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Front cover: Male Cherokee Clubtail (*Gomphus consanguis*) at Taliaferro Creek, Chattooga County, Georgia, taken 7 June 2009. Photo by Marion M. Dobbs.

Saskatchewan to Host the 2013 DSA Annual Meeting

David Halstead <halstead@siast.sk.ca> (1-306-765-1643)

The 2013 DSA Annual Meeting will be held at Prince Albert, Saskatchewan from 12–15 July. Your host will be Dave Halstead and members of the local DSA Annual Meeting Committee. The province of Saskatchewan lies immediately north of Montana and North Dakota; however, any geographic similarity is lost by the time you reach Prince Albert in the central part of the province. P. A., as it is locally known, is poised on the edge of two distinctly different ecological regions with aspen parkland and prairie to the south and boreal forest to the immediate north. The easiest way to get to P. A. is to fly directly to Saskatoon via one of several international airlines (United, Delta, Air Canada, Westjet, American Airlines) and then make your way 120 kilometres (75 miles) north to Prince Albert by automobile. Most car rental agencies (Enterprise, Budget, Hertz etc) can be found at the Saskatoon airport.

Prince Albert, at 53 degrees latitude, represents a new milestone for the DSA; it's the furthest north a DSA annual meeting has ever been held and it's adjacent to one of the largest gaps in dragonfly distributional knowledge in North America. The region is characterized by long cold winters and short mild summers. Consequently, dragonflies and damselflies must contend with seven or eight months of ice cover and an abbreviated few months of flight. These conditions favour a concentration of darners and emeralds with over 20 species known to occur among these two family groups and several others suspected. DSA participants should be on the lookout for *Aeshna eremita*, *A. interrupta*, *A. canadensis*, *A. sitchensis, A. juncea*, *A. subarctica*, *A. tuberculifera*, *A. umbrosa*, *Basiaeschna janata*, *Cordulia shurtleffi*, *Epitheca canis*, *E. spinigera*, *Somatochlora minor*, *S. franklini*, *S. cingulata*, *S. walshii*, *S. williamsoni*, *S. hudsonica*, *S. albicincta*, *S. kennedyi*, and *S. whitehousei*. Species suspected but not yet known to occur in the region include *A. septentrionalis*, *S. septentrionalis*, and *S. brevicincta*. Libellulid lovers should expect to see good representation from the whiteface and meadowhawk clans including: *Leucorrhinia borealis*, *L. hudsonica*, *L. glacialis*, *L. proxima*, *L. patricia*, *Sympetrum internum*, *S. obtrusum*, *S. danae*, and *S. costiferum*. *Ladona julia* and *Libellula quadrimaculata* also commonly occur. Among the clubtails you should see *Ophiogomphus colubrinus* and *O. severus*. Damselflies of note include *Coenagrion angulatum*, *C. resolutum*, *C. interrogatum*, *Enallagma boreale*, *E. annexum*, *E. hageni*, *E. ebrium*, *Lestes dryas*, *L. disjunctus*, *L. forcipatus*, *L. congener*, *Nehalennia irene*, and *Calopteryx aequabilis.* See Hutchings and Halstead 2011 for a concise list and diagnostic keys for the area.

The focus for the dragonfly survey will be Prince Albert National Park 40 minutes northwest of Prince Albert. Prince Albert National Park is often mentioned in Edmund Walker's surveys of the early to mid 1900s but has received little attention since. Some of you may be familiar with the park as home of noted conservationist Grey Owl during the 1930s (others may be familiar with the Pierce Brosnan movie of the same name). The park boundary encompasses 1500 square miles of pristine boreal forest. A collection permit has been obtained for DSA participants and the park has agreed to waive the daily park fee of $8.00 in exchange for survey information. Survey results will also be published in ARGIA at the conclusion of the summer's activities.

The DSA business meeting is planned for Saturday 13 July. The meeting will be held at the Saskatchewan Institute of Applied Science and Technology (SIAST) in Prince Albert. SIAST should be able to accommodate any presentation related needs, but please give me a call if you require anything out of the ordinary. Presentations should be around twenty minutes in length but more time may be granted on request. Consider this announcement as an early call for presentations. We also hope to continue the

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Calendar of Events

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

Event	Date	Location	Contact
DSA Annual Meeting	12–15 July 2013	Prince Albert, Saskatchewan	D. Halstead <halstead@siast.sk.ca>

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tradition of a silent auction in support of Odonata Central. Please give some thought to auction items you might be willing to donate.

The costs for accommodation might be a little more than people are used to but we are hoping to make it up in other ways. The best rate is $95.00 plus tax ($11.40) at the Prince Albert Travelodge (3551 2nd Avenue West, 1–800–578–7878). This motor hotel will serve as headquarters for most of the non-survey activities. The hotel offers wifi and a restaurant. The manager is willing to provide restaurant vouchers to help offset some of the costs for breakfast and we're hoping to secure a small banquet room where we can gather in the evenings to share the day's adventures. Twenty five rooms have been set aside for the "Dragonfly Society" until 30 June 2013. In addition, twenty five rooms are booked, also until 30 June, at the Prince Albert Super 8 Motel (444 2nd Avenue West, 1–306–953–0088) located about a mile down the road on the outskirts of the city. The rate for the Super 8 is $104.50 plus tax ($12.35). This rate includes wifi and a continental breakfast. Please book early.

For those on a tight budget, or if you're interested in sleeping with the dragonflies, the Mary Nisbet Campground located just off Highway 2 on the north side of Prince Albert charges $20.00/night for tenting and $25.00/night for electrical hookup. If you don't mind travelling a little further, superior campground facilities can be found 50 kilometres (30 miles) north at Murray Point Campground, Emma Lake (http://www.saskparks.net/Reserve-a-Site); 60 kilometres (40 miles) north at Sandy Lake Campground in the south end of Prince Albert National Park; or 100 kilometres (60 miles) north at Beaver Glen Campground (1–450–505–8302) in the town of Waskesiu.

Pre–Meeting Trip

The pre-meeting survey will also originate out of Prince Albert July 10 – 11. The focus of the pre-meeting will be the immediate region around Prince Albert as well as Candle Lake and Narrow Hills Provincial Parks to the east. The transitional nature of the region provides a wealth of different habitat types from bogs to rivers to kettle lakes.

Post–Meeting Trip

The post-meeting is scheduled for 15–17 July in the vicinity of LaRonge and/or Missinipe, Saskatchewan. LaRonge is three hours north of Prince Albert at the southern edge of the Canadian Shield, a vast region of low lying bedrock covered with thin soils, boreal forests, and wetlands. The high latitude (55 degrees north) and distinctive ecology of the region is ideal for dragonflies and damselflies with restricted northern distributions. Missinipe is another 80 kilometres (50 miles) north on the shores of Otter Lake and just south of the Churchill River crossing.

Accommodations for the post–meeting are not yet fully decided. The preferred plan, likely to result in significant cost savings, involves sharing group facilities at Thompson Camps Otter Lake Resort and Fishing Lodge in Missinipe (1–800–667–5554). I've tentatively booked six cabins overlooking Walker Bay in anticipation of this option. The cabins come with fully equipped kitchens, barbecues, two bathrooms, large screen TV and laundry facilities. Wifi and restaurant facilities are available in the main lodge. Obviously, the opportunity to share accommodation and prepare our own food would result in significant cost savings. Each cabin is outfitted with two rooms sporting either a queen or double bed and one room with three single beds. Total accommodation therefore ranges from five to seven persons (assuming two couples utilize the rooms with larger beds). A fold-out couch in the common area could push this number to eight. Each cabin is $440.00/night (tax included). Photographs of these facilities are available at <http://adventuredestinations.ca/gallery#/Page/1>.

The only drawback to this option is Thompson Cabins requires a deposit for half the price of the stay six months in advance. Moreover, the deposit is non–refundable within 60 days of the projected date of arrival. This requirement is typical of northern fishing camps that must operate at close to full capacity over the very short field season. Since the lodge prefers to deal with as few clients as possible, the Prince Albert DSA Committee plans to advance the initial deposit until early to mid–May whereupon we'll make the decision to book, or not book, based on expressed interest. The key to securing these facilities is to have a few groups of individuals willing to commit to the deposits. These sponsoring groups would then be at liberty to share the costs with DSA members signalling their intentions to take in the post–meeting on the DSA Conference web page or at the Annual Meeting. If there is insufficient interest expressed by early to mid–May, then we'll cancel the registration, have our deposits returned, and revert to plan B below. The DSA Annual Meeting 2013 web page will provide additional details when activated later this fall.

Plan B involves conventional accommodation in LaRonge. Participants could either book at The Waterbase Inn (303 LaRonge Ave, 1–306–425–5550, Single $99.00, Double $110.00, or Queen/King/Kitchenette $132.00); or at the LaRonge Motor Hotel (1120 LaRonge Avenue, 1–800–332–6735, $110.00 plus tax). These hotels are a couple of blocks apart on opposite sides of the street. The Waterbase Inn overlooks Lac LaRonge, and as its name implies, also serves as an Aerodrome for one of the local float plane companies. The LaRonge Motor Hotel houses the town bar

(not necessarily a good thing) and has a full service restaurant. Group bookings have been set up at both of these facilities until 30 June, should they be required. As with any hotel, deposits are refundable as long as you cancel with sufficient advance notice.

Campground facilities are situated in close proximity to proposed accommodations in both Missinipe and LaRonge. Nut Point Campground in LaRonge is one of the jewels of northern Saskatchewan. Missinipe has a campground within the village. There is also a campground adjacent to the highway a few kilometres down the road at Otter Rapids. Both campgrounds are wilderness campgrounds with a minimum of amenities.

As you'll discover, Saskatchewan offers endless territory for you to explore and unlimited potential for new discoveries. The protected wilderness of Prince Albert National Park supports a vast array of habitat types ranging from alkaline seeps to acid bogs, small forested streams, sedge fens, and immense lakes. When you head north, onto the Precambrian shield, you will be struck by the raw beauty of exposed bedrock and unspoiled lakes. I seriously hope you'll consider visiting us this summer and if you are coming from the U.S., please don't forget your passport.

References

Hutchings G. and D. Halstead. 2011. Dragonflies and damselflies in the hand: an identification guide to boreal forest Odonates in Saskatchewan and adjacent regions. Nature Saskatchewan. 158 pp. Available from Nature Saskatchewan <http://www.naturesask.ca/store/en/publications/dragonflies-and-damselflies-in-the-hand>.

Another Successful Southeastern Soirée

Steve & Mary Jane Krotzer <rskrotze@southernco.com>

In mid–June, a dedicated group of 31 odonate watchers, photographers, and/or collectors converged on the town of Columbia in central Tennessee for the 2012 southeastern DSA meeting. The main purpose of this gathering was a chance to see some of the South's spectacular dragonfly fauna, including two species endemic to the region—*Gomphus sandrius* (Tennessee Clubtail) and *Ophiogomphus acuminatus* (Acuminate Snaketail). Participants arrived from 13 states, from Washington to New York and Wisconsin to Florida. Some participants were relatively new to the dragonfly game, while others were wizened veterans (like George Harp, just to mention one!). There were several couples and families there, including a father/son team from Texas and a grandfather/grandson tandem from Oregon!

