1983 I was newly arrived as a graduate student at Purdue University. One of the first people I met was John MacDonald, an empidid fly expert (*the* empidid fly expert? Name another). John, my advisor, Pat McCafferty, and illustrator Arwin Provonsha were just about the only people in the entomology department who were not of the "spray 'em and count 'em" school. In one discussion, John mentioned that I had just missed Mark Deyrup, who he thought I would have liked. From John's tone, it was

clear that Mark was not of the "spray 'em and count 'em" school. Mark had just left for a position at a field station in Florida (cue music heavy with foreshadowing).

Ten years later, my parents had moved to Florida, preceded by my brother and his family. They had settled into central Florida, and it became a yearly ritual for me to visit for a few weeks every summer. I took the opportunity to also explore the natural side of Florida, although doing field work there in the summer is particularly brutal. By this time I had switched from mayflies to dragonflies and I was better at catching the latter than identifying them. Among my excursions I came across the Archbold Field Station, where the invertebrate biologist was Mark Deyrup. We quickly struck up a conversation based on mutual friends, and over the next 13 years I was a carrier pigeon between West Lafayette Indiana (which I visited yearly to see my in-laws) and Lake Placid, Florida, carrying messages between John MacDonald and Mark Deyrup (hint, guys—we have phones and the internet now).

The Archbold station is a fascinating place. It was started in 1941 by the famed explorer Richard Archbold. Richard was an heir to the Standard Oil Fortune, his grandfather being a business associate of John D. Rockefeller. He worked with the Museum of Natural History in New York, and financed expeditions for that organization. His particular contribution was in purchasing a large Catalina flying boat (the only one in private hands, the rest going to the Navy). In the 1930s he flew this plane, called Guba, to land on lakes in the interior of New Guinea, making first contact with several civilizations in the process. The expeditions also returned a host of biological specimens. As a side note, although I am a graduate of Purdue, which owns Amelia Earhart's Lockheed (though Purdue has misplaced the plane somewhere in the Pacific for the past 70 years), I'd have to say that Guba would kick Earhart's Electra's butt.

As WWII approached Catalina flying boats were in demand, and at the government's request Archbold sold Guba to the navy. In any event, it was an awkward time to be flying the South Pacific, what with the Japanese shooting down planes and people fighting all over the place. Archbold went to Florida to ponder his next move. Near Lake Placid, he bought the property which today comprises the core of the Archbold Station. The land was the estate of the Roebling family, of Brooklyn Bridge fame. Archbold was a classmate of the great-grandson of the builder of that bridge, and arranged to purchase the estate (for \$1!) from his classmate's father. At the time, the Roeblings were just getting ready to build their house;

the buildings on the property were simply the support structures to house the workers and the equipment that would be used to build the actual mansion. Included was a large warehouse built in the Roebling over engineered style—that is to say of heavy reinforced concrete, with storm shutters. It was built to withstand a hurricane, and has several times over. Given the station's position on the relatively high Lake Wales Ridge, the lack of any tectonic activity in the neighborhood (or volcanoes, for that matter) and the distance from anything anyone would want to nuke, this just might be the safest place in the world (if you stay inside out of the lightning). In any event, Archbold settled in for the duration of the war.

During that time, the strange nature of the unique Florida scrub ecosystem worked its magic on Archbold and he decided to transform his expeditionary organization into a more sedentary one, based at what became the Archbold Station. His fortune went to endow the endeavor, and he stayed on to manage it until his death in 1976. It was probably a good move for a narcoleptic to stop flying large planes over unexplored territory. In any event, the endowment allowed for the hiring of experts in various areas, and Mark Deyrup is the latest to occupy the position of resident invertebrate biologist. The station is also well-known for the visiting scientists who have done research there. Odonatologists will no doubt recognize the names of E.O. Wilson and Tom Eisner, both of whom have worked there. Eisner in particular has spent a lot of time at the station and many of his discoveries in chemical ecology were made there.



The Archbold Field Station.



The author with Needham's net.

Now, I should mention that Mark knows everything. Seriously; he is probably the most capable naturalist I have ever seen (and I know Dennis Paulson), and his knowledge extends beyond the insects (I think he knows all the insects on the station on a first name basis). All I have to do is to begin to describe an insect that I saw on a walk, and before I can even find the picture on my camera, Mark has pulled open a drawer to show me specimens of the species. He's written a few books (Florida's Fabulous Insects is great) and a ton of papers. He's also an incredible illustrator. He discovered a moth that feeds only on the scutes of dead gopher tortoises. This guy is from the deepest end of the entomological gene pool. So, when I

first was talking to him, and mentioned that I had switched from mayflies to dragonflies, his eyes lit up. He looked around, first to the right, then to the left, leaned in, and confided "we've got Needham's net". He then took me to a door which led to a stairway up to the attic. The space was now used mostly for storage, and there, about halfway up, along the wall, it stood. Needham's Net. It turns out that Eisner was not the only Cornell entomologist to frequent the station!

The story does not quite end there. Like any timeless relic, the net, after its first sighting there in 1993, disappeared for a while. Actually, it sat in the same closet, but I forgot about it—and got it confused. I thought that it was Kennedy's net for many years. About 2003 Mark corrected me when I asked about it, as one would inquire after an old colleague "and how is Kennedy's net doing?" I said, to which Mark replied "it's Needham's net". I was mortified. I don't know how many people I had told it was Kennedy's net, although apparently not enough to start a stream of entomologists down to Archbold on pilgrimage. In any event, I felt that now was the time to set the record straight.

This past summer, after years of encouragement from Mark to come up with *some* serious project at the station (other than walking around and taking pictures and catching dragonflies at Lake Annie) I finally returned, triumphant, with both project and student in hand. Of course, the project was on color change in Oak Toads, and not something entomological, but Mark hid his disappointment and revealed he knows more about Oak Toads than any herpetologist on the planet. He set my student up in his lab, and I found housing in the same cabin that Tom Eisner used year after year on his visits to the station; the walls covered with prints of some of his amazing photographs. It's living history, folks!

I got to work at Eisner's desk and even drink some bottled water that Eisner—or possibly someone else, had left in the refrigerator. Did I mention that I was almost run over by Eisner once in the parking lot there?

The Oak Toad work was going well; the student had it under control, and Mark and I were talking. I wondered if I might see Needham's net again. Indeed I might—it had been brought down from the attic and was leaning against the wall in the lab. Might I touch it? Yes again. I was even allowed permission to take it outside into the bright sunshine for a few photos, which I share with you here.

You will notice the long handle, which is about two meters

long, attached to a relatively small collecting head. To my embarrassment, I cannot recall if the handle was made of wood or fiberglass, and the photos are of little help. The ring hoop is made of metal, attached to the handle by a T-shaped brace (see below).

In the detailed view, you can see the nature of the brace and the rim. The net bag is attached to the rim by a band of cloth to which the netting is sewn. The mesh is very fine. Note the interesting method of closing the long side of the net bag (circled)!

Due to the obviously fragile nature of the net and its tremendous historical value, I did not dare swing it, although it did seem to have a nice balance. My impression is that it would be good for pancaking perched petaltails and other unwary odonates, but that it would also be very hard to swing at a moving target. Of course, on recognizing Needham, odonates probably just flew to him and deposited themselves in his cyanide jar, making the net just for show. This makes the staples holding the net bag shut less intriguing. After taking a few pictures I whisked the net back out of the harsh Florida sunlight and into the controlled environment of the lab. I suggested to Mark an arrangement with climate-control, bulletproof glass and a device that lowers the net into an underground vault at night, but he just leaned it back up against the wall.

If you find yourself in Florida, you owe it to yourself to visit the station—if not the net. It is very easy to get to. Simply take I-4 between Tampa and Orlando and exit at US 27. Follow 27 south for about two hours until you pass through Lake Placid. Continue on to SR 70 and head west (alternately, you could come up from Miami on US 27, about two hours). Turn south onto Old Route 8 and drive several miles; you will presently see the station's fence on both sides of the road and come to the main entrance on the west side of the road. The station has a nature trail open to visitors and you can purchase books and souvenirs in the office, which is part of the main building (the video of the Lake Wales Scrub is great, as are the T-shirts, many of which feature Mark's illustrations). If you make contact in advance, you can arrange to stay in one of the cabins and to take meals in the dining hall, if you wish.

In terms of wildlife, the station's most visible and endearing residents are the Scrub Jays. The scrub ecosystem itself is worth at least a day of exploration, and there is no better place to do it. In terms of odonates, Lake Annie, a fairly pristine, undeveloped sinkhole lake is on the property and hosts a wide assortment of species. Mark can help you make arrangements to get to the lake in return for a list of what you find. The ponds and lakes in the



A close-up of Needham's net. The bag closure apparatus is circled.

area have a similar diversity, and if you are lucky you can encounter swarms feeding on fire ant reproductives coming from pasture lands. I have caught a dozen Swamp Darners (*Epiaeschna heros*) in such swarms, as well as Hyacinth Gliders (*Miathyria marcella*), Twilight Darners (*Gynacantha nervosa*) and Regal Darners (*Coryphaeschna ingens*). Using Archbold as a base camp, such places as the Everglades, Corkscrew Swamp, and Lake Okeechobee, are only a morning's drive away, and Highland Hammock State Park—a gem, is even closer. The station's Web site is: <<http://www.archbold-station.org/abs/index.htm>>. For more on Needham himself, re-read Nick's article on him from ARGIA (1999, 11: 24–26)—also available online at <http://www.odonatacentral.com/dsa1/argia/argia/issues/Argia_1999_11_1.pdf>.