Several folks arrived on Thursday evening, but the meeting officially commenced with the traditional Friday morning gathering in the parking lot of the Hampton Inn. The weather was sunny and unseasonably mild as small groups explored several localities on the Duck River, while others journeyed a bit further afield to the Swan Creek watershed in search of *O. acuminatus*. Other sites visited included some area lakes, the small bedrock streams that are home to *G. sandrius,* and even the small pond in back of the Super 8. After supper, a hard–core group returned to the Duck River until dark, hoping to see the resident shadowdragon species, *Neurocordulia yamaskanensis* (Stygian Shadowdragon). A few were seen, and one was collected by the eagle–eyed Cary Kerst.

Saturday was another mostly sunny and mild day. After the group photo at the Hampton Inn, everyone dispersed to look for species they had missed seeing the previous day. That evening, to celebrate another successful day in the field, most of the group continued the SE DSA tradition of dinner (and beer, and margaritas!!) at a local Mexican restaurant.

The historically warm spring of 2012 made us worry that we might be too late for some species, but our fears turned

Figure 1. Male Acuminate Snaketail (*Ophiogomphus acuminatus*) photographed on Swan Creek, Lewis County, Tennessee. Photo by Marion Dobbs.

out to be unfounded. In spite of Sunday being a rainout, a total of 68 species was seen, photographed, or collected either during the meeting or elsewhere in the state by folks traveling to or from Columbia. *Ophiogomphus acuminatus* and *Gomphus sandrius* were found at several localities, and almost everyone got to see both species. Other "target species" seen included *Calopteryx angustipennis* (Appalachian Jewelwing), *Enallagma antennatum* (Rainbow Bluet), *E. vesperum* (Vesper Bluet), *Tachopteryx thoreyi* (Gray Petaltail), *Arigomphus submedianus* (Jade Clubtail), *A. villosipes* (Unicorn Clubtail), *Gomphus crassus* (Handsome Clubtail), *G. lineatifrons* (Splendid Clubtail), *G. modestus* (Gulf Coast Clubtail), *G. quadricolor* (Rapids Clubtail), *G. vastus* (Cobra Clubtail), *Hagenius brevistylus* (Dragonhunter), *Ophiogomphus rupinsulensis* (Rusty Snaketail), *Stylogomphus sigmastylus* (Interior Least Clubtail), *Stylurus plagiatus* (Russet-tipped Clubtail), *Macromia alleghaniensis* (Allegheny River Cruiser), *Somatochlora linearis* (Mocha Emerald), *S. tenebrosa* (Clamp–tipped Emerald), *Celithemis verna* (Double-ringed Pennant), and *Libellula flavida* (Yellow–sided Skimmer). The biggest disappointment was that the only margaritas seen were at the Mexican restaurant; no *Macromia margarita* (Mountain River Cruiser) were encountered during the meeting, so I guess that one will have to wait until next time!

All in all, it was a very productive meeting, and all who attended seemed to have a good time. Special thanks go out to Richard Connors, Larry Everett, and Alan Trently, as "local" outstanding field naturalists very familiar with the regional odonate fauna, their willingness to lead groups to some of the best sites in the area greatly improved the meeting. Thanks, guys!

Figure 2. Female Acuminate Snaketail (*Ophiogomphus acuminatus*) photographed on Swan Creek, Lewis County, Tennessee. Photo by Steve Collins.

Odes in the Mist

Sandra Hunt–von Arb <pnwb@suddenlink.net> and **Kathy Biggs** <bigsnest@sonic.net>

Del Norte County, located in the far northwestern corner of California, was chosen for our annual CalOdes/DSA Blitz this year, as it was a very under–censused county. Members of the Blitz group arrived from two different directions, planning to meet on Day Two. Our new county records are in bold text.

Ah, but for a match! The Inland Approach Group had known it would be primitive camping as we headed down the last 17 miles of gravel road to Sanger Lake. When we arrived, it was primitive indeed; not only was there no running water, nor an outhouse, but there also was no picnic table. But we'd planned ahead: we had water, hand spades, tents, camp stove, etc. Then we realized that we had no matches—oops!! We thought we were still okay as we could eat cold food for dinner and breakfast, but when we thought of no coffee, THAT was the deal breaker! We decided not to stay the night there but to head instead towards the coast and join up with the Coastal Approach Group a night earlier than planned. However we did see some beautiful scenery and odes while there.

We found three *Darlingtonia* seeps right along the road, each adorned with Tiger Lilies and Five-finger Ferns. At 1 pm we watched a male Black Petaltail (*Tanypteryx hageni*) duelling face–to–face with a male Pacific Spiketail (*Cordulegaster dorsalis*). They circled each other for nearly a full minute before the spiketail gave it up and moved on. Was this territorial, or was someone hungry? At a tiny pond, barely the size of three standard picnic tables, we risked broken bones getting down the scree slope. There we found three species of "emeralds": American, Mountain and Spreadwing (*Cordulia shurtleffii*, *Somatochlora semicircularis* and *Lestes dryas*)! A fourth species at this site was Northern Spreadwing (*L. disjunctus*). We named the pond, which was surrounded by tall sedges, "Emerald Pond". Sanger Lake (5,100'), the highest point on the entire blitz, hosted plentiful Chalk–fronted Corporals (*Ladona julia*), Boreal Bluets (*Enallagma boreale*) and a few Crimson-ringed Whitefaces (*Leucorrhinia glacialis*). No darners entered our nets, which was maddening because we were certain they were Variable Darners (*Aeshna interrupta*), which would be a first record for the county.

We needed to move on fairly quickly though, if we were to join the Coastal Approach Group at their campsite before dark. We vowed to return on "Clean–up Day" as our return would again take us by this area. We had looked forward to camping in such a primitive area, with no other humans around for miles and miles, and especially to seeing the lake at dawn and accessing the few other lakes and wet areas that Sandra (our organizer) had found on topo maps and by assessing maps and terrain via Google Earth. Little did we know then that our van would have been unable to make even another a mile or two beyond Sanger Lake anyway.

In the meantime, the Coastal Group was well on its way. Tony the Elder, as he would come to be known, had started a couple days early and saved campsites for us at the Ruby Van Deventer County Park, our "Blitz Operation Command Center". Before the rest of us had even arrived, Tony had documented two species, including Flame Skimmer (*Libellula saturata*), for the Del Norte list. This county is unusual in that it has more public land than private land (USFS, BLM, State Parks, State Wildlife Reserve, National Parks, etc.). Although that means access, it also means permits were needed if we were going to handle dragonflies and have permission to go off–trail. One of the advantages of going through the tedious process of getting permits was that park representatives had made many suggestions of where to go and they were all looking forward to our report!

Sandra and Tony the Younger of the Coastal Approach Group arrived at the county line at ~11:00 a.m. The forecast was fog in the morning with partly sunny skies late in the afternoon—not ideal. We started at Mill Creek Pond just inside Del Norte County near the mouth of the Klamath River where we were rewarded with sunny skies! Although the pond was beautiful, access to the shores was not easy because of all the brush and trees. We did get our first new county record quite quickly with a blurry photo of a distant Common Whitetail (*Plathemis lydia*) and we also upgraded Western Pondhawk (*Erythemis collocata*) from a "sight only" record.

We headed up the highway to Lagoon Pond where everything seemed fine until the last curve in the road—the dreaded fog. Tony was still upbeat and said that our next destination, Mill Creek Acquisition (State Parks land), had its own weather and was often sunny just behind the first set of hills. Tony, who works for State Parks, had just recently joined CalOdes and couldn't wait for others to be able to see this gem of a pond. It was not grand in size, but the diversity of odes in this location was amazing—we found no less than four new county records there including California Spreadwing (*Archilestes californicus*), Blue Dasher (*Pachydiplax longipennis*) and Black Saddlebags (*Tramea lacerata*). The area was an old gravel pit, just across the dirt road from Mill Creek (maybe ¼ acre total) with a small area that stays wet, and a larger area that was ephemeral. This location tied for the most species sighted overall, but was the most diverse for its size. Several small puddles on the verge of drying were full of spreadwing larvae hoping to emerge before it dried, reminiscent of the tadpole cycle, though tadpoles were surprisingly absent from this location. As we enthusiastically netted and photographed (state parks permit only allowed catch and release), Sandra saw something quite spectacular—three teneral female Autumn Meadowhawks (*Sympetrum vicinum*)! Tony wasn't quite sure why Sandra was so excited, until she explained that we hadn't expected to get this county record because it was too early in the season for them. They were about a month earlier than ever seen in California before and of course the first to be sighted this year!

Figure 1. Autumn Meadowhawk (*Sympetrum vicinum*). Photo by Sandra Hunt-von Arb.

A quick walk down in the creek yielded some brightly–colored older grappletails (*Octogomphus specularis*). Soon it was time to head towards camp so we could join the others that were going to be part of the Coastal Group. Tony the Elder was there with his camp all set up and Chris had just arrived. As it was, it was only a few minutes after our arrival before the Inland Group joined us a day early!

The campground nestled in the Redwoods along the Smith River made for a picturesque "command center". We discussed the morning schedule because it had to be loose, as we knew fog could be a problem in this north coastal county. Some of us awoke to the kerring calls of Marbled Murrelets (*Brachyramphus marmoratus*), which nest in old growth redwoods. It was a beautiful yet cold and foggy Saturday. Ken drove over to join us and was ready to go, but the fog made it hard for the campers to get motivated. The plan: squeeze into two vehicles, hit some inland lakes and then move to the coast in the afternoon. We started

by stopping at Sand Camp on the South Fork Smith River to look for Gray Sanddragons (*Progomphus borealis*). They did not grace us with their presence, but the Bison Snaketails (*Ophiogomphus bison*) were a delight. Sandra's vehicle was in the lead as we drove towards Dry Lake, on the curvy road with four names depending on which map you look at (not unusual in Del Norte County, as it turns out). Sandra was just saying how these serpentine cliffs we were driving by looked a lot like Black Petaltail (*Tanypteryx hageni*) habitat in Humboldt County, minus the water, when suddenly there was a spring. Brakes were quickly depressed—and there, *Darlingtonia*! The first little pullout was seized (it's a good thing Dave doesn't tailgate!). No adult petaltails were found, but this site needs to be monitored in case it could be a new breeding site for this rare species.