Literature Cited

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Rearing is the Key to Finding Those Elusive Clubtails

Nick Donnelly, Binghamton, New York, <tdonelly@binghamton.edu>

Tired of being skunked by your buddies when you go looking for odes? Tired of them finding all the good ones, leaving you with a meager list of mainly pond damselflies and skimmers? Now you can get back at them. You, too, can find all those great clubtails that elude you on every trip. The secret, boys and girls, is *rearing*.

Gomphids are among the real prizes for people who chase odes. They tend to be elusive. As adults, they are extremely wary. Because of their large body weights and relatively small wings (high wing loading, in the terminology of aerodynamics people) they tend not to rely on their maneuverability, which is more limited than for most other dragonflies. The result is that they are inclined to take evasive action very quickly. Some spend most of their adult life in trees—*Gomphus vastus* (Cobra Clubtail) and *G. quadricolor* (Rapids Clubtail), for example. Others, such as *Stylurus spiniceps* (Arrow Clubtail), spend their time who knows where—probably also in trees but possibly also away from the water. They are not just eluding the collector—they are also eluding the kingbirds and other predators who would just love pigging out on a juicy clubtail if they could only find one. So your problem is the same as the predatory bird: How to find them.

Adding to the difficulty of finding them is their tendency to “mass emerge,” so that at least some will make it through to breeding even if the population suffers greatly from a mass slaughter during emergence, mainly by red wings and grackles. A mass emergence means the total adult lifetime of the species collectively is briefer than for more laid-back species, such as the skimmers, which fly with far more prowess, and trust in their ability to elude nasty birds.

Early in my ode career I had a good friend at Cornell (Bob Gibbs, who went on to become a noted ichthyologist) who was handy with dredges, seines and the other tools that one uses to sample streams. So we went out around Ithaca in May and collected oodles of live larvae. Their fully developed wing pads meant they were about to emerge. We brought these back and kept them in five-gallon aquaria in our rooms, with some screen wire for emergence, and simply waited for something to happen. Towards the end of May our tanks produced oodles of adults, who emerged literally by the dozen on some mornings.

Thus, at an early stage in my career I was rearing abundant *Ophiogomphus carolus* (Rifle Snaketail), which the noted Cornell professor James Needham had pronounced “rarely seen in the wild.” This wasn’t and still isn’t really true, but

what is true is that rearing quickly became the method of choice for finding gomphids. In one local stream I reared six species of *Gomphus*, and at another I found abundant *Stylurus scudderi* (Zebra Clubtail), which I never found as adults around Ithaca. I was hooked. I got George Beatty in Philadelphia interested in rearing and he found many good things in the Delaware valley. At one point he mailed me a dozen live larvae in a quart milk container (this was before there was a Department of Homeland Security). The *Neurocordulia* all perished, but one of the *Macromia alleghaniensis* (Allegheny River Cruiser) survived and emerged in my aquarium. These dudes are tough.

At the same time I was collecting around my home in Washington, DC. I dredged *Stylurus* larvae at many places, and, upon rearing them, found that *Stylurus laurae* (Laura’s Clubtail), which had never been recorded anywhere near Washington, was really one of the most common local gomphids.

After a round of graduate school, I settled in Houston, Texas, for seven years. I discovered the east Texas piney woods and dredged up a storm. Shortly I was rearing more *Stylurus laurae* (a state record for Texas, and I am not certain it has ever been taken in Texas subsequently). [Editor’s note: To my knowledge the only subsequent record for *S. laurae* in Texas is a single photograph by Bob Behrstock; a testament to Nick’s point!] I also found the first *Gomphus modestus* (Gulf Coast Clubtail) for the state this way, and the first *Gomphus apomyius* (Banner Clubtail) ever were found. Some time after I left Texas for the sunny North, friends who began to retrace my steps down there said they could never find many of the things that I had recorded. Why? They didn’t rear anything.

Recently I have also added *Gomphus quadricolor* (Rapids Clubtail) to our county fauna and established *Gomphus viridifrons* (Green-faced Clubtail) as an inhabitant of the upper Delaware River. But one of the most important payoffs from my years of rearing is that I now possess a nice collection of identified exuviae. The finding of exuviae is one of our most valuable tactics for establishing the local faunas. But their identification is a very difficult exercise, and even careful following of published keys is a chancy proposition at best. To identify exuviae properly, one really has to have a good collection of identified species. *Gomphus descriptus* (Harpoon Clubtail) and *G. lividus* (Ashy Clubtail) are almost identical, but for those who possess reared specimens, it is possible to identify females rather easily, and even males. Just try distinguish-

ing *Ophiogomphus rupinsulensis* (Rusty Snaketail) and *O. carolus* (Riffle Snaketail) from the book—the characters of the labium are very subtle without reference material. So, friends, if you want to survey an area, you will miss a lot of things if you don't rear.


What is involved? It is all very simple. You need a water tank. I prefer a five-gallon fish tank, but I also use a 20-gallon tank. You need some clean sediment (stream sand is great) for the bottom, so your little buddies can burrow. You should have an “air bubbler,” which is a very simple and cheap accessory available at fish stores. Finally, you need to have some stiff screen (I prefer ¼-inch hardware cloth) in the tank so that the emerging ode can climb out of the water. I found that the position of the wire is unimportant. Even if they emerge in the wild on a horizontal surface, they will happily emerge on a vertical surface, as long as they have a substrate that allows them to hook their little tarsi firmly.

What do you feed them? Nothing. If you take them in early May, they will already probably be beginning their “resting” phase before emerging, and they can easily coast through to emergence with what they already have in their tummies. If you want, however, you can feed them a variety of small wiggly things, including some commercial live fish food. It is fun to watch them grab and consume critters you put in the tank. But don't be surprised if they don't eat at all. *Cordulegasters* are really fun—watching them eat small worms is like seeing a kid eat spaghetti by sucking in single strands.

A problem with a crowded tank is that they may eat each other, or just take a chomp out of their neighbor. I have lost a few specimens that way. Another small complication I found is that a tank full of *Ophiogomphus* might produce

a mass emergence, and more than once I have returned to my room in the afternoon to find nearly a dozen adults clinging to the wire screen on the sides, with a dozen exuviae also on the screen. Which adult goes with which exuviae? Obviously, there is no certain way of knowing. Thus a refinement that you might consider is placing each larvae in a small cylinder (say about three to four inches in diameter and about a foot long) rolled from window screen, and with the ends pinched closed. The cylinder with the larvae is placed in the tank, so that it is about half beneath the water, with the upper part dry. Then they will simply emerge in their individual cages, and the adult and its cast skin are kept together.

What to do with the adult specimens? You can simply release them after inspecting them and recording the species. I like to keep most of them in the collection, but as teneral they are too soft for decent preservation. I transfer them to a softer cage made from plastic window screening (the same as I carry in the field for teneral specimens if I really want to bring them back for identification) and let them harden up a bit. They never really develop full adult hardness, but at the same time they display bright colors you may never see in the field, unless you come upon a very freshly emerged specimen. An example is *Gomphus lividus* (Ashy Clubtail). Adults are among the least vividly colored gomphids, but a freshly emerged male will have vividly contrasting yellow and dark on the thorax, and the end of the abdomen will be a bright chestnut color. In the wild, the colors rapidly dull up, and many adults in the north quickly become a dull gray.

This is just the season to rear things in the northeast. The best time for collecting the larvae is during May, with emergences expected mainly at the end of the month and into early June. What are you waiting for? 

Dragonflies and DNA: Some Suggestions for Odonate Collectors

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In the most recent ARGIA, Jerrell Daigle and Mark McPeck (Daigle & McPeck, 2007) reported some exciting new information about relationships in *Enallagma coecum* and *E. cardenium* from Florida and the Caribbean. DNA sequences revealed that the two taxa, which had been synonymized by several recent authors, in fact, seem to have been descended separately from a common ancestor that dates to two million years ago. In the same issue Michael May provided a primer on the arcana of modern taxonomy and systematics, including the role genetic data can play (May, 2007).

It seems likely that data from genetic studies will become more and more valuable in determining species limits and evolutionary history of odonate groups. The kind of collaboration behind the first article, with the dogged field efforts of Daigle and at least four others combined with the technical expertise supplied by McPeck, seems likely to become more common in the future. It's with that in mind that I make the following suggestion to all those active in field collecting of odonates: Collect some specimens routinely with the possibility of future genetic studies in mind.

Genetic studies are by their very nature destructive to

specimens (you need to destroy some tissue to get DNA out), but not very destructive. A single damselfly contains enough DNA for literally thousands of analyses, and genetic work has been done on endangered damselflies in Great Britain by capturing individuals, removing part of one leg, and releasing the live insect—the DNA in just a leg was sufficient for the analysis (Watts et al., 2004).

But although DNA is abundant in living odes and is quite durable in some circumstances, it does degrade over time in specimens. I have had good success working from acetoned and dried specimens that were collected in the preceding twelve months, especially if I was willing to dissect out the flight muscles as a source of DNA, but with specimens much older than that results get unpredictable. Time, moisture and warmth are what degrade DNA, and even the moisture in the air, given time, will result in DNA breakdown. Luckily, there is a cheap and widely available preservative: ethanol. Specimens preserved in concentrated ethanol will retain useful amounts of high quality DNA almost indefinitely, without freezing or any other complicated storage needs. Although preservation in 100% ethanol is ideal, the strongest local “firewater” will do just fine in a pinch, and specimens can also be transferred to stronger stuff once the collecting trip is complete (grain alcohol at 190 proof is readily available in most states and is probably practically equivalent to 100% as a preservative). Those who collect and preserve odonate larvae will already be familiar with how to house ethanol preserved specimens (but please substitute 95% ethanol for the more standard 60–70%, which is “wet” enough to allow DNA degradation). Those who have only collected and dried adult insects before can obtain suitable vials and jars for keeping ethanol specimens from BioQuip or similar suppliers.

I have a personal interest in this—I’m a biologist who studies bird behavior and mating systems professionally, but I also have an amateur’s fascination with odonates. I use the tools of molecular biology routinely in my bird work, and recently when I was teaching a college class in molecular techniques, I was looking for projects students could address. With the help of several odonate experts (via the e-mail list Odonata-L), I decided perhaps these students might do a genetic comparison of some species pairs or groups where taxonomy had been recently revised, or where there was some uncertainty. From the suggestions of Glenn Corbiere, Dennis Paulson, Timothy Benyon, and Fred Sibley, the students and I decided to tackle a part of either the genus *Sympetrum*, or *Erythemis*, or *Orthemis*, and then narrowed it to *Erythemis*: We would compare mitochondrial DNA of Eastern (*simplicicollis*) and Western (*collocata*) Pondhawks, and construct a phylogeny of the other *Erythemis* to provide context for any differences we found in the two focal forms.

Dennis Paulson was tremendously generous and enthusiastic about providing tissue (single legs) from dried specimens in his collection, in which he had all described *Erythemis* species and several individuals that may represent undescribed species. Unfortunately, we were unable to complete the work due to difficulty in obtaining good quality DNA from most of the specimens. To some extent, this failure may reflect the people (students) doing the work, but students in the class working with fresher tissue (from sharks, birds, and other insects) often succeeded where the *Erythemis* group failed. Most likely, the age of the specimens (measured in decades for some of the specimens) accounted for much of the difficulty.

I intend to pursue some more odonate projects when I complete some bird work now underway—Fred Sibley has sent me some red and purple Caribbean *Orthemis* preserved in rum (and since transferred to 100% ethanol), and I hope to contribute some data towards the discussion of the status of those two forms. But I still am disappointed with our failure to make headway with the *Erythemis* question and thought maybe an exhortation to field collectors might pay some dividends down the road.

So if I can also refer back to Dennis Paulson’s excellent Odonata-L post (17 March 2005) on the subject, there is real value in continued collection of even common taxa, maybe especially the common taxa. Individuals from throughout ranges, individuals collected at different times—all may have use in future studies. And please drop a few in ethanol while you’re at it.

Acknowledgements

Thanks to Mark McPeck for comments on this note. Thanks also to Fred Sibley, Dennis Paulson and John Payne, all of whom supplied specimens in response to a request posted on Odonata-L that led in various ways to this note.

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***Celithemis elisa* (Calico Pennant) Emergence Period in the Fingerlakes Highlands of New York State**

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On 5 June 2005, we couldn't help but notice a large number of dragonflies emerging from our pond. They were easily identified as *Celithemis elisa* (Calico Pennant) by their blotchy wing pattern, soft golden-green body and deep red-brown eyes. Many more emerged the next day so, beginning on 7 June, we began a count.

On our first experimental pass around the pond we walked side-by-side counting emerging and teneral individuals. They were thick enough that we had to tip-toe through the unmowed grass and were overwhelmed at 560. We decided to conduct a count every day until they ceased to emerge.

Survey times varied, some days we counted as early as 8 AM, other days as late as 11 AM. We counted only once per day but passes made later in the day revealed more emerging, all day long. We estimate our count was merely a snapshot at what was many more per day.

The 2005 count continued until the last teneral was seen on 19 July, a total of 40 days from the beginning of our observations. Emergence began before first light and continued until mid-afternoon. At any given time during daylight hours, the sedges, cattails and grasses were festooned with teneral pennants. The summer of 2005 was very dry, with no rain to wash away exuviae, so every leaf and stem was littered with exuviae piled high one atop another.

The first week of the 2005 count produced the highest numbers (7 June: 560, 8 June: 356, 9 June: 615, 10 June: 172, 11 June: 325, 12 June: 62).

Double digits maintained for a few days before dropping to single digits for the remainder of the period, which ended 19 July. The 2005 season total topped out at 2,455.

We considered this to be pretty impressive, so were anxious to repeat the count in 2006 and were watching for the first sign of emerging *Celithemis*. The weather this year was completely different, with rain and cold weather well into the season, but we watched anyway.

Our counts began 1 June with 67. The next day we saw 319. As of that day we decided to split up, John going around the pond one way, me the other, to avoid possible double counting. Heavy rain slowed the next couple of days' emergence but the biological clock prevailed and some

emerged regardless. On 7 June we achieved our highest count. Our heads were spinning as we met on the opposite side of the pond. We saw hundreds of emerging *Celithemis* in the same position, hanging back from their larval skins, as far as 3 meters from the waters edge and everywhere in between. We added our totals . . . 2,675. Emergence continued all day. We estimated 50 to the meter, from early light to around 4 PM, to be 8,000 in that single day. For the next two days tenerals fluttered up from the grass with each baby step we took, akin to clouds of mosquitoes rearing up upon stepping into the Everglades.

The three biggest days of 2006 were 7 June with 2,675, 8 June with 839 (cool and damp), and 9 June with 1,280 (cool and drizzly).

Cold drizzle fell the next day and temperatures were in the 40s for two more, but still, they came (10 June: 27, 11 June: 16, 12 June: 80, 13 June: 251—warmer but cloudy, 14 June: 313—warm and sunny)

Counts then continued in the hundreds. Whereas numbers in 2005 dropped to single digits by mid-June, in 2006 hundreds emerged every day, even in hard rain, until the end of June. Counts dropped into the double digits until 19 July, and into the singles until emergence ended on 2 August. The total count for 2006 was 10,944 over 63 days. Keep in mind that counts were made only once a day and emergence of this species carries on at a similar rate until mid-afternoon.

The favorite emergence area was a 2 × 3 m patch of Spike Rush (*Eleocharis* sp.). Elsewhere, tall thick vegetation was slightly preferred over sparse low grasses and sedges. Cattails (*Typha* sp.) were quite popular, heavily utilized despite being in the shade. On average, when we met at the opposite side of the pond and added our totals, our numbers were about the same.

There were a considerable number of damaged tenerals, most often due to uninflated or unfurled wings. Occasionally the reason was evident, such as wind causing vegetation to strike a wing or a pounding by hard rain. Some remained in larval state, never opening at all, and will always be a mystery.

The first adult male showed up on 13 June, just 13 days after emergence began. By 19 June pairs were ovipositing

by the dozens, and singles were swarming all over the pond. Meanwhile, the greatly outnumbered *Epitheca canis* (Beaverpond Baskettail) and *E. cynosura* (Common Baskettail) were trying valiantly to hang on to their territory. We even saw one resting!

On 26–28 June we had huge rains, with 10 cm over 3 days, flooding ponds, streams and rivers. Emergence continued in the hundreds even though it poured all day and all night.

By mid-July the local flock of Cedar Waxwings learned to associate our presence with an easy meal and began to exhibit learned behavior and cooperative hunting. They would hover 1 m in front of us, waiting for us to flush teneral and showed considerable bravery by swooping in close to grab a meal. We watched them hover amongst the vegetation, zeroing in on individual stems looking for perched teneral, similar to behavior by adult damselflies hunting small insects. Sometimes they worked an area together; one beating its wings and hovering to flush out a teneral while another would zoom in and snatch it up.

No similar emergence phenomenon was detected in visits to nearby ponds of suitable habitat (there are five others on this 60-acre wildlife sanctuary) although adults dispersed to most other ponds in July. All ponds are under 10 years old, and have similar vegetation. This study pond is much deeper, so has more submergent aquatic vegetation (SAV), most of which is *Chara*.

Although similar in appearance to milfoil, *Chara* is technically not a plant but an alga. It quickly colonized all our ponds, covering the substrate within 3 years. Its dense

structure provides sanctuary and hunting opportunities for a myriad of aquatic animals and absolute manna for odonate larvae of all sizes and species.

The pond is 35 × 40 m and 6 m deep with very steep sides all the way around and is the home of a breeding population of *Anax longipes* (Comet Darner) and the study pond for *Anax junius* (Common Green Darner). It is 6 years old and is fully described in ARGIA 18(1): 12–13.

Celithemis elisa is known to be an early colonist of new ponds, and a few dutifully showed up the second year after the pond was dug. Numbers here were small until the flood gates opened in 2005. We wonder for how long it will continue to grow, when it will stabilize, will it fizzle out or even crash like the *Lestes unguiculatus* (Lyre-tipped Spreadwing) in 2004 and 2005 (ARGIA 16[4]: 9–10 and 18[1]: 14).

The weather in June of 2005 was warm and very dry, while in 2006 it was quite the opposite, cold and wet. Nonetheless, in comparing data from each year the highest percentage of emergence occurred during the same span of calendar days. In addition, field notes from 2004 mention many *Celithemis elisa* emerging over the period of 1 June through 10 June. This leads us to believe weather above the water's surface has little effect on activity below and surmise photoperiod is the determining factor for this species. We will continue to monitor this pond as well as the others for as long as we can walk and count at the same time.