Back in the truck and off to Dry Lake, which did not disappoint and tied Mill Creek Acquisition gravel pit for the most species in one location (17). On the way out, we stopped at an unnamed pond along the road. It was hard to pry people away, but Sandra wanted to make sure to get to the coast that day. There were so many dragons to look at, we were lingering. A roundup ensued and then we were off via a VERY windy and steep dirt road to Rattlesnake Lake. The Biggs' 2WD "Green Cruiser" Dragonfly Van never knew this road required 4WD—"shhhh, don't tell!" The most common species of that lake was the Chalk-fronted Corporal (*Ladona julia*), a lifer for several folks. Another roundup and we were off to Tolowa Dunes, or is it Talawa Dunes…maps and guides spell it both ways! We found many dragonflies foraging in the fields, but were frustrated trying to find access to the ponds as they were surrounded by dense brush; yet we were able to add Striped Meadowhawk (*Sympetrum pallipes*) to the Del Norte County List. We oded there until the fog came back in and then headed to town (Crescent City) for both a hot meal and warm water for washing. We said goodbye to Ken and then headed back to camp.

Tony the Elder, a relatively new CalOdes member, didn't know about OdonataCentral. Kathy the teacher, always keeping up with technology, got out her MiFi and voila, the internet! Hard to believe there was only dialup available to the vast majority of people just a short decade ago. A quick tutorial and our first county record, found by Tony, an Emma's Dancer (*Argia emma*), was up and vetted! How's that for service?

Day three began with a bang! It seems all of us were trying to deny that it was thunder we were hearing rolling in the distance, but it came ever closer until it became undeniable. We ate breakfast in a somber mood, hoping there would be some sun inland—at least partial sun, please! After a few raindrops, we headed out to hit any river access we could find. Smith River runs east–west, so we left the coastal bad weather behind and headed east. We first stopped by Darlingtonia Trail, which was adorned by a couple of dancers and an absolutely HUGE Alligator Lizard (*Elgaria multicarinata*). Sandra pounced to catch it: got it! Panther Flat was next, which yielded a new species for the trip, the Sooty Dancer (*Argia lugens*) among other odes. The Scarlet Monkeyflower (*Mimulus cardinalis*) and Stream Orchids (*Epipactis gigantea*) were also a treat. Another stop yielded a Pacific Giant Salamander (*Dicamptodon ensatus*) and Foothill Yellow–legged Frogs (*Rana boylii*) along with the seemingly ever–present Vivid Dancers (*Argia vivida*). All the while, clouds loomed westward and the winds finally blew us off the river. We wouldn't get to ode on the coast that day nor for the rest of the blitz; what a shame that such a unique and beautiful area would not get surveyed. We used up extra time by stopping at a couple of touristy shops along the road and then headed to Crescent City for a fish dinner. Can't go to a fishing community without eating some fresh fish! We drowned our disappointments with a song, surprising Sandra with a "Happy Birthday" and some dangly dragonfly earrings. One of Sandra's best birthdays ever—odeing for four days with a wonderful group of dragonerds (yup, Sandra's new word, and she's quite fond of it!).

Saturday morning started with fog, Sunday with thunder, and Monday with the sound of rain. It wasn't until after a dour breakfast that it was discovered the sound was only fog dripping off the redwood needles, but it didn't make breaking up camp any easier. Chris left us that morning just after the group photo, and that left us with five for clean–up day. The coast was out of the question, so we decided to head back to Sanger Lake and check out the additional lake that the Inland Approach Group missed out on for the lack of A MATCH! Again we went up the 17 miles of dirt road, stopping at the petaltail sites that had been found a few days earlier. Sandra and Tony were

Figure 2. Whiskey Lake. Photo by Dave Biggs.

looking for nymphs and were bound and determined to show Kathy, who had somehow managed never to see one! Looking in all the pencil width–sized holes in the moss and mud rewarded us as there, finally, was a nymph.

Onward we went past Sanger Lake, planning to backtrack to it later. Several miles further, we found Dave parked to the side. The Dragonfly Van just didn't have the clearance to make it over the rocks and humps without scraping. A little rearranging and we all loaded into Sandra's big truck with Tony the Younger insisting he sit over the camping gear in the back! We crawled down the rough dirt road and finally made it to Whiskey Lake. Kathy had talked all weekend about how she knew there would be Variable Darners (*Aeshna interrupta*) here and sure enough there were. Then Dave spotted a Four-spotted Skimmer (*Libellula quadrimaculata*) and got a photograph for another county record before it flew off. Northern Spreadwings (*Lestes disjunctus*) surrounded the lake, and a few American Emeralds (*Cordulia shurtleffii*) and two record–making Twelve-spotted Skimmers (*Libellula pulchella*) that had just finished emerging rounded out the morning.

We left Whiskey Lake with our spirits renewed. Kathy, Dave, and Leslie had to leave after a brief stop at Sanger Lake. They said their good-byes and left for their long trip eastward to McCloud. Sandra and Tony stayed for a while longer, confirming the Darners that were there were, indeed, Variables. They also stopped at "Emerald Pond" (named by Kathy just a few days ago). Although no more than a large pothole surrounded by sedges, this pond was quite special. Not only were there three of the four species found in California with the word emerald in their name, it also was full of a bright blue, large species of shrimp (not yet identified). Tony and Sandra then headed home, west, back toward the fog.

One might think the blitz was over, but really it's not over until it's over. The next few weeks, Kathy and Sandra compared notes, pored over pictures and voucher specimens, and tried to make sure all our i's were dotted and t's crossed. With much patience from Dennis Paulson, Tim Manolis, and Jim Johnson, we kept trying to find pictures of Tule Bluets (*Enallagma carunculatum*), only to have them all turn out to be Northern Bluets—what? They're supposed to be more blue than black—what's up with that! Well, Dennis kindly schooled us on the fact that he had found that north coastal male Northern Bluets have a dark form. Sure enough, we had all missed it; page 88 in his book has a picture of just such an individual. The voucher Northern Bluets (*Enallagma annexum*) from Rattlesnake Lake is indeed one of these dark forms (and it had been this darkness that prompted Sandra to net it) but she was not careful about the very coastal ones whose dorsal patterns looked remarkably like Tule Bluet's (tsk tsk Sandra!). Then, as that drama settled, e-mails were sent to the group, asking "Anyone with a specimen or photo of a

Eighth Annual California Blitz, Del Norte County, 2-6 and 14 August 2012

Participants in alphabetical order: Kathy and Dave Biggs, Leslie Flint, Chris Heaivilin, Sandra Hunt–von Arb, Tony "the Younger" Kurz, Ken Mierzwa, Stephan Telm, and Tony "the Elder" Westkamper. Photo by Tony Kurz.

Western Forktail (*Ischnura perparva*)?" Nope, not a one! The record was begrudgingly downgraded to a sight–only record. It had been relatively common, but such is what happens when a county is missing so many of the relatively common species from its list! Luck was to be on our side, though, as Stephan Telm came to our rescue. As it turns out, he couldn't come to the blitz because he had a family camping trip planned the very next weekend in Humboldt County. He visited Del Norte County during that trip with a secondary goal of being the Blitz Sweep. We had all thought he hadn't located any additional county records, but as it turns out, he is the ONLY one to have taken a picture of a Western Forktail. So with the upgrade, the final tally brought us to 14 new county species!

All in all, the 8th Annual CalOdes Blitz was a great success, despite the weather. We saw a total of 37 species and even broke several records. No state records, but we did document 14 new county record species, more than twice of any previous blitz (6 for Trinity County in 2010), which brought the county list up from 29 species to 43 and took the county from 4th lowest count in the state (58 counties) to a middling 44th status. We blew the California early flight date for Autumn Meadowhawks out of the sky, 23 days earlier than ever before, and we also broke a 1953 late flight date record by one day for the Chalk-fronted Corporal—and that was a 59 year-old record! Fun times and good camaraderie were at the forefront.

For a list of all species found and places visited visit California's 2012 Sighting Site at <http://southwestdragonflies.net/caphotos/2012Sightings.html#blitz>.

Minutes of the 2011 Annual Meeting of the Dragonfly Society of the Americas

Steve Valley, Secretary <svalley2@comcast.net>

The annual meeting of the Dragonfly Society of the Americas was held on Saturday, 9 July, 2011, at Colorado State University, Plant Sciences Building W09, Fort Collins, Colorado. Our host, Boris Kondratieff welcomed us to Colorado.

President Bill Mauffray introduced the new president, Steve Hummel. Opening remarks were given by Steve Hummel. The meeting buttons were handed out by Jerrell Daigle.

Attending members introduced themselves:

Steve & Mary Jane Krotzer from Alabama.
George & Phoebe Harp from Arkansas.
Kathy & Dave Biggs from California.
Liz Gordon, Jeffery Gordon, Boris Kondratieff, Paul A. Opler, Bill & Inez Prather, Charles Bradford, David A. Leatherman, and Ann Cooper from Colorado.
Jerrell Daigle, Don & Kathy Hess, and Bill Mauffray from Florida.
Marion Dobbs from Georgia.
Steve & Marcia Hummel from Iowa.
Yvette Liautaud, Kathy Kozacky, and Marla Garrison from Illinois.
David Small and Jason Forbes from Massachusetts.
Bronco Quick from Maine.
Ailsa & Nick Donnelly, Ed Lam, Fred & Peggy Sibley, and Annette Oliveira from New York.
Cary Kerst, Celeste Mazzacano and Steve Valley from Oregon.
Daniel Bogar from Pennsylvania.
Chris Hill from South Carolina.
Greg Lasley, Nancy McIntyre, Allyson Marceau, John & Kendra Abbott, Jim Edwards, Jerry Hatfield, and Steve Collins from Texas.
Alan Myrup from Utah.
Paul Bedell and Steve Roble from Virginia.
Bryan Pfeiffer from Vermont.
Oliver Flint from Washington D.C.
Dennis Paulson and Jim Johnson from Washington.
Susan Olcott from West Virginia
Bob DuBois and Ken Tennessen from Wisconsin.
Melanie Mock also attended.

Reading of the 2010 Annual Meeting Minutes was waived and the minutes were approved as published in Argia Vol. 22 No. 4.

Steve Hummel announced the results of the 2011 election for a new President Elect, Jim Johnson, and a new Regular Member on the Executive Council, Bryan Pfeiffer.

Steve Valley (Secretary) discussed the low number of ballots returned for this election and the possibility of using electronic or e-mail voting in the future.

Jerrell Daigle gave the Treasurer's budget report. Jerrell also reported that no funds were awarded for the Donnelly Fellowship in 2011.

Jerrell Daigle (DSA Annual Meeting Coordinator) asked that anyone willing to host a future annual meeting contact him.

Chris Hill presented a proposal to hold the 2012 annual meeting in South Carolina. The proposal was voted on and approved.

John Abbott reported on the Donnelly Fellowship. No funds were awarded in 2010 or 2011 mostly because of bureaucratic red tape in the Latin American countries where the applicants lived.

Bryan Pfeiffer discussed possible areas for the 2012 northeastern regional meeting.

Steve Krotzer reported that the 2012 southeastern regional meeting would be in Columbia, Tennessee on the second weekend in June.

Bill Mauffray gave a report about the International Odonata Research Institute.

Dennis Paulson reported on the Checklist Committee history.