Marathon Man

Jerrell J. Daigle, <Jdaigle@nettally.com>

Running and running right past Marathon Key, I arrived at Middle Torch Key for a short odonate survey 6–9 March 2007. After checking in with George Tegzes and getting my linens for the tiny hut, I retired for the night.

In the morning, I went to the Botanical Garden and Key West Golf Course on Stock Island. *Orthemis schmidtii* Buchholz with its glossy, scarlet abdomen was common at the Gardens and Desbiens Pond. I even got a mature female and a teneral male. However, there were no other species to speak of. The current drought made me feel lucky just to get a couple of *Brachymesia furcata* (Red-tailed Pennant), *Erythrodiplax berenice* (Seaside Dragonlet), *E. umbrata* (Band-winged Pennant), and *Ischnura ramburii* (Rambur's

Forktail). As for birds, I did see a flock of Glossy Ibis and Black Skimmers at the 16th hole.

The next day, I checked out the hammock depressions on Big Pine Key for *Lestes spumarius* (Antillean Spreadwing) and *Nehalennia minuta* (Tropical Sprite). No such luck! All the sites were dry and I did not find any adults hiding in the surrounding forest. I believe these two species estivate as eggs or larvae during the dry season and emerge to complete their development after the summer rainy season. This would account for their appearance as adults during the last two October surveys conducted by myself and Fred Sibley (ARGIA, 2006, 18[4]: 17–19). As a point of record, the *Remartinia secreta* exuvia found here

a couple of years ago was examined by Ken Tennessen, the leading larvae expert in North America, and determined to be *Gynacantha nervosa* (Twilight Darner). This species had been recorded historically from Big Pine Key, although not recently.

I did have better luck with lots of *Orthemis schmidtii* at Kyle Boulevard. Again, nothing else, except a lone *Brachymesia furcata* (Red-tailed Pennant). At one almost dried-up mud puddle, I found several last instar larvae of *O. schmidtii*. Two have emerged since then and the others are in my aquarium at home waiting their turn at future flying.

Later that day, I went to the famous Blue Hole tourist attraction where the odonate diversity was much better. The most common species was *Tramea insularis* (Antillean Saddlebags) with a few *Brachymesia furcata* (Red-tailed Pennant), *Macrodiplax balteata* (Marl Pennant), and *Orthemis schmidtii*. I did see one *Ischnura ramburii* (Rambur's Forktail) here plus one big alligator with the tag number 151 on his tail. He looked pretty hungry, so I wouldn't get too close to him.

The following day, I decided to explore and headed out to Marathon Key to check out the Crane Point Botanical Gardens. This is a very beautiful place with lots of large native hardwoods such as mahogany, blolly, poisonwood, and gumbo-limbo. At the only freshwater hammock pool there, I found lots of *Orthemis schmidtii*. This is the first time I saw *O. schmidtii* on Marathon Key and it might be a new location record for this species.

Also, to my surprise, I saw a female aeshnid flying over the pool. Despite several attempts, I could not catch this wary beast. I thought I might have better luck catching this strange species hiking down the wider forest trails to the east. After a couple of miles, I was having no luck. While resting and chatting with fellow snowbirds Nancy and Dale Hillstrom from Twin Cities, Minnesota, a large green aeshnid went right by us! It flew down the trail, then slowly double-backed. As it flew high over us, I jumped up and got it with a broad sweeping swing! It was a nice vibrant green male *Coryphaeschna viriditas* (Mangrove Darner), aptly named! They had a digital camera, taking several pictures of it while I held it by the wing tips and promising to e-mail them to me. Later on, I saw several more adults cruising down the trail. I ran and ran after them, but they were too wary. I was living up to my Marathon Man billing!

I had one more day to spend and I decided to go back to Kyle Boulevard and look for more *Orthemis schmidtii* larvae. It proved to be a good move, but for other reasons. Upon reaching another borrow pit across the road from

the Kyle Boulevard borrow pit, I spotted a strange brown dragonfly on patrol out over the middle of this deeper borrow pit. It would not come close to the shoreline, so I had no chance of reaching it. Finally, after several minutes, it flew up and high over to some flowering trees and began feeding on insects attracted to the white blooms. It did this for some time. Suddenly, it floated down towards me. I leaped up and I got it with yet another sweeping, jumping swing! Believe it or not, it was a nice male *Epithecstella* (Florida Baskettail)! I do not know what it was doing on the Keys. My guess is it was probably blown over from the Everglades. This might be a new record for the lower Keys. It was a fitting touch to this wintertime trip to the sunny Florida Keys. I will have to come back again. Stay tuned for the sequel!

Species List

Orthemis schmidtii (abundant)
Coryphaeschna viriditas (Mangrove Darner—common)
Tramea insularis (Antillean Saddlebags—fairly common)
T. onusta (Red Saddlebags—1 seen)
Brachymesia furcata (Red-Tailed Pennant—common)
Celithemis eponina (Halloween Pennant—4 seen)
Erythrodiplax berenice (Seaside Dragonlet—3 seen)
E. umbrata (Band-winged Dragonlet—2 seen)
Erythemis vesiculosa (Great Pondhawk—2 seen)
Macrodiplax balteata (Marl Pennant—2 seen)
Pantala flavescens (Wandering Glider—1 seen)
Epithecstella (Florida Baskettail—1 seen)
Ischnura hastata (Citrine Forktail—1 seen)
Ischnura ramburii (Rambur's Forktail—3 seen)

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



Arizona 2006 Summary

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The 2006 season proved to be a very fruitful one, the second consecutive noteworthy one with regard to new and unusual species occurrence within the confines of Arizona. What follows is a brief discussion of the cream of the crop of the odonate discoveries for the past season.

Zygopterans (Damselflies)

Argia apicalis (Blue-fronted Dancer)—A colony of *apicalis* was discovered below the dam at Talkalai Lake, on the Gila/Graham County line north of Peridot, on 18 September. The only previously known colony was at a catfish pond southeast of Duncan, some 90 miles southeast of Talkalai Lake, in Greenlee County.

Argia tarascana (Tarascan Dancer)—Several males and one pair in tandem were observed on 21 June along the Blue River, on the San Carlos Indian Reservation in Gila County. There had been only one known locality for *tarascana* previously in Arizona, at Muleshoe Ranch in Bass Canyon, Cochise county. This is a range extension of 75 miles to the north.

Enallagma eiseni—This species was reconfirmed on 16 October after its discovery in 1992. Males were found in the saltbush flats surrounding Quitobaquito Springs at Organ Pipe Cactus National Monument. Just a few individuals were seen over water at the bulrush fringes encircling the pond there. Two females were observed, also in the saltbush. All individuals were seen about 6 inches to two feet above the ground. This is an amazing occurrence and the mystery of how they got there will never be known. This area of Arizona does on occasion get the remnants of tropical storms passing over in the fall which could have carried this species into Arizona. It was previously thought to be a Baja California endemic.

Anisopterans (Dragonflies)


Celithemis eponina (Halloween Pennant)—A male *eponina* was photographed at Roper Lake State Park south of Safford, Graham County, on 19 September. It was perched at the tips of cattails some six feet over the water. It was not found two days later by two searchers. Previous western most records for the Southwest extended to east-central New Mexico.

Erythemis vesiculosa (Great Pondhawk)—On 19 August a male landed and was photographed along the Virgin River in the far northwestern corner of the state, west of

Littlefield, in Mohave County. The habitat was salt cedar thickets with it perching on a pile of salt cedar debris. In light of the banner year for this species in Arizona with at least 6 other 2006 reports, this find is not totally unexpected. However, it does represent an incredible range expansion of over 300 miles to the northwest.

Orthemis discolor (Carmine Skimmer)—In ARGIA (2002), Rehn and Paulson reported this species for Arizona based on two males in the University of California collection in Berkeley. They were taken along Sycamore Creek [Maricopa County?] on 22 August 1977. One fresh male was collected in 2006 at Patagonia Lake State Park, Santa Cruz County, on 3 November. This is the second record for the state and for the southwestern US.

Tramea calverti (Striped Saddlebags)—This species is proving to be quite regular in the fall, at least the past several years. As many as fifteen individuals were seen at Roper Lake State Park on 29 September. It was also found in at least four other locations in Pima, Pinal, and Maricopa Counties in 2006. In light of the fact that there are now two confirmed species of small-saddled saddlebags in Arizona, a sight record at the Yuma West Wetlands cannot be confirmed to species level and is not included in these data.

Tramea insularis (Antillean Saddlebags)—There are now two localities in the past two years confirmed for *insularis*. One, Kearny Lake near Kearny, Pinal County, had as many as five males on 18 November 2006, after at least two males were verified the previous year. This many individuals in two successive seasons suggests the possibility of a breeding colony although no females have been seen or collected either year. The meager data so far suggest that this is an extremely late flier in Arizona with all reports being from 31 October or later. 

**Don't forget the DSA Annual Meeting in Spring-
erville, Arizona, 27–31 July 2007**

For more information visit <http://odonatacentral.com/dsa1/annual_meeting.htm> or contact the meeting organizer, Jerrell Daigle, at <jdaigle@nettally.com>.

Interesting New State and County Odonata Records for Utah

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After many years of studying Lepidoptera, I was browsing through the Sears Christmas Wish Book, er, I mean the BioQuip Catalog (childhood habits never die), filled with pictures of nets, spreading boards, and books on Lepidoptera, I ventured beyond the Lepidoptera section into the “other insect orders” category. One book in particular caught my interest, “Dragonflies Through Binoculars” by S.W. Dunkle. I dropped a hint to Santa, (my wife) and was pleasantly “surprised” to receive the book on Christmas morning. I had taken Dunkle’s bait and now I was hooked on dragonflies.

While doing an internship at the Monte L. Bean Museum at Brigham Young University, I had the opportunity to work with two fine entomologists, Richard Baumann and Shawn Clark. Much of that time I spent identifying and sorting Lepidoptera. With my new interest in Odonata, they were kind enough to allow me to study the dragonflies in the BYU collection. Although the BYU collection contains several thousand odonate specimens from Utah and surrounding states, it was evident that there were many gaps in our knowledge of Utah dragonflies. So, I decided to begin a project to study the distribution patterns of Utah dragonflies. I have spent much of the last two summers collecting odonates across the state filling in some of those gaps, while spending the winters (in between teaching my high school biology students) cataloging all identified Anisoptera from the BYU collection. Some of the more interesting finds are discussed below.

Perithemis intensa Kirby (Mexican Amberwing). While searching through the BYU collection, I came across a previously unidentified specimen of *Perithemis intensa* Kirby. It was collected on 9 August 1985 by G.I. Baird at Lytle Ranch Preserve, Beaver Dam Wash, Washington County in southwestern Utah, a very unique corner of the state at the northeastern end of the Mojave Desert. I know of no other records for this species in Utah, although there are records for *Perithemis intensa* further south in Arizona and California. This record, later confirmed by John Abbott, shows that at least once, this species has worked its way up the Colorado and Virgin Rivers into the Beaver Dam Wash. It would be interesting to discover just how far north this species is permanently established.

Libellula luctuosa Burmeister (Widow Skimmer). In the summer of 2005, I obtained several new records from areas where they were previously unrecorded. One surprise was a colony of *Libellula luctuosa* Burmeister found on 1 August 2005 in ponds below Montez Creek Reser-

voir NE of Roosevelt (Duchesne Co.) in Uintah County, Utah. Musser (1962) did not list this species from Utah in her publication on the “Dragonfly Nymphs of Utah,” although she had collected in Uintah County, along the Green River quite extensively. Is it a newcomer or was it missed? I collected three males of this beautiful dragonfly at the site and observed several others including one female. Further research in the BYU collection revealed a previously collected specimen of *Libellula luctuosa* on 16 September 2001, on the trail to Delicate Arch, Arches National Park, Grand County, Utah by A.Z. Taylor. I submitted my record to OdonataCentral in 2005 and found that a record also exists for Emery County on the OdonataCentral site. There are now three Utah records for this dragonfly.

Macromia magnifica McLachlan (Western River Cruiser). On 6 July 2005, while collecting at Warm Springs (Goshen Ponds), Utah County, Utah, a very large, yellow-banded dragonfly buzzed over my head, then climbed high into the sky disappearing out of sight. A minute later, it dropped right “out of the sun” straight for me like a World War II dive bomber! However, with my lightning reflexes, I ducked and twisted, netting my attacker! At first I thought it might be *Cordulegaster dorsalis* Hagen (Pacific Spiketail) until I noticed that it had only one yellow, lateral thoracic stripe and concluded that it must be *Macromia magnifica* McLachlan. Although Warm Springs (Goshen Ponds) is the “premiere” odonate habitat in northern Utah with 22 Anisoptera species recorded, it seems an unlikely spot for this species with no large rivers for miles around. I found one other record in the BYU collection for *Macromia magnifica* in Utah, collected by C.R. Nelson on 13 July 1985 in Dinosaur National Monument at the Green River Campground in Uintah County. It was found dead, although not fossilized with the dinosaurs!

Aeshna persephone Donnelly (Persephone’s Darner). On 2 September 2006 I was searching for *Oplonaeschna armata* (Hagen) (Riffle Darner) in upper Leeds Canyon along Leeds Creek, Washington County, Utah. Although I was unsuccessful, I did collect what I believed to be *Aeshna persephone* Donnelly. Relatively new records of *Aeshna persephone* collected in the Grand Staircase Escalante National Monument in Kane County, Utah are housed in the BYU collection (Abbott, 2002). The specimen I had collected was quite similar to those from Kane county, so I sent the specimen along with two others from Washington County to John Abbott for confirmation. He concluded that all three were *Aeshna persephone*.

After my first season collecting and cataloging dragonflies, I was feeling somewhat confident in my abilities to identify Utah dragonflies when Richard Baumann suggested that I also learn the damselflies. So in the Spring of 2006, I began collecting damselflies along with dragonflies on my outings. By the end of the summer, I had collected all but eight of the 34 known Utah damselflies listed by Provonsha (1975), some from counties and river drainages not previously recorded. A few damselfly records from 2006 are of interest.

Telebasis salva (Hagen) (Desert Firetail). One record for *Telebasis salva* (Hagen) was obtained on 2 September 2006, at Danish Ranch, which can be reached by a road branching south off the Leeds Canyon, Washington County, Utah. According to Provonsha (1975), there were only three records for this species in Utah, all from the same pond (now a golf course) in St. George prior to 1959. Provonsha speculated that it might have disappeared from the state. I find it interesting that it was found at Danish Ranch which is not on the valley floor, but in the mountains north of St. George, at 4,000 ft in elevation. I was collecting at the ranch pond with my monster net, a converted Cabelas fishing boat net, 6' 10" long with a 26" diameter net ring. (Okay, so I got frustrated because I kept missing dragonflies with my smaller nets after traveling long distances to obtain new Utah records. So I convinced my wife that in order to save gas money, she should buy me the fishing net for my birthday and sew an insect net bag to fit it. The plan worked!) I was crouched behind a Russian Olive tree waiting stealthily for an *Anax walsinghami* MacLachlan (Giant Darner) to patrol past when I looked down on the water and noticed a tiny fiery red damselfly darting back and forth just millimeters above the algae mats. I immediately wondered if it could be *Telebasis salva* the "lost damselfly." So I took an awkward sweep and came up with algae dripping off the net ring. The big net was just too oversized for the task. I thought my chance had passed when another buzzed over the algae mat on the pond's surface. Again, I scooped up only algae making a mess of the net! After cleaning the algae off the net, I decided to give up on the *Anax walsinghami* and started back to the car for a smaller net when I noticed another fiery red damselfly. This time it landed on a small weed sticking up above the surface of the water where I carefully made the catch. I managed to collect two males with the big net as well as the *Anax walsinghami*. My initial identification was later confirmed by John Abbott.

Argia hinei Kennedy (Lavender Dancer). On the north fork of Leeds Creek in Leeds Canyon (2 Sep 2006), I found several damselfly species including one later identified by John Abbott as *Argia hinei* Kennedy. I was aware that this species had recently been found at two other sites

(Johnson, 2004; Bailowitz & Stevens, 2006) in Utah, one just a few miles downstream from Leeds Canyon along the Virgin River near LaVerkin. I actually tried finding *Argia hinei* along the Virgin River later that day without success, not realizing that I had already collected it in Leeds Canyon. I was excited to add another location to this relatively new addition to the Utah damselfly fauna.

There are a few dragonflies listed in the literature as occurring in Utah but which are not represented in the BYU collection with specimens from Utah. They are *Aeshna constricta* Say (Lance-tipped Darner), *Oploniaeschna armata* (Hagen) (Riffle Darner), *Libellula (Plathemis) lydia* (Drury) (Common Whitetail), *Ladona julia* (Uhler) (Chalk-fronted Corporal), and *Sympetrum madidum* (Hagen) (Red-veined Meadowhawk). Brown (1934) lists several *Aeshna constricta* records from Utah and provides sources. However, the year collected and specimen locations are not given. Musser (1962) lists only "one cast skin" of *Oploniaeschna armata* collected in Zion Canyon National Park at Weeping Rock Stream. Needham, Westfall and May (2000) lists *Sympetrum madidum* from Utah and *Libellula (Plathemis) lydia* in "all contiguous states." But the original sources are not given. Musser (1962) lists a record for *Ladona julia* from Kormondy (1960) housed at the University of Michigan. But locality data is lacking. I would be most interested in any information (verified records and specimen repositories) about these species in Utah. Please send any information to my e-mail address: <alanm@provo.edu>. I would like to thank John Abbott for his assistance in the identification of specimens.


Maiden Flight

Ken Tennessen

Wings stretched straight,
fluttering like Sunday fans
on yester Dixie's porch,
transformed from straw-colored
gauze to diaphanous film,
the sweet tea all sipped through,
the damsel shuffles her feet,
checks that her most
colorful dress is packed,
then reflects on the old plantation
as she waits on the right
moment to steal away.



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Anax longipes (Comet Darner) Breeding Population Expanding in New York

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The summer of 2006 marked the third season *Anax longipes* (Comet Darner) has made an appearance at one of our ponds, extending the former range into the Finger Lakes Highlands of New York. In 2004 two single males were seen for the first time. Although we never saw a female, one apparently visited as we found 10 exuviae the next season of 2005. An account and description of habitat as well as the former range for this dragonfly can be found in *ARGIA* 18(1): 12–13. At the time it was unknown as to whether this small breeding population would maintain or if it was just a fluke.