John Abbott gave a report on OdonataCentral (OC). There was a discussion of funding for OC. Marla Garrison proposed that the Executive Council discuss giving a grant to OC. (The Executive Council later voted to pay an annual fee of $1000 to OC for hosting the DSA web page and the ARGIA and BAO archive).

Ouachita Spiketail (*Cordulegaster talaria*), New for Oklahoma

Berlin Heck, Broken Bow, Oklahoma <baheck@pine-net.com>

On 18 April 2011, my wife and daughter (Pat & Greta Heck) and I were driving along a U.S. Forest Service (FS) Road, about 19.3 km northwest of Broken Bow in McCurtain County, Oklahoma, and 2.9 km south of the intersection of FS roads 53000 and 53420, near the Cedar Creek crossing. This area is very rocky and is dense with trees, mostly hardwood (*Quercus* and *Carya* sp.) and pine (*Pinus* sp.). The slopes are steep, falling to a small stream that meanders through the area.

We stopped to look at insects nectaring at a patch of blackberry bushes (*Rubus* sp.) in a small open area of the woods where the sun could reach. Greta saw the large dragonfly first and alerted me. We watched it land on a blackberry bush, and I thought at first that it was *Cordulegaster maculata* (Twin-spotted Spiketail), but then noted the color pattern and realized it was almost certainly some other species, beyond my talent to identify. We were in Greta's vehicle and I had neglected to transfer my net to her vehicle, so I could only photograph it. We flushed it several times and it would fly down the road, but return each time to perch on the sunlit blackberry bushes. Coordinates of this location are: N 34.16757° and W 94.89209°.

Figure 1. Ouachita Spiketail (*Cordulegaster talaria*), new for Oklahoma. Photo by B. Heck.

Figure 2. Ouachita Spiketail from junction of USFS roads 53000 and 53420 . Photo by B. Heck.

Later, after learning the identity of this first Oklahoma record (OC# 327732), and first record outside of Arkansas, I returned to the area several times, always checking the blackberry bushes, but I also walked along various areas of the creek with hope that the dragon might have emerged

in Oklahoma, rather than wandered here from the Arkansas population, but always to no avail. I also returned to the area several times this year in mid–April, with the same results—no Ouachita Spiketail.

Advice Column

Never turn your back on a tripod. M. Dobbs

Do you have any short notes of advice you can pass on to fellow odonate enthusiasts? This can be anything you have learned related to your experiences with odonates. If so, send them in to the editor and we'll share them.

Stylurus intricatus (Brimstone Clubtail), A New Old Record for Oklahoma

Brenda D. Smith–Patten and Michael A. Patten, Oklahoma Biological Survey, University of Oklahoma, Norman, Oklahoma 73019 <argia@ou.edu>

Conventional wisdom, formed on the basis of many extant specimens, photographic records, and sight reports, has it that the only species of hanging clubtail (*Stylurus* sp.) in the southern Great Plains is the Russet-tipped Clubtail (*S. plagiatus*; Abbott 2005). In the whole of the Great Plains, two other species, the Brimstone Clubtail (*S. intricatus*) and Riverine Clubtail (*S. amnicola*), have been recorded south to Kansas (Paulson 2009), and a third, Laura's Clubtail (*S. laurae*), has been recorded west to central Arkansas and eastern Texas (Abbott 2005). These geographic distributions made identification of a *Stylurus* species in Oklahoma a trivial affair: any hanging clubtail found in the state "must" be a Russet-tipped.

But nothing is ever easy. In the course of helping to catalog the extensive Odonata collection—over 9,300 specimens for Oklahoma alone—housed at the Sam Noble Museum at the University of Oklahoma, we were stunned to come across a fluid specimen (OMNH 2413; Fig. 1) of a female clubtail labeled as "*Gomphus intricatus*," stunned because neither of those illustrious forefathers of Oklahoma odonatology, Ralph D. Bird or George H. Bick, published *S. intricatus* as occurring in the state (Bird 1932, Bick and Bick 1957, Bick 1991), and this despite the specimen being collected in the 1930s as part of Bird's statewide arthropod surveys.

Figure 1. Female *Stylurus intricatus* collected by A. Earl Pritchard at Dunlap, Harper County, Oklahoma, 24–26 August 1932 (OMNH 2413), with Pritchard's original label.

We overcame initial skepticism after running through the genus key in Needham *et al.* (2000) to ensure that the specimen was referable to *Stylurus*. Thereafter, careful examination of the subgenital plate confirmed that the specimen is a female *S. intricatus*—two broad lobes of the plate extend posteriorly a substantial portion of the length of S8 (Fig. 2) rather than, as in *S. plagiatus*, two narrow points extending but a short distance (see Needham *et al.* 2000:436, Paulson 2009:282). A handwritten label in the vial bears data that the specimen was collected by [A. Earl] Pritchard, a standout member of Bird's team, at Dunlap, Harper Co., Oklahoma, between 24 and 26 August 1932. Pritchard apparently determined the species himself.

We can only speculate as to the reason Bird (1932) overlooked the specimen in his "Dragonflies of Oklahoma" or why Pritchard never published the record himself. Possibly neither was fully convinced that a female *Stylurus olivaceus* was eliminated given what was then thought to be strikingly similar subgenital plates of these species (see Needham and Heywood 1929:99) as well as their imperfectly known geographic ranges. Although Bick reexamined much of Bird's material, it is clear that he never came across this specimen, as he does not reference the species in his detailed notes (housed at the International Odonata Research Institute in Gainesville, Florida).

Even so, we can now claim *Stylurus intricatus* as a "new" species for Oklahoma, one of 155 species documented to occur in the state. And its occurrence in the state is not surprising: Donnelly's (2004) comprehensive "Dot Map Project" included records for Seward and Meade Counties, both of which abut the Oklahoma panhandle. Yet these records leave a few questions. Does the species occur regularly in the state or was Pritchard's collection an anomaly? In the latter vein, have dramatic land–use changes in Oklahoma's post–Dust Bowl era led to the species' extirpation in this region? As we continue our statewide surveys, we hope to find an answer.

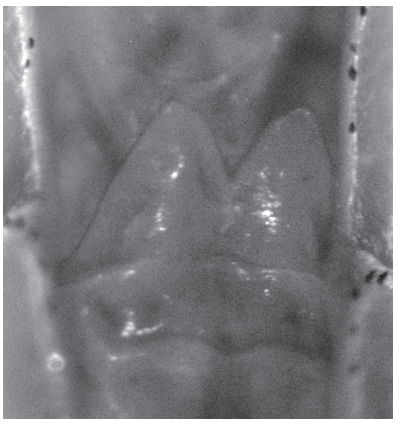

Figure 2. Subgenital plate of a female *Stylurus intricatus* (OMNH 2413). The broad, long, petaloid projections eliminate *S. plagiatus*, heretofore the only *Stylurus* species known from Oklahoma.

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Odonates are taking over Facebook!

Dragonfly and damselfly groups are exploding on Facebook. Some of the groups that are currently active include: Northeast Odonata, the Minnesota Odonata Survey Project, Carolina Odonates, Odonata Ohio, California Odonata, Odonata Florida, and Dragonflies and Damselflies of Kansas, Oklahoma and Northern Texas. If you are on Facebook, be sure to search for them!

New Issue of BAO

The newest issue of BAO was just published in August, 2012. This issue includes an update on the Odonata of Meta Department in Columbia from Catalina Amaya-Perilla and Fredy Palacino-Rodríguez, an update on the Odonata of Oregon from Jim Johnson and Steve Valley, and a report of some new county records for Florida odonates by Ed Keppner.

If you have a subscription to BAO, your new issue will arrive in the mail soon. If you would like to subscribe to BAO, please see the last page of this issue of Argia or contact Steve Hummel, Editor, BAO, <shummel@iowatelecom.net>.

Notes on the Distribution of the Purple Skimmer (*Libellula jesseana*) with Emphasis on Bay and Washington Counties, Florida

Edwin J. Keppner <ekeppner@bellsouth.net>

Introduction

Libellula jesseana (Purple Skimmer) is endemic to Florida (Paulson and Dunkle 2011; Needham *et al*. 2000). Figure 1 shows the counties in Florida where *L. jesseana* has been documented to occur, and the location of Bay and Washington counties within the Panhandle of Florida. The first time that I collected a specimen was at a sandhill lake in Bay County in 2004, and since then I have been interested in its occurrence in Bay and Washington counties. The following is based on reports of this species in the literature and my collections and observations of it in Bay and Washington counties.

Libellula jesseana (Purple Skimmer). Photo by George Willson.

Methods

Adults were collected with an insect net, killed in a killing jar with ethyl acetate, soaked in acetone, dried, and placed in plastic envelopes with a data card. Locations were recorded with a Garmin GPSmap 76CSx. Maps were produced with ArcGIS 8.3. All specimens are in my collection.

Identification

The larva of *L. jesseana* is apparently unknown and is not included in the keys to the larvae of *Libellula* provided by Needham *et al*. (2000) and Richardson (2003). Williamson (1922) described *L. jesseana* based on 44 males and two females collected in Volusia County, Florida, and stated, "Both sexes of *jesseana* are separated at once from those of *auripennis* by the darker face and frons, and the dorsum of the thorax and abdomen."

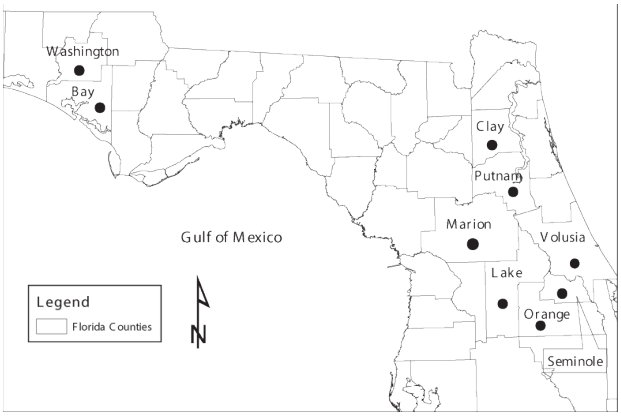

Figure 1. Known Florida county occurrences of *Libellula jesseana* (Purple Skimmer).

Needham *et al*. (2000), however, stated that the females of *L. jesseana* are indistinguishable from those of *L. auripennis* (Golden–winged Skimmer), except for the rare purple individuals. Dunkle (2000) stated that female *L. jesseana* come in two forms: purple form females develop a slightly pruinose blue and the yellow form females are identical to female *L. auripennis*.

According to Paulson (2011), the juvenile males of *L. jesseana* can be separated from other skimmers and, particularly juvenile males of *L. auripennis*, by the color and pattern of the wings; bright orange with extreme basal veins blue. Adult males of *L. jesseana* are separated from all other male skimmers by the dark purple face and the pruinose dark to pale blue body and orange wings and pterostigma. Differentiation of females of *L. jesseana* from females of *L. auripennis* is problematic.