Beginning 1 June 2006, we started our annual daily counts of emerging *Celithemis elisa* (Calico Pennant) (see article elsewhere in this issue) and *Anax junius* (Common Green Darner) as part of two ongoing projects. During our surveys we are intensely aware of other species as well and picked up the first *Anax longipes* exuvia on 16 June. As with the other two species we kept an ongoing log of numbers, weather and activity. Totals for all three species far exceeded our modest expectations.

The emergence season for *Anax longipes* lasted from 16 June through 26 August. It began slowly with one here, one there, but picked up during the last week in June then dwindled to singles again. The highest count was 10 on 26 June, coinciding with the period of 4 days of hard rain during which *Celithemis elisa* also emerged in large numbers. When the last was collected on 26 August our jar held a total of 85 exuviae!

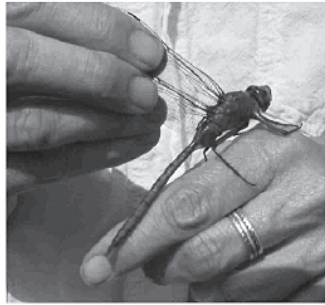
Emergence always took place during the night, rain or no rain. We were witness to very few teneral still at their exuviae early in the morning, and once they took off on their maiden flight all but a couple of adult males were never seen again.

Sex ratio was fairly even with 49 males and 37 females, although we have yet to see an adult female. Adult flight season was rather short, from 8 to 24 July. During this time it occurred to us that this might be an excellent opportunity to study dispersal of a “new kid on the block”. A “wanted” poster with a photo and description was created and a small “posse” set out to search nearby ponds. From here we visited all ponds within 1½ mile, stopping at residences, presenting the poster and asking permission to check their ponds. This being rural farmland with plentiful ponds we were able to search 15 besides our own.

Between 16 July and 14 August, we observed single adult males at two ponds and two males and one exuvia at a third. Habitat notes were taken for each pond, and residents advised. (That was the really fun part!) All ponds were within 1 mile of “*longipes* central” with no presence any further away.

In the time between placing the poster at a few local stores and the present, two folks from greater distances reported seeing large red dragonflies at their ponds. Although it is pretty hard to misidentify that big red and green dragon these sightings will be treated as anecdotal until confirmed.

WANTED



Anax longipes, Alias Comet Darner

This impressive dragonfly has established a breeding population in a pond on our property. The previous range is much further East and South, plus a small population in Albany County and one in Central Pennsylvania. There are a few sight records in Tompkins County dating back to the 70s.

We are studying this species and its dispersal habits. So far this summer we have found evidence of over 60 that have emerged from our pond. The mystery is where they go from here.

Their MO is to be in flight patrolling a pond in the mid-morning and late afternoon. Optimum time for viewing is around 4PM. They prefer sunny days.


Pictured is a mature male. His size and bright red abdomen makes him easy to observe, so dispersal can be tracked with little effort.

Thanks for helping!!!

John and Sue Gregoire, 5373 Fitzgerald Road, 546-2169 (khmo@att.net).

One of them is between us and Ithaca, New York where there is a sight record from the 70s.

An interesting note on habitat: the vegetative substrate at our pond and the next nearest in Albany County, New York both consist of thick beds of *Chara*, a plant-like alga. We had considered this SAV (Submerged Aquatic Vegetation) to be a key attractant to *Anax longipes*, but the one nearby pond that presented two males and an exuvia had no SAV at all. In fact the dike surrounding that pond was gravelly with just a few asters growing at the waters edge. Hundreds of *Tramea lacerata* (Black Saddlebags) exuviae were also seen there.

As it turned out the flight season ended soon after we set out, so revisits are in order beginning at an earlier date next year. However we now believe this is a firmly entrenched breeding population with Kestrel Haven Migration Observatory as the central point and will continue to take advantage of the opportunity to study its dynamics. To see an adult female remains a tantalizing quest, especially to watch one as she oviposits. 

A New Species for the Galápagos Islands: Great Pondhawk (*Erythemis vesiculosa*)

John Muddeman, Professional Naturalist & Wildlife Tour Guide, <john@iberianwildlife.com>

As a principal leader for two British natural history tour companies, I have had the immense good fortune to accompany four groups to the Galápagos Islands to date.

On 13 July 2004 (my second trip) we visited the black lava field of Punta Moreno, W Isabela Island, which contains a remarkable series of pools of varying size where lava tunnels have collapsed. These pools are of differing size, degree of salinity and also show differences in tidal drawdown due to variable sub-surface connections to the sea. The largest accessible (and furthest from the sea) pool is one of the deepest and always retains water, apparently being less saline than most of the others, though all are brackish given freshwater seepage through the lava.

Numerous dragonflies were present (as in the adjacent mangroves), especially over the largest pool, mostly being *Tramea calverti* (Striped Saddlebags). However, in a smaller pool with an abundant growth of small sedges

and/or grasses around the edge, I also noticed a larger, almost "day-glow" lime-green colored dragonfly with black banding increasing towards the abdominal tip and whitish anal appendages. Given a lack of time, moderate distance to the insect and its habit of suddenly darting off in irregular chases (apparently when disturbed by another with the same characteristics), I didn't try to take photos, but the image of the insect remained clear in my mind.

Returning for the last time on 24 October 2006, on our trip to Punta Moreno I was delighted to see the same insect again, this time in a pool with similar characteristics, but just beyond the main pool. Two or perhaps three were present, and since they were too fast and cryptic when settled in the vegetation to be able to digiscope readily, I asked one of the group members to take a picture for me. On my return while researching the dragonflies on internet, I discovered an article with a key to the islands' dragonflies (Peck 1992). However, the only "green" spe-

cies listed was *Aeshna amazili* and photos on the Internet showed it was clearly not this species.


The solution came after a recent visit to Trinidad, where one evening while looking for birds at Wallerfield, we stopped by a wet ditch. To my surprise there was the same dragonfly, which I successfully digiscoped this time, and the hunt for its identification was on. Returning home I again started the search via the Internet and came across John Abbott's Trinidad and Tobago dragonfly page. The species appeared to be *Erythemis vesiculosa* (Great Pondhawk), but given my complete lack of knowledge of New World species clearly needed confirming. Fortunately, the same evening (28 Jan) after a rapid flurry of e-mails, the specific identity was kindly and rapidly confirmed via e-mail by Dr. Abbott himself.

These sightings appear to be the first published records for the Galápagos. Given the wide distribution of this common species in northern South America, its occurrence is perhaps not so unusual. The good luck is that as a non-

cryptic species, identification has been possible through field observations and long-distance photography. Given that such a colourful species can go unrecorded at a regularly visited site for several years and access by non-specialist visitors on the islands is (correctly) very restricted, I wouldn't be at all surprised if one or more other species also await to be discovered on the islands.

My sincere thanks to The Travelling Naturalist and Limosa Holidays for enabling me to visit the islands, to all the participants on the two trips where we saw the species—for “hanging around” longer than normal in order to see more of the insects, to Mrs. Judith M.S. Robinson who kindly took the picture which has enabled the identification, and of course to Dr. J. Abbott for confirming the species.

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***Somatochlora elongata* (Ski-tipped Emerald) and *Enallagma durum* (Big Bluet): Two New Species for Tennessee**

Richard Connors, Nashville, TN, <Rconnorsphoto@aol.com>

In 2006 I surveyed odonates for Tennessee State Parks' All Taxa Biological Inventory (ATBI). In the process of conducting these surveys two species new to the state list were discovered.

On 19 July 2006, I was camping at a friend's farm in Carter County, upper east Tennessee. Set in a mountain valley near the Cherokee National Forest, the average elevation of this farm is about 610 m. A series of spring-fed ponds have been built by the owner consisting of a couple of ½-acre fish ponds and several small “frog ponds” without fish.

The upper “trout pond” is mostly shaded and has such species as *Aeshna umbrosa* (Shadow Darner) patrolling from mid-season on. “Green Eyes” as the owner called it, was noticed as being different, possibly a *Somatochlora* Emerald. Digital photos of the perched dragonfly were made. It was subsequently captured and photographed in detail. Dunkle's field guide was consulted and the identification was determined to be *Somatochlora elongata*, Ski-tailed Emerald (now called Ski-tipped Emerald).

After consulting with Ken Tennessen I returned on 1 August to collect a specimen (one male) to submit for the official record. Two other males were present and a female was seen ovipositing along the edge of the pool where the

male was collected. No *Somatochlora* were observed at nearby Roan Mt. State Park during the survey there. Similar habitat including shaded trout ponds was lacking. *S. elongata* is known from North Carolina and from farther north. It possibly occurs in other Tennessee counties bordering North Carolina where the appropriate habitat is available.


On 3 October 2006, Rita Venable and I were conducting ATBI surveys for “odes and leps” at Paris Landing State Park, Henry County, Tennessee. Rita was concentrating on butterflies and I was searching out odonates. An *Enallagma* (Bluet) species was observed and photographed along the shore of the Tennessee River (Kentucky Lake). This particular species seemed to be common here; males and females were observed, with some mating. Upon comparing photos with “Damselflies of the Northeast” by Ed Lam, the identification was determined to be *Enallagma durum* (Big Bluet). On 4 October a male and female were collected as voucher specimens.

The afternoon of 4 October a survey was done at Nathan Bedford Forrest State Park in Benton County, to the south of the previous park and also bordering Kentucky Lake. *E. durum*, males and females, were found and photographed here also. Big Bluets were found on 14 October at Pickwick Landing State Park, just above the Missis-

issippi border, in Hardin County, also along the Tennessee River (Pickwick Lake). One specimen was collected for a voucher. These sites were all on the west side of the river, which has a more gradual slope than the east shore (one site on the east side, Mousetail Landing State Park, Perry Co., was checked on 21 October with no *E. durum* found there). The more gentle western shore makes for easier survival of emergent plants with the wide fluctuation of US Corps of Engineers' water-level controlled lakes.

In all these locations *E. durum* were found in almost every good patch of Water Willow (*Justicia* spp.) that I checked. *Justicia americana* is common on streams throughout middle Tennessee, but the Water Willow found along

the Tennessee River in west Tennessee is possibly *Justicia ovata*, Coastal Plain Water Willow. This would be fitting as habitat for a species of damselfly usually associated with the eastern US coastal plain. I was not able to get positive identification on the plant before the season ended.

Enallagma durum was the dominant species where it was found, and I would call it common or abundant at those sites, on those dates. It has obviously expanded its previously known range. Other species found nearby included *E. civile* (Familiar Bluet) which was generally present away from the "big water" in coves, *Ischnura ramburii* (Rambur's Forktail) which was not previously on record for these counties (also expanding its range), and *I. posita* (Fragile Forktail). 


First Record of *Enallagma basidens* (Double-striped Bluet) in Nevada

Jeff Lubchansky, <thelube@verizon.net>

In June 2006, I had the opportunity to trade off my time-share and visit friends in Las Vegas, Nevada. Not being a gambler, I checked the Yahoo Groups and found the Southwest odes group. They, along with a Google search led me to the Las Vegas Wetlands, Henderson water reclamation facility, Floyd Lamb State Park, Lake Meade, and the Desert National Wildlife Refuge.

On 17 June, my wife and I hiked the wetlands. Since this was my first trip to the area, just about everything I photographed was a personal record, except for the *Enallagma carunculatum* (Tule Bluet). On 19 June, we drove to Floyd Lamb State Park. As I had seen much of the odes on previous hikes to parks mentioned above, I didn't really get excited and in fact was a bit disappointed to see *E. basidens* (Double-striped Bluet) all along the first lake. It was hot and I didn't explore the other water features expecting to see the same.

As always, I don't try to identify the odes in the field, nor do any capturing. When I get back home or wherever, I plug the memory card in and use Photoshop to ID the creature.

After all were identified, I went to the OdonataCentral page (<http://www.odonatacentral.com>) to download the Nevada and Clark county checklists. I find it rewarding to put a check mark next to each new personal record. I also discovered that the Tule Bluet was a Clark county record. I was also informed that the checklists on OdonataCentral were being updated, so what I thought were records such as the *Hesperagrion heterodoxum* (Painted Damsel), *Libellula luctuosa* (Widow Skimmer), *Perithemis intensa* (Mexican Amberwing), *Tramea onusta* (Red Saddlebags), and *Brechmorhoga mendax* (Pale-faced Clubskimmer) were actually previously recorded. Then it occurred to me that I hadn't checked off *E. basidens*, I couldn't find it on the Clark County checklist so I went to the Nevada list. Again, no record. I then went to "Common Dragonflies of the Southwest"; Nevada was not listed for this species. So there apparently was my first state record and I only had to travel 2000 miles to get it. Upon my return to New Jersey, I was contacted by Steve Potter, Tim Manolis, Nick and Ailsa Donnelly, and Kathy Biggs who were all able to confirm my posting and records. 

New County Records for Southern Iowa

Ann Johnson, <aj@hologrambirds.com> and Karen Kinkead, Ph.D., <Karen.Kinkead@dnr.state.ia.us>

When the Iowa Wildlife Action Plan was developed a couple of years ago, the odonates were included based on the multitude of records obtained over the years and published in the Bulletin of American Odonatology (Cruden & Gode, 2000) with more recent updates in ARGIA (Johnson, 2003; White & Hummel, 2004; Johnson, 2004). Under the direc-

tion of Kinkead, Research and Monitoring Biologist for the Iowa DNR, the first major effort to inventory wildlife and provide a baseline occurred in 2006 when a team of technicians concentrated on 12 private properties in south-central Iowa. Johnson collected data on weekends and trained the full-time field technicians on odonate identification.

The data collected in 2006 were made possible through two Iowa Department of Natural Resources (IDNR) programs. Protocols designed as part of the Iowa Multiple Species Inventory and Management Program (MSIMP, http://www.iowadnr.com/wildlife/files/multispecies_inventory_monitoring.html) were implemented on property enrolled with the Landowner Incentive Program (LIP). The IDNR LIP is funded through a US Fish and Wildlife Service grant. The purpose of LIP is to provide cost-share to landowners interested in protecting, enhancing, and restoring habitats for threatened and endangered species.

The LIP used the protocols developed for the MSIMP to document the presence of mammals, birds, amphibians, reptiles, fish, butterflies, and odonates during the summer of 2006. We visited 10 properties enrolled in LIP in Lucas County, one in Wayne County, and one in Clarke County. In addition, we also visited Ringgold Wildlife Area in Ringgold County and Whiterock Conservancy in Guthrie County. The MSIMP program will be expanded statewide (depending upon available resources) beginning in 2007 on Iowa's public lands.

The protocol for detecting odonates involves visiting each property on multiple occasions (at least six visits per property) between April and October. These six visits are further separated into three seasons, with two visits made between April and mid-June, two between mid-June and mid-August, and two between mid-August and the end of October. During each visit, the observer keeps track of the amount of time spent at each pond or other appropriate habitat (including uplands used for foraging) as well as which species are seen and a categorized count of the number seen. By visiting the same areas on multiple occasions, we can determine whether a species may have been missed because it was not present or because it was accidentally overlooked.

The properties inventoried had few permanent streams and even the three which maintained some water throughout the summer were reduced to little flowing water due to drought. Consequently, most of the odonates observed were those expected at ponds and wetlands associated with upland savannah. It was a very successful summer:

- ♦ 51 species recorded
- ♦ 24 new county records
- ♦ Recorded seven "species of concern" on six different properties
- ♦ Expanded known ranges of several species
- ♦ Found three/four new populations of a dragonfly previously known from only one location in the state (Slaty Skimmer—*Libellula incesta*)
- ♦ Expanded the confirmed breeding range of one spe-

cies (Lance-tipped Darner—*Aeshna constricta* [Lucas Co.])


Species of Concern

Spotted Spreadwing (*Lestes congener*)—Lucas Co.
 Cyrano Darner (*Nasiaeschna pentacantha*)—Lucas Co. (two locations)
 Mocha Emerald (*Somatochlora linearis*)—Lucas Co.
 Slender Baskettail (*Epithea costalis*)—Lucas Co.
 Spangled Skimmer (*Libellula cyanea*)—Clarke Co., Lucas Co. (three locations)
 Slaty Skimmer (*Libellula incesta*)—Clarke Co., Lucas Co. (three properties; four ponds)
 Blue-faced Meadowhawk (*Sympetrum ambiguum*)—Clarke Co.

County Records

Amber-winged Spreadwing (*Lestes eurinus*)—Clarke, Lucas, Ringgold
 Tule Bluet (*Enallagma carunculatum*)—Ringgold
 Slender Bluet (*Enallagma traviatum*)—Lucas
 Sedge Sprite (*Nehalennia irene*)—Lucas
 Cyrano Darner (*Nasiaeschna pentacantha*)—Lucas
 Horned Clubtail (*Arigomphus cornutus*)—Lucas
 Calico Pennant (*Celithemis elisa*)—Wayne
 Halloween Pennant (*Celithemis eponina*)—Ringgold
 Spangled Skimmer (*Libellula cyanea*)—Clarke, Lucas
 Slaty Skimmer (*Libellula incesta*)—Clarke, Lucas
 Wandering Glider (*Pantala flavescens*)—Ringgold, Clarke, Lucas
 Spot-winged Glider (*Pantala hymenaea*)—Lucas
 Blue-faced Meadowhawk (*Sympetrum ambiguum*)—Clarke
 Variegated Meadowhawk (*Sympetrum corruptum*)—Clarke, Lucas
 Saffron-winged Meadowhawk (*Sympetrum costiferum*)—Clarke, Lucas
 Red Saddlebags (*Tramea onusta*)—Clarke

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Dragonflies Featured in Song

Jerry Hatfield, <dragonflywatcher1029@yahoo.com>

Some time ago I ran across a neat little song about dragonflies by singer/songwriter Fernando Ortega. The CD is entitled Fernando Ortega and was produced in 2004. The song was written by Fernando Ortega, Elaine Rubenstein, and John Andrew Schreiner. It is called "Dragonfly" and has a really catchy beat to it. The words are as follows:

Come a little closer, dragonfly
Settle down with me a little while
I'm turning off the phone and enterprise
I could use your company, all right

Hey, hey dragonfly
I'd like to stare into your big bug eyes
Get a closer look at your fine wings
Think about some fleeting, pretty things
Hey, hey, hey, dragonfly

Come a little closer, dragonfly
Little sapphire slipping through the sky
Between the skaters and the fishing lines
My, my, my dragonfly

Hey, hey dragonfly
I'd like to stare into your big bug eyes
Get a closer look at your fine wings
Think about some fleeting, pretty things
Hey, hey, hey dragonfly
Hey, hey, hey dragonfly

Come a little closer, dragonfly
I love the quiet air you occupy
I'm sitting down right here, right now, alone
To hear the river lapping at the stone

Hey, hey dragonfly
I'd like to stare into your big bug eyes
Get a closer look at your fine wings
Think about some fleeting, pretty things
Hey, hey, hey dragonfly
Hey, hey, hey dragonfly

Hey, hey, dragonfly
I'd like to ride with you tonight
Take in your show, take up your life
Dragonfly, I really like your style.