Paulson (2011) stated that the females of *L. jesseana* at full maturity are entirely covered with gray–purple pruinosity,

but immature females are not distinguishable from Golden–winged Skimmer although dark–tipped stigmas may allow recognition of some. Paulson (2011) summarized this species by saying that "the species is anomalous in the absolute minimum number of characters that differentiate it from its closest relative…", and that the possibility exists that it is a localized pruinose color morph.

Flight Season and Habitat

Presently, *L. jesseana* is considered a valid species with a flight season from April–September (Dunkle 2000 and Paulson 2011). My earliest observation was a male escorting an egg–laying yellow form female at a sandhill pond in Washington County on 13 April 2011, and the latest observation was an adult male at a different sandhill pond in Washington County on 16 October 2009.

L. jesseana and *L. auripennis* share the same flight season and habitat types in Bay and Washington counties. The difficulty in accurately identifying yellow form *L. jesseana* females from those of *L. auripennis* females and the absence of a description of the larva of *L. jesseana* may skew the discovery of locations for this species to those where only males and mature pruinose females are collected or observed.

Williamson (1922) described the type locality for *L. jesseana* as a pond north of Enterprise, Volusia County, Florida having a solid sand bottom that deepened rapidly with grassy sedges growing from the water's edge into the water for a distance of five to six feet followed by another belt of emergent vegetation. The banks were steep sand with sparse grass.

According to Dunkle (2000), the habitat of this species is clear water sand–bottomed lakes and ponds edged with maidencane grass and St. John's–wort bushes, and it requires the most infertile lakes with sparsest grass.

Paulson (2011) stated that this species is often found at the cleanest, least-vegetated small lakes on white sand soil, usually with a narrow band of tall grasses along the edge. He expanded the description of habitat to include larger lakes with a broad vegetation band and even ponds with much vegetation throughout, but always on white sand.

The sand hills region of southern Washington and northern Bay counties is an area of deep, well–drained, white sandy soil that has numerous sandhill and sinkhole lakes and ponds. The water bodies are mostly surrounded by a belt of maidencane (*Panicum hemitomon*), other grasses and forbs, and the endemic smoothbark St. John's–wort (*Hypericum lissophloeus*) that is listed as Endangered by Florida. The region also has ponds and lakes that, although on sandy soils, have accumulated some organic matter, support emergent and floating aquatic vegetation, and the shoreline is primarily titi shrubs (*Cyrilla racemiflora* and/or *Cliftonia monophylla*).

Water level in all the lakes and ponds in this area fluctuates greatly depending on the amount of precipitation and many may be dry for extended periods in the presence of severe drought conditions. Many of the water bodies are on land owned and managed by the Northwest Florida Water Management District (NWFWMD) but most are on private property. A number of the lakes on private property have experienced sparse to dense residential development while others remain nearly pristine.

Distribution in Bay and Washington Counties

My recording of the locations of this species in Bay and Washington counties is based on the presence of adult males only. I have yet to collect a pruinose female. Figure 2 shows the distribution of locations for *L. jesseana* in Bay and Washington counties where I have observed or collected males as well as records for this species from Paulson (2009).

I collected or observed *L. jesseana* in Bay County at 5 unnamed ponds clustered very close together south of State Route 20 and west of Enfinger Road on land owned by the NWFWMD (Figure 2). There is an addi-

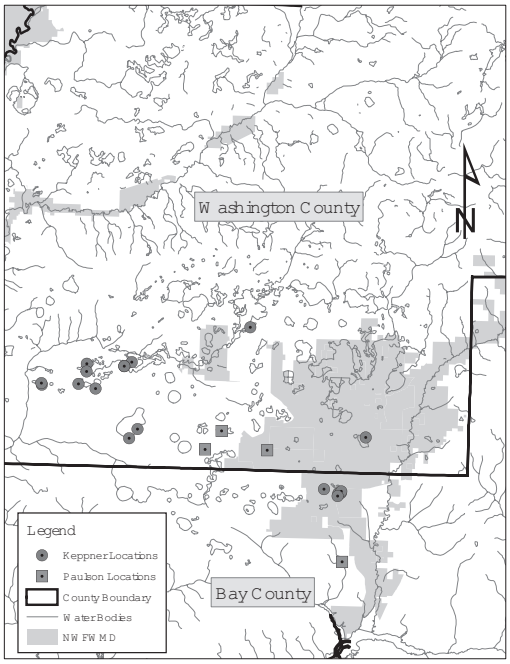

Figure 2. Distribution of *Libellula jesseana* (Purple Skimmer) in Bay and Washington Counties, Florida.

tional record from Bay County (Paulson 2009), but it did not have a specific location and is only generally located on Figure 2. There are six locations for *L. jesseana* in Bay County.

The northernmost pond on the west side of Enfinger Road is a steep, sandy basin with abundant smoothbark St. John's-wort along the edge. The second and third ponds are basins in sandy soil but have some accumulation of organic material. They have a dense band of herbaceous vegetation and titi shrubs at the high water mark and abundant herbaceous vegetation along the shoreline as well as in the water under low water conditions.

The fourth and southernmost pond west of Enfinger Road is a larger sand–bottom pond with steep slopes, St. John's–wort, some maidencane, and a seepage stream that enters at the southwest corner. Males were collected or observed at these four ponds several times between 8 September 2004 and 11 July 2010. The fifth pond is further west of Enfinger Road and just south of State Route 20. It is a larger pond when filled with water, has a steep sandy slope to a more gradually sloping bottom on the north side and west side, and St. John's–wort and maidencane are the dominant shoreline vegetation. Males were collected or observed on 15 July 2005 and 11 July 2010. Paulson (2009) provided the sixth location in Bay County as an unspecified pond somewhere along County Road 388 that runs east to west a few miles south of the locations along State Route 20.

I was fortunate to receive permission to collect odonates on a large area of private property in Washington County that contained numerous pristine sandhill, sinkhole, and flatwoods lakes and ponds. *L. jesseana* adult males were collected and observed on this property at nine sand-bottomed lakes and ponds with smoothbark St. John's–wort, maidencane, and other grasses and forbs around the shoreline. The property owner requested that the specific locations not be released at this time.

I observed *L. jesseana* at one location on NWFWMD property in Washington County; Rattlesnake Lake. Rattlesnake Lake is a relatively large sandhill lake with a sandy bottom and a shoreline that supports maidencane and smoothbark St. John's–wort. The lake has held water throughout this past decade of drought although at a low level at times. I observed *L. jesseana* at a pond northeast of Daniels Lake in Washington County that is not on NWFWMD property. It is located in an area of sandy soil but has a much reduced water level, supports cypress trees, titi, and a variety of herbaceous vegetation.

Paulson (2009) provided three locations for this species in Washington County at water bodies located 0.5 mile and 3.5 miles east of Crystal Lake and 2.1 miles north of Bay County on State Route 77. Coordinates for these locations were obtained from an ArcGIS map with 2007 aerial photographs and the plots on Figure 2 are approximate. The location about 3.5 miles east of the east edge of Crystal Lake appears to be on NWFWMD property. The other locations appear to be on private property. The total locations reported for *L. jesseana* in Washington County is 13 lakes and ponds with 2 locations on NWFWMD property.

To date, *L. jesseana* has been documented to occur at 20 locations in Bay and Washington counties. All of the ponds at which I have observed populations of *L. jesseana* have experienced large fluctuations in water level during the last decade due to a persistent drought in the area. Many were dry for up to a year or more only to be rehydrated when significant rains fell. Three of the ponds along Enfinger Road and the larger pond just south of SR 20 are examples of ponds that were dry for a year or more. However, when water was present in the ponds, *L. jesseana* males were generally present.

Other lakes and ponds such as Rattlesnake Lake and some lakes and ponds on private property had surface water throughout the drought although at much reduced water levels at times. It is possible that the lakes and ponds that did not become dry produced adults to recolonize the newly hydrated habitats. Mature males were usually sparse with only one to three observed at a given location. There are numerous other water bodies in Bay and Washington counties that may support populations of this species.

Distribution in Florida

Figure 1 shows the Florida counties with locations for *L. jesseana* based on reports in the literature. Dunkle (1992) provided 10 counties with locations for the species: Bay, Washington, Clay, Putnam, Marion, Lake, Orange, Volusia, Seminole, and Palm Beach. Abbott (2012) has locations in the same 10 Florida counties, and Richardson (2003) also has locations in the same 10 counties. Florida Natural Areas Inventory (FNAI, 2012) provided records of occurrence from Sheeler Lake (July 2005) and Pebble Lake (25 May 2010) in Mike Roess Goldhead Branch State Park in Clay County.

The distribution of *L. jesseana* in Florida is interesting in that the locations in Bay and Washington counties are significantly separated from the locations in the central Peninsula and Atlantic coast counties. This may have implications should management of the populations at the locations in the panhandle become of interest as

separate from the remainder of the locations in Florida. In turn, the locations in the central Peninsula and upper Atlantic coast counties are almost as widely separated from the location in Palm Beach County as those in the panhandle. However, Paulson (2009) stated that the 1937 record from Palm Beach County is quite anomalous and should be confirmed or discredited, and Paulson (2011) excluded Palm Beach County from the range map for *L. jesseana*.

Species Status

FNAI is Florida's Heritage Program and evaluates the species of plants and animals in Florida and assigns a level of imperilment in Florida based on their criteria. FNAI (2012) lists *L. jesseana* as S1, critically imperiled, because of extreme rarity (5 or fewer occurrences or less than 1000 individuals) or because of extreme vulnerability to extinction due to some natural or man–made factor.

The Florida Fish and Wildlife Conservation Commission (FFWCC) prepared Florida's Wildlife Legacy (2005) and began revising the document (FFWCC 2011). The preliminary revised list includes *L. jesseana* as a Species of Greatest Conservation Need but listed the status and trend of this species as unknown.

Bick (2003) summarized the existing information on at–risk species of odonates in the conterminous United States and assigned *L. jesseana* a conservation status of G2 ("imperiled"; 6-20 occurrences; judged to be equivalent to endangered). The U.S. Fish and Wildlife Service does not list *L. jesseana* under the Endangered Species Act but is being encouraged to do by the Center for Biological Diversity (2012) apparently based on the information provided by the International Union for the Conservation of Nature (IUCN).

IUCN (2012) includes information from Paulson (2009) that stated the range of *L. jesseana* is limited to 10 counties in Florida. He cited a personal communication (Daigle 2007) that indicated that the species had disappeared from all of its known former locations in the Florida Panhandle, and except for Clay and Marion counties, it had not been seen recently at other former locations in the peninsula. Paulson (2009) also stated that even at optimal habitats, populations of *L. jesseana* seem small and the population trend remains unknown and that research is urgently needed to determine the present extent of occurrence and area of occupancy. It is listed by the IUCN as vulnerable.

The information provided herein for Bay and Washington counties was not available to Paulson (2009) when he prepared the assessment of this species for the International Union for the Conservation of Nature (IUCN), but it may be of some value in future assessments of *L. jesseana* in terms of the distribution of the species in the portion of its range in Bay and Washington counties.

Acknowledgements

I thank my wife Lisa for all of her help collecting odonates over the years. I thank George Willson for permission to use his photo of the Purple Skimmer. I express my appreciation to Dennis Paulson for reviewing the manuscript and providing helpful comments. I also thank Jerrell Daigle for reviewing the manuscript.

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Photos Needed

Have any high-quality photos of odonates? We are always looking for great photos to use on the front and back covers of ARGIA. Contact John Abbott at <jcabbott@mail.utexas.edu> if you'd like to make a contribution. Images in TIFF format are best, but JPEGs work too as long as they are high quality and compression artifacts are limited. Resolution needs to be 300 ppi at about the sizes you see printed on this issue (no more than 6.5 inches in width).

Feeding swarm of Common Green Darners (*Anax junius*)

Jerry R. Oldenettel, Socorro, New Mexico <Borealowl@aol.com>

One late afternoon in the fall of 2011, I stopped by the North Roosevelt trap, a popular birding spot in east central New Mexico (aka the "Melrose Trap", 10 miles west of Melrose in Roosevelt County). The trap is a stand of several large cottonwoods among a stand of poplar trees (some 60–70 ft. high) totaling about 2 acres. There is a single 14 ft. diameter pump–fed cattle tank as the only source of standing water. There are usually several (<10) dragonflies hanging around the tank; Flame Skimmer (*Libellula saturata*), Roseate Skimmer (*Orthemis ferruginea*), Common Green Darner (*Anax junius*), Twelve-spotted Skimmer (*Libellula pulchella*), and Blue-faced Darner (*Coryphaeschna adnexa*) have been seen at various times. There was an emergence of alate ants in progress throughout the area, but I am not sure of the species. Around the open areas of the trap, I observed hundreds of dragonflies (my estimate of the total at the time was about 2000). All identified individuals were Common Green Darners, and I didn't see any individuals that I thought were a different species. A flying ant would not get far off the ground before a dragonfly had scooped it up. Since there are no large bodies of water in the area, I'm guessing these must have comprised a long-distance migrating swarm, something I have never encountered before. I appear to have left this out of my birding notes, so I have no precise date.

Leg Position in Ovipositing Pondhawks and Other Dragonflies

Dennis Paulson, Seattle, Washington <dennispaulson@comcast.net>

Watching a Western Pondhawk (*Erythemis collocata*) laying eggs the other day, I noticed that it held its hind legs out behind its thorax as it hovered, and I thought that was interesting enough that I checked my photos of ovipositing pondhawks. The only species for which I have photos are Western and Eastern Pondhawks (*E. simplicicollis*).

Sure enough, in every photo, the female's hind legs were extended on either side of the abdomen. This included Westerns at Magnuson Park, Seattle, Washington, on 29 July 2011 and 31 July 2012; and Glenwood, New Mexico, 31 July 2007; and Easterns at Lochloosa Lake, Florida, 19 April 2005, and Bass Island, Ohio, 19 September 2007 (this last from William Hull). Thus both species share this behavior, and it would be of great interest to see if other species of the genus did likewise.

Looking at these photos made me recall a photo of an ovipositing Clearlake Clubtail (*Gomphus australis*) that I had taken. It too was hovering with legs extended to the rear, as was a female of the same species in a photo sent to me by Marion Dobbs. My only other photo of a clubtail female hovering is of a Cypress Clubtail (*Gomphus minutus*), and it also had the hind legs extended.

I have all too few photos of ovipositing females in flight, but I found no others like these. Females of Swift River Cruiser (*Macromia illinoiensis*), American Emerald (*Cordulia shurtleffii*), Red–tailed Pennant (*Brachymesia furcata*), Neon Skimmer (*Libellula croceipennis*), Eight–spotted Skimmer (*L. forensis*), Spot–tailed Dasher (*Micrathyria aequalis*), Roseate Skimmer (*Orthemis ferruginea*), Blue Dasher (*Pachydiplax longipennis*) (2), Slough Amberwing (*Perithemis domitia*) and Common Whitetail (*Plathemis*

lydia) (3) hovered while in the ovipositing mode with the hind legs folded forward as is usual for odonates in flight.

Of course exophytic ovipositors that oviposit in tandem (e.g., *Celithemis, Sympetrum, Libellula composita*) cannot do this, as all of the female's legs are grasping the male abdomen, but a female Red Saddlebags (*Tramea onusta*) had its legs folded after the male released it for a single dip. I haven't photographed a male flying with its legs extended backwards, so I consider that position unusual and wonder about its significance in egg–laying females. Is it typical of gomphids? Is it more likely to occur in ground–perching species? I encourage other observers to watch for this and document it photographically. It will be interesting to learn whether the leg position characterizes species or genera and speculate why the difference. And the value of photo archives is demonstrated once again.

A brief field report on emergence of Riverine Clubtail (*Stylurus amnicola*) and Arrow Clubtail (*Stylurus spiniceps*) Along a Sandy Bank in Northern Connecticut

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In the summer of 2007, a sandy bank on the Connecticut River in East Windsor, Connecticut was visited a total of eight times between 27 June and 4 August. The location is immediately adjacent to the Interstate 91 overpass and is heavily visited by fishermen. The riverbanks in this area consist mainly of fine sand. During my visits to the area I observed many active emergences and eclosures, and countless cases of dragonfly mortality due to bird predation.

The steep sandy banks and lack of extensive vegetation made the area ideal for recording emergence distance. Nymphal tracks were evident throughout the area, despite the heavy pedestrian use.

A total of 209 *Stylurus amnicola* emergence distances were recorded. Nymphs traveled an average of 10.99 feet from the edge of the river (s.d. 3.73). Fewer *Stylurus spiniceps* (n=29) were observed, but emergence distance was similar (11.03 ft, s.d. = 3.64).

Color as a Stimulus for Male Aggression in Ebony Jewelwing (*Calopteryx maculata*)

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Male Ebony Jewelwings (*Calopteryx maculata*) are one of the largest damselflies found along small to medium–sized forested rivers. The male *C. maculata* is typified by a slim green abdomen and dark wings. Females of the species have bronze abdomens and slightly lighter wings. Male *C. maculata* will often engage in aggressive displays with other males in their area. Aggression is typified by the two damselflies beating their wings rapidly and facing each other with their bodies elevated in a 45–degree angle.

The study took place on the Scantic River (Somers, Connecticut) on 13 July 2012. Water in the area was slow moving due to a beaver dam located just upriver of the sample location. River width at the study location was 20 ft. and water depth was 4 ft. The study location is in an electrical right of way so there are no large canopy trees. Shoreline vegetation consisted mainly of buttonbush (*Cephalanthus occidentalis*) and cattails (*Typha* sp.).

Four–inch diameter plastic discs were covered in waterproof tape. Disc coloration was as follows: all black (B), all green (G), two inch green stripe centered in a black field (BFGB), two inch black stripe centered in a green field (GFBG), one inch green stripe centered in a black field (BgB), and one inch black stripe centered in a green field (GbG). One disc at a time was placed in the center of a mat of floating vegetation. Observations were recorded for five minutes, then the disc was removed and a five–minute resting period was allowed before the next disc was placed in the mat. Ten trials for each color disc were conducted.

Male aggressive displays were defined as "quick contact with disc, rapid wing movement, body elevated in a 45 degree angle". Perching behavior was not recorded. A total of 556 aggressive displays were recorded during the observation period. The greatest number of aggressive displays was recorded with the green disc (n=347, m = 24.7, s.d. =

13.72) (Table 1).

A one–way between subjects ANOVA was conducted to compare the effect of color on aggression. There was a significant effect of color on aggression for the three conditions [F(5, 54) = 12.86, p = 0.0001]. Results of the analysis indicated there was a significant difference (p<0.05) between colors, so a *post hoc* statistical analysis was conducted using Tukey's HSD. Results of the test indicated that the mean score of aggressive hits on the black disc (m = 3.80, s.d. =2.82) was significantly different (p = 0.0004, p<0.05) than the mean score of aggressive hits on the green disc (m= 24.70, s.d. = 13.72); however, the mean number of aggressive hits on the black disc was not significantly different than any of the other colored discs. There were significant differences in the means when the green disc was compared to each of the other disc colors. There were significantly (p<0.05) fewer aggressive hits on black full green stripe (BFGB) disc (m=11.60, s.d.= 8.95, p = 0.002), green full black stripe (GFBG) disc (m= 4.40, s.d.= 1.78, p= 0.0007), black with a half green stripe (BgB) disc (m=7.10, s.d.=4.80, p=0.0002), and the green with a half black stripe (GbG) disc (m=4, s.d.=2.31, p=0.0005) than the green disc. No significant (p>0.05) difference was found between the means when the four striped discs were compared.

Color	Sum	Mean	Std. Deviation
B	38	3.80	2.821
G	247	24.70	13.720
BFGB	116	11.60	8.947
GFBG	44	4.40	1.776
BgB	71	7.10	4.795
GbG	40	4.00	2.309

Table 1. Description of aggressive hits on colored discs. See text for definitions of color code abbreviations.

Color plays an important role in triggering male *C. maculata* aggressive displays. Interestingly, results of this study suggest that the color itself, rather than the pattern, might play a more significant role in stimulating these displays. No statistical significance was found between the various color patterns (GFBG, BFGB, GbG, and BgB); instead, the amount of green appeared to be a defining factor in the observed behavior. I find the results of this field study to be intriguing as the discs were placed in the center of a floating mass of vegetation, and the green of the discs varied only slightly from the natural color of the vegetation.

Spot-winged Glider (*Pantala hymenaea*) Migration

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A row of seven Spot-winged Gliders photographed on 28 July as part of a large migration which took place over a span of about eight days. This photograph was taken along the upper McNally Canal in northern Owens Valley, California.

Beginning on about 25 July 2012, Inyo County, California, experienced a large migration of Spot–winged Gliders (*Pantala hymenaea*). They were seen everywhere, even by casual observers. At some of our favorite dragonfly sites we saw them in amazing numbers. At one site we saw them hang perching in the willows by the several hundreds over a distance of a couple of hundred yards.

Great swarms were also seen flying, and it was impossible to estimate their total number. I would conservatively guess that there were tens of thousands flying over the County. This amazing migration lasted about seven days. A few Wandering Gliders (*Pantala flavescens*) were seen among them.

Ebony Jewelwing (*Calopteryx maculata*) Courtship Wing Clapping

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Paulson (2011) notes both sexes of *Calopteryx maculata* (Ebony Jewelwing) spend most of the day perched on pond or stream side vegetation, often wing clapping, i.e. opening their wings slowly then suddenly closing them. What is the purpose of wing clapping? Why do they do it?

Bick and Bick (1978) suggest wing clapping of *C. maculata* occurs in a variety of social contexts including reproduction activities, feeding and grooming. Erickson and Reid (1989) hypothesize that wing clapping occurs to reduce both the endogenous and exogenous temperature of *C. maculata*. When they exposed females to an external heat source, they observed an increase in wing clapping frequency. They also observed both males and females followed physical feeding behavior with an increased frequency of wing clapping. These observations appear to support their hypothesis, but when they measured the temperature of the thorax of *C. maculata* before and after wing clapping they did not detect significant temperature change. So, Berger (2004) summarizes the current thinking as to why *C. maculata* engage in wing clapping: (1) as a means for mates to communicate with one another (akin to hand signaling); (2) as a means to cool off by increasing blood circulation to the extremities; or (3) in order to increase the intake of oxygen.