Book Review: **Dragonflies & Damselflies of Georgia and the Southeast**, by G. Beaton. The University of Georgia Press, 2007, 355 pp., \$24.95, ISBN-10 0-8203-2795-6

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The newest submission to the flurry of dragonfly and damselfly field guides appearing in North America is Giff Beaton's "Dragonflies & Damselflies of Georgia and the Southeast." It covers more than 150 species found in Georgia in wonderful detail with over 400 color photographs. The book is well laid out and aesthetically pleasing. I applaud Giff for including damselflies in his guide. This is one of the few guides covering a relatively large fauna that includes both damselflies and dragonflies. The photographs are excellent and reproduced at a size that will really make them useful to the reader.

The first 35 pages contain a thorough and informative introduction covering general morphology, taxonomy, life cycles, migration, Georgia physiography, habitats, conservation, how to watch for odonates, and photography. These sections provide a broad introduction to odonates

for the beginning dragonfly watcher.

The following 14 pages introduce the reader to the specifics of identifying dragonflies and damselflies, how the guide is setup, and how to go about using it. The bulk of the book is of course dedicated to species accounts. In order to keep the book's size manageable, the author limited the species accounts to the 151 (53 damselflies and 119 dragonflies) most common species found in Georgia. The remaining 21 species known from the state are listed in an appendix with a brief summary of their history and occurrence in the state. The reader is also referred to Giff's Web site, <<http://www.giffbeaton.com/dragonflies.htm>>, for details and photographs of these species.

The families are arranged in phylogenetic order and introduced with generalities about life history and morphology.


Conventions like a color-coded index to families make groups easy to access when the book is closed. Helpful illustrations are also included along the sides of the family-level introductions. Following something Ed Lam did in his *Damselflies of the Northeast*, Giff then includes Identification Tips for each genus. This is very useful and I think readers will benefit greatly from these sections. Generally, species are listed alphabetically within each genus, but exceptions are made to place similar appearing species next to one another. Each species account is headed with the common name (scientific name is given below), remarks on identification, similar species, habitat and behavior. In addition, a distribution map, size, status in Georgia, and seasonality are all given along the side.

The book concludes with a number of very useful appendices including Odonata collecting/viewing sites in Georgia (this is a list of state and federal lands along with other areas Giff has found productive; they are all nicely shown on a map of the state), a preliminary list of state rankings for each species compiled by the author, seasonality presented in chronological order, additional resources on the web and in print, and a glossary.

I could only find a few places where I felt minor improvements could have been made. The introduction contains a combination of scientific and colloquial terms. For example a photograph of a dragonfly head is labeled with labrum, face, frons, ocelli, antennae, compound eyes, and occiput. It is inconsistent to use the term face over clypeus when terms like frons and labrum are used. I note that in the Glossary "forehead" is used as a synonym for frons. I

would have liked to see more consistency in the choice of terms used. The family-level key on pages 43–45 is a mixture of dichotomous and trichotomous couplets which may be a bit confusing to first-time users. I also found the distribution maps to be a little confusing at times. The species' distributions are represented in the color assigned to a particular family, which is sometimes close to the base color of the map and I often found myself having to stare at the map longer than I would have liked to get a feel for where the species was found. Each map does have a legend below though that will help. While I didn't find the color schema useful with the maps, the same schema (different colors for different families) was applied to the appendix with seasonality histograms and it does work there.

Lastly, no fault of the author's, I noticed a couple of common names were already incorrect because of recent changes (*Epithecus costalis* has been changed from Stripe-winged Baskettail to Slender Baskettail and *Celithemis elisa* has been changed from Faded Pennant to Ornate Pennant). Hopefully we will soon see a leveling off with these changes.

Giff Beaton and The University of Georgia Press are to be applauded for producing such a beautiful and well organized field guide. Though certainly not small at 355 pages, the book is compact enough it can be easily taken in the field. I encourage everyone who lives or plans on visiting the southeastern United States to be sure and pick this gem up. With each new dragonfly and damselfly field guide published, the bar for the next one seems to keep getting raised and Giff has certainly done that with this book. 

New and Recent Books Briefly Noted

The Dragonflies and Damselflies (Odonata) of Texas, Volume 2. Edited by John C. Abbott, 2007, Published by The Odonata Survey of Texas.

This is the second volume of the Odonata Survey of Texas. Included in Volume 2 are updated and detailed species distribution and seasonality accounts arranged so that users can quickly and easily search by scientific name, county name, or flight season. A variety of articles are also included on the natural history, collection and preservation, and diversity of Texas odonates.

Featured Articles Include:

Digital Odonate Photography: My Personal Techniques, G.W. Lasley

First Texas Record and Second U.S. Occurrence of the Pale-green Darner, *Triacanthagyna septima* (Selys in Sagra, 1857) (Odonata: Aeshnidae), R.A. Behrstock, J.S. Rose, and J.C. Abbott

Williamson County Gold: Chandler Creek, B. Thomas

What Do We Know About Dragonfly Migration on the Texas Coast?, J. Matthews

The Dragonflies and Damselflies of the Llano Estacado: In Search of New Species Records on the Panhandle South Plains, J. Hatfield

New Odonata for Bastrop County and the Stengel "Lost Pines" Biological Station, P. Schappert

Available at <<http://www.lulu.com/content/668195>> for \$30. This volume will soon be available via Amazon, Barnes and Noble and other distributors.

Forests and Dragonflies. 4th WDA International Symposium of Odonatology, Pontevedra (Spain), July 2005. 2006. Edited by Adolfo Cordero Rivera., Pensoft Series Faunistica No. 61. ISBN 978-954642278-1.

From the Book Jacket:

Over the world, forests provide diverse habitats for a range of organisms, including dragonflies and other animals, that at a first sight seem not to depend on forests. For instance, *Macromia splendens*, one of Europe's most endangered dragonflies, uses forest roads as hunting places, and larvae are sometimes found amongst tree roots. As the authors of this book show, dragonflies are highly dependent on forest cover and composition, and this is true from the boreal forests to the tropics.

The aim of this book is therefore to explore the ways in which forests affect dragonfly life, and to show that forests are much more than places where timber is produced.

Les Libellules de France, Belgique et Luxembourg by Daniel Grand and Jean-Pierre Boudot. 2006. Biotope, Mèze, (Collection Parthénopé), 480 pages. ISBN 2-914817-05-3.

The first ever comprehensive book on the dragonflies and damselflies of France, Belgium and Luxemburg published in the French language. In addition to serving as an identification guide, the book discusses biology, taxonomy, and ecology of the dragonflies. It covers 38 damselflies and 62

dragonflies and is richly illustrated, containing over 700 color photographs.


Damselflies of North America 2nd edition by Minter J. Westfall, Jr., and Michael L. May, (revised by Mike May). 550 pp. Scientific Publishers; accompanying color guide expected spring 2007.

The original text from 1996 is revised, with new distribution data, corrected keys, and the addition of two Mexican species newly recorded for the region, plus added figures for these species. The page format is altered to better conserve space, thus saving over 100 pages of text and keeping the book cost down, but the size of the pages remains the same at 7 × 10 inches. Publisher's price: \$95.00.

Newly added is a supplemental volume of color plates illustrating all 163 damselfly species for North America with photos taken in nature. This second part to the new edition will contain about 60 color plates. Part 2 will be sold separately for those wanting to add it to their copy of the first text edition, while a discount price package will be available for those purchasing the entire 2-volume set of the new edition. Publisher's price \$110.00.

IORI pricing (<http://www.iodonata.net/>), 2nd Edition only: US deliveries, \$90.00 (media mail); outside US, US\$100.00 (surface rate, add \$30 for airmail).

Companion color volume: expected late spring 2007 [hard back] US deliveries \$100.00; outside US, US\$110.00 (surface rate, add \$30 for airmail).

Package of both: [hard back] US deliveries \$180; outside US, US\$190.00 (surface rate, add \$30.00 for airmail). 

ARGIA and BAO Submission Guidelines

Digital submissions of all materials (via e-mail or CD) are vastly preferred to hardcopy. If digital submissions are not possible, contact the Editor before sending anything. Material for **ARGIA** must be sent directly to the John C. Abbott, Section of Integrative Biology, C0930, University of Texas, Austin TX, USA 78712, <jcabbott@mail.utexas.edu>; material for **BAO** must be sent to Ken Tennessen, P.O. Box 585, Wautoma, WI, USA 54982, <ktennessen@centurytel.net>.

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

Tables may be submitted as Word documents or Excel spreadsheets. If Excel is used, place each table on a separate sheet and name each sheet appropriately (e.g. "Table 1", "Table 2", etc.)

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Back cover: (upper) *Celithemis elisa* (Calico Pennant) emerging in large numbers in the Fingerlakes Highlands of New York, 7 June 2006, photo by John Gregoire; (lower) *Orthemis schmidtii* from the Mayaro Ortoire River in Trinidad, 31 July 2004, photo by John C. Abbott.