I undertook a series of field observations to further explore wing clapping behavior. On previous hikes along the Little Conestoga Creek in Manor Township Park, Lancaster County, Pennsylvania, I noticed *C. maculata* to be the predominant summertime damselfly, making the site a perfect location for my exploratory streamside work. The observations occurred over 10 consecutive days, on 15–24 July 2012. They lasted from one to two hours daily, between 10:30 a.m. and 1:00 p.m. Temperatures ranged between 80–98 degrees (F), with the median temperature being 92 degrees. Skies were clear every day except for one which was overcast, and every day was very humid.

By chance I discovered three separate areas of streamside foliage each containing from three to 11 *C. maculata* during every one of the 10 observation days. These sites were separated from one another by approximately 30 yards. I delineated a three by twenty foot section to observe at each site. These three areas fortuitously provided the observer with an experimental group comprised of both sexes contrasted with two single gender control groups, one all male, the other all female.

Single Sex Site Behavior

The sites comprised of only males or only females were characterized by very similar behavior. The damselfly would land on a leaf maintaining a minimum of approximately one foot of distance from any other. Once perched, it rarely moved from the location. It certainly did not engage in movement that could be characterized as displaying various sides of his or her body to others, i.e., courtship behavior. Wing clapping was infrequent and never in tandem with the clapping of another.

Dual Sex Site Behavior

I dubbed this site containing both females and males as "Lover's Lane." The level and variety of activity at this site was much greater when compared to the single gender sites. There were always at least three males present and perched on leaves at a distance of at least one foot from one another. On eight of the 10 observation days I found at least three and as many as eight males present. On one occasion two males were sitting on vegetation one inch above ground level off to the side of the six males who were perched on leaves 36 inches above the ground. The six appeared to each occupy a claimed territory which they each defended from invasion by any other male by chasing them away or touching their wings or bodies with their feet. The other two appeared to be transients on the sideline, not claiming a territory at this location, and awaiting the possibility of an approach by any female. When a female did approach one of these two, the male occupying the adjacent territory chased the transient away even though he was outside of the defended territory.

There were at least three potential simultaneous pairings observed daily (three male–female potential pairings displaying courtship behavior at the same time). A female would land and perch within a male's territory. She apparently selected a male to observe as there were always at least twice as many males present in Lover's Lane as opposed to females. Whenever a female presented herself, the potential pair took turns showing themselves to the other by altering the angle of view while on the same leaf or moving to another nearby leaf. Wing clapping always accompanied their presentations. The frequency of wing clapping greatly exceeded that which was observed at the single gender sites by an estimated ratio of five to one. Both male and female in a potential pairing continued this mutual display—clapping, showing another angle of themselves, clapping again, and so forth—during my

entire observation period. On some occasions the female would end the courtship by moving to a leaf in the territory of another male. They would then begin the same cycle of moving around to show themselves and wing clap, until I left or until she moved on to yet another male. Unfortunately, I never observed the consummation of any courtship. Only once did I see a male attempt to land on a female and walk down her back. She promptly displaced him by flying off to a leaf in the territory of the adjacent male. The jilted male appeared to accept his fate by remaining quietly perched and awaiting the arrival of another potential partner.

Returning to the question: why do *Calopteryx maculata* exhibit wing clapping?

While the temperature and humidity remained consistently high during the 10 day observation period (so one could argue the need to cool down and increase oxygen flow), one consistent, key observation suggests courtship communication is a salient reason for wing clapping. Lover's Lane occupants consistently engaged in frequent wing clapping during every session of the 10 days of observation. When in close proximity, both males and females appeared to take turns clapping, the male more often than the female. Adjacent territory males also sometimes clapped. On the other hand, at the non–Lover's Lane sites where only males or only females were present, wing clapping was far less frequent. I was left wondering if, when the opposite sex was not present, the occasional wing clap might be a communication device to alert others to their presence. At the same time, the more vigorous wing clapping employed during courtship may be interactive communication akin to saying "bravo" to the potential mate—unless the need for cooling off is increased as a result of "Lover's Lane" activity.

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Whittle Road Soirée #333!

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It was about time for another summertime soirée to the famous Whittle Road site north of Bristol, Florida. From 5–8 July, I joined newcomers Chris Rasmussen, Roy Morris, and Kathy Cherry from Florida to look for *Somatochlora* (emeralds). We stayed at the Snowbird Motel in Bristol, saying a cheery hello to the longtime proprietor, Mr. Patel.

Despite extensive deforestation along the dirt road, we were able to find *Dromogomphus armatus* (Southeastern Spinyleg), *Progomphus bellei* (Belle's Sanddragon), *Tramea onusta* (Red Saddlebags), many mature *Somatochlora calverti* (Calvert's Emerald), and a couple of *S. provocans* (Treetop Emerald). We then went to nearby Flat Creek where we saw a couple of perching *Stylurus laurae* (Laura's Clubtail), but we missed the two layups! Ughhh!

Our interest in *Stylurus* was heightened, so we crossed the Apalachicola River and went to Juniper Creek west of Blounstown. There we saw and caught a few *S. potulentus* (Yellow-sided Clubtail), despite the high heat and humidity. We did see a few *Libellula flavida* (Yellow-sided Skimmer) and *Argia bipunctulata* (Seepage Dancer) in the adjoining roadside ditches.

Later, we went to Sweetwater Creek where we saw *Macromia illinoiensis georgina* (Georgia River Cruiser) and *Gomphus dilatatus* (Blackwater Clubtail). But the best part was that we found several *Erpetogomphus designatus* (Eastern Ringtail) on the nearby hillsides. While common out west, this species is only found along the Apalachicola River in Florida.

We then went to Chattahoochee where we stopped and walked along river. We were reduced to watching a few patrolling *Gomphus vastus* (Cobra Clubtail). Roy made a fantastic catch of a female *G. vastus*, but you have to hear that story from him! But the best part of our trip to Chattahoochee was our stop at the Cypress Pond Park at the old dam just east of town off Hwy. 90. There we found lots of dragonfly activity with many *Dythemis velox* (Swift Setwing) along the lake. I am particularly interested to see if these *D. velox* were the same, genetically, as the *D. velox/sterilis* found in Miami and Guadeloupe by Fred Sibley or if they are like the *D. velox* found in Texas. Results are still pending, so stay tuned!

All in all, we had a great time and we are looking forward

to doing it again!

P.S. On another note, after this trip, Roy and Chris informed me they have found *Tauriphila azteca* (Aztec Glider) and *T. australis* (Garnet Glider) flying east of Tampa, Florida.

Request for *Orthemis* Specimens

I am looking for specimens of the following *Orthemis* species: *O. cinnamomea*, *O. harpago*, *O. regalis*, plus any *O. anthracina* or *O. flavopicta* from Central America for DNA work. If you have any specimens to loan, I would really appreciate it. The specimens must be less than 10 years old and only one leg will be taken. Let me know if you have any questions. Thank you very much!

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Eclosion of a *Stylogomphus* (Gomphidae) Nymph from the Middle Fork of the Rockcastle River, Kentucky

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During an investigation into the distribution of Odonata in the upper Rockcastle River system of eastern Kentucky (McMurray and Schuster 2009), I was able to document and photograph the eclosion of a *Stylogomphus* nymph in the Middle Fork of the Rockcastle River in Jackson County. The stream at this location, 1.3 km SSW of the junction of State Roads 89 and 2002 (N 37° 20.14', W 84° 05.11'), was about 20 m wide and 0.25–0.75 m deep with a substrate primarily composed of small cobble and sand/silt. On 30 May 2003, the date the eclosion was observed, the air and water temperatures were 23.7°C and 15.5°C, respectively. Eclosion took place 10 cm above the water's surface on a log 130 cm long by 20 cm wide located in a shallow, shaded section of the stream 2 m from the shore.

The *Stylogomphus* nymph was first observed attached nearly vertically on the log at 12:40 p.m. At 12:45 p.m. the exoskeleton began to split along the midline of the thorax and the adult head and thorax began to emerge (Figure 1); the adult head and thorax had completely emerged by 12:50 p.m. (Figure 2). At 12:55 p.m. the adult abdomen had also fully emerged from the exuvia (Figure 3). At 12:57 the adult wings began to expand (Figure 4) and reached their full length by 1:10 p.m. (Figure 5). At 1:17 p.m. the adult abdomen began to expand and several drops of liquid were extruded from the tip. At 1:20 p.m. the adult was able to move its legs to avoid an approaching aphid. At 1:21 p.m. the wings opened slightly and were completely opened by 1:30 p.m. (Figure 6). One minute later, the adult flew away into nearby riparian vegetation.

As I was unable to capture the teneral adult it is difficult to be absolutely certain about the identity of the *Stylogomphus* species that was observed. The exuvia showed several features characteristic of *S. sigmastylus* Cook and Laudermilk (Interior Least Clubtail), namely the "double–pointed" distal tooth followed by five teeth in a straight line, and slightly convex lateral margins of the prementum. However, the distal tooth was not significantly larger than the following teeth and the prementum length and width were nearly equal which is more characteristic of *S. albistylus* (Hagen in Selys) (Eastern Least Clubtail). Cook and Laudermilk (2004) provided distribution maps for both *S. albistylus* and *S. sigmastylus* showing that the ranges of these two species overlap in eastern Kentucky. *Stylogomphus sigmastylus* is recorded from Skeggs Creek in Rockcastle County (Cook and Laudermilk 2004, Abbott 2007) and six adult *S. albistylus* specimens were collected in the Middle and South Forks of the Rockcastle River in neighboring Jackson and Laurel counties (McMurray and Schuster 2009); the *S. albistylus* specimen collected by Williamson (1905) from the Rockcastle River south of Livingston was later determined to be a hybrid of the two species (Cook and Laudermilk 2004).

Timed documentation of the sequence of events that occur during odonate eclosion is relatively rare in published literature (Martin 2007, Rivera *et al.* 1999). In Michigan, Bright (1997) described *S. albistylus* nymphs as emerging in late morning and early afternoon on rocks and vegetation less than 1 m from the shore, requiring about 15 minutes to emerge from the exuviae. Also in Michigan, Kielb *et al.* (1996) collected *S. albistylus* exuviae attached vertically to vegetation and horizontally to rocks down-

Figure 1. *Stylogomphus* eclosion, 12:45 p.m.

Figure 2. *Stylogomphus* eclosion, 12:50 p.m.

Figure 3. *Stylogomphus* eclosion, 12:55 p.m.

Figure 4. *Stylogomphus* eclosion, 12:57 p.m.

Figure 5. *Stylogomphus* eclosion, 1:10 p.m.

Figure 6. *Stylogomphus* eclosion, 1:30 p.m.

stream of mountain stream falls. In Pennsylvania, Blust (1980) described eclosion of *S. albistylus* nymphs as taking place 30–40 cm from the water with exuviae attached horizontally and vertically to logs, rocks and the stream bank itself.

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Argia is going all–digital!

Starting in 2013, Argia will no longer be available in hardcopy form. It will only be accessible as a PDF online through OdonataCentral <www.OdontataCentral.org>. The reason for this change is to eliminate the costs of printing and shipping. While this may be a difficult change for some of you, it has some tangible benefits, including lower annual dues and full–color issues.

First Report of Blue–faced Meadowhawk (*Sympetrum ambiguum*) for Wisconsin

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I have been watching the dragonflies and damselflies that visit our yard for five summers. It all started one August when our younger child discovered an injured Common Green Darner (*Anax junius*) on the sidewalk, and we wondered who this beautiful creature was. After we got books out of the library to learn more about dragonflies, I couldn't wait to see more of these amazing beings.

A Blue-faced Meadowhawk (*Sympetrum ambiguum*), reported in Wisconsin for the first time.

We live just north of Milwaukee, Wisconsin. Lake Michigan is three blocks from our house; the Milwaukee River and a pond are about a mile away. Our small yard has lots of native plants and insects, as does our neighbors' to the south. Most summers I have seen Four–spotted (*Libellula quadrimaculata*), Twelve–spotted (*L. pulchella*), and Widow Skimmers (*L. luctuosa*), Dot–tailed Whitefaces (*Leucorrhinia intacta*), Common Whitetails (*Plathemis lydia*), Blue Dashers (*Pachydiplax longipennis*), Common Green Darners (*Anax junius*), and White–faced (*Sympetrum obtrusum*), Ruby (*S. rubicundulum*), and Autumn Meadowhawks (*S. vicinum*). I haven't seen as many damselflies over the years, but many times Sedge Sprites (*Nehalennia irene*), Lyre–tipped Spreadwings (*Lestes unguiculatus*), Familiar Bluets (*Enallagma civile*), and Eastern Forktails (*Ischnura verticalis*) are hiding in the spiderworts, grasses, or sedges in my garden.

This year has been unusually hot and dry in southeastern Wisconsin. In June, we had less than a half–inch of rain. July was dry until the thirteenth. The days were hot and windy, many in the nineties or above!

On 5 July, it reached a record–setting 103°F. I went out around nine in the morning, and saw a teneral meadowhawk who was starting to turn red. My photos were blurry, but it was hot so I quit trying to photograph that dragonfly. When the temperature dropped below 100°F in the late afternoon, I went back outside to hunt for the meadowhawk. There he was, I thought, in the neighbors' arborvitae. As I crept closer, I saw that he was unlike any meadowhawk I'd ever seen before. His abdomen had black rings and his thorax had faded brown stripes. Then I saw his blue face! I took a lot of photographs, and then I went inside to look in my books. There he was—a Blue-faced Meadowhawk (*Sympetrum ambiguum*). I posted the photo to OdonataCentral (OC# 381321) and e–mailed Robert Dubois at the DNR. The next day, he confirmed that this was the first reported sighting of the species in Wisconsin.

On 22 July, at nine in the morning, I found him (or another individual) perching on a fern on the still–shady south side of our house. I was so surprised to see him! He stayed perched for about fifteen minutes, occasionally leaving to hunt. Every day, I wondered if I'd discover another one. On July 25th, I saw one! A Blue-faced Meadowhawk was perched on an old daylily scape. It was close to sunset; he was catching and eating small winged things. We watched until he disappeared into the leafy canopy of our Paperbark Maple tree. We haven't seen any blue friends since, but an unidentified dragonfly in a photo I took on 29 June could be a female Blue-faced Meadowhawk.

DSA is on Facebook

For those of you who stay connected using the social networking web site Facebook, The Dragonfly Society of the Americas now has a Facebook page. Information, announcements, and links relating to the Society as well as photos and discussion contributed by those who "like" the page will be found here. The page is located at <http://www.facebook.com/DragonflySocietyAmericas> or just search for "dragonfly society" within Facebook and the page will appear in the results list.

Egg–Laying Behavior in Autumn Meadowhawks (*Sympetrum vicinum*)

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One of the most interesting and varied aspects of dragonfly behavior is how they lay their eggs. Cardinal Meadowhawks (*Sympetrum illotum*) start by hovering in tandem over water. Next, they slowly and gently move downward to dip the abdomen of the female in the water, where she releases eggs. On the other hand, Striped Meadowhawks (*S. pallipes*) and Red–veined Meadowhawks (*S. madidum*) hover in tandem over dry grass and drop their eggs from mid–air. You can often see the small yellow eggs falling from the tip of the female's abdomen and bouncing off vegetation on their way to the ground.

Life isn't so easy for the Autumn Meadowhawk (*S. vicinum*). When they lay eggs, it's more like a full–body contact sport. They repeatedly "whack" into shoreline vegetation as part of their egg laying process. If there were such a thing as reincarnation, you would not want to come back as an Autumn Meadowhawk.

Though considerable research has been done on oviposition in Autumn Meadowhawks (McMillan, 1996), slow-motion videos I've taken at Cranberry Lake in Anacortes, Washington shed further light on the behavior. This article presents results obtained from those videos, which can be viewed on thedragonflyguy channel on YouTube.

A Three–Step Process

Oviposition in Autumn Meadowhawks can be thought of as a three–step process. Though variations are observed, the basic steps in the process are as follows:

Step 1. The first step is to briefly submerge the tip of the female's abdomen in the water. This results in a good–sized droplet of water attached to the tip of the abdomen. One of the key field marks in identifying the female Autumn Meadowhawk is her large vulvar lamina, or "egg scoop". The outsized egg scoop supports the large drop of water, almost like a waffle cone supports a sizeable scoop of ice cream.

Step 2. After dipping into the water, the tandem pair doesn't immediately slam into vegetation on the shore. Instead, they hover in one spot for about a second. Data from a typical video of an egg–laying pair is presented in Figure 1. The horizontal line gives the average time of hovering, which is about 1.00 s.

It's reasonable to suppose that during the period of hovering the female is depositing eggs into the water droplet attached to her egg scoop. This would account for the fact that they hover for some time before continuing to the next step in the process. Verifying this directly would make for an interesting project.

Step 3. The final step of the process is the most dramatic. After hovering for a considerable time (on their time scale), the female gives an indication to the male that she is ready to proceed. At this point the pair drops downward, gathering speed as they go, until they "whack" with considerable force into the vegetation. This dislodges the egg-bearing water droplet. When I first saw this behavior I thought they were being clumsy, and were sometimes hitting vegetation instead of just flicking the tip of the female's abdomen to release the water droplet. It soon became clear, however, that hitting the vegetation is no accident—it's exactly what they want to do. If they don't hit the vegetation with enough force the first time, they often do one or more additional "whacks" until they're satisfied with the results.

McMillan (1996) points out that "the female's abdomen is struck alternately against the water surface and the bank of ponds or slow streams". This alternation between touching the water and hitting the shoreline vegetation is a striking feature of the Autumn Meadowhawk's egg–laying behavior when observed in the field, but the key role played by hovering in Step 2 sheds additional light on the process as a whole. Videos of the three-step process can be viewed online (thedragonflyguy on YouTube).

Darner Predation

The importance of hovering in Step 2 of the egg–laying process is attested to by the fact that this behavior is quite risky, and yet it is still performed consistently. During the 0.5–1.5 seconds that the pair hovers motionless they are virtually "sitting ducks" for various predators that might like a meal of meadowhawks.

The top predators in the small scale world of dragonflies at Cranberry Lake are darners—mostly Paddle–tailed Darners (*Aeshna palmata*) and Shadow Darners (*A. umbrosa*). I've often seen darners pick off pairs of meadowhawks in tandem and take them to bushes or trees for processing. Sometimes the struggling pair is difficult for the darner to handle, and the darner snips off the male meadowhawk at the base of its abdomen, resulting in a female meadowhawk with an attached abdomen. When I first saw cases like this I thought they were probably due to bird preda-

tion. Over time, however, I've seen that darners are generally the cause—at least at Cranberry Lake.

A slow–motion video of a Paddle–tailed Darner attacking a hovering pair of Autumn Meadowhawks is available online (thedragonflyguy on YouTube). The darner attacks with shocking speed and power, but in this case the meadowhawks were able to escape and, after a bit of a rest, continue their egg–laying activities. Notice the separation of the droplet of water from the female's abdomen when the darner hits the pair. This attack is every bit as dramatic and forceful on its scale as an attack by a falcon on a songbird.

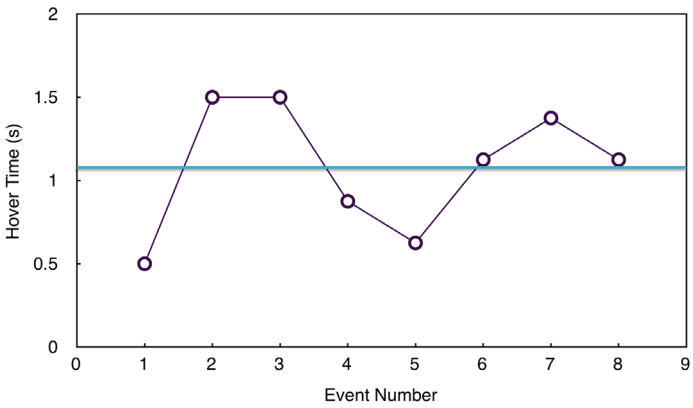

Figure 1. Hover times for eight successive egg–laying events performed by a pair of Autumn Meadowhawks. The average hover time is just over 1 second.

Lone Males and Displacement Activity

Autumn Meadowhawks are one of the friendliest dragonflies. When people tell me they went to a lake in the fall and a beautiful red dragonfly landed on them, I can say with some confidence that it was an Autumn Meadowhawk. Landing on people is one of their "field marks". Autumn Meadowhawks can also gather in considerable numbers (Walker, 2012), and engage in group egg–laying behavior.

When several tandem pairs of Autumn Meadowhawks are performing their three–step egg–laying process, there are occasional lone males mixed in with the group. As McMillan (1996) reported, lone males "rarely disrupted tandem pairs." What the males do instead is rather interesting—they engage in a fascinating bit of displacement activity.

Picture a group of tandem pairs dipping, hovering, and whacking into vegetation. A lone male appears and assesses the situation. Instead of attacking a pair to separate the female, it hovers right alongside them. The single male then goes through the motions of egg laying, just as it would if it had a female of its own. It dips down to the water, sometimes immersing its own abdomen, hovers for about a second, then swoops down and slams into the shoreline vegetation, right next to an actual egg–laying pair. The lone males are so highly motivated to engage in egg-laying behavior that they go through the motions on their own, in a classic form of displacement activity. Videos of this behavior are also available online (thedragonflyguy on YouTube).

Summary

Observations at Cranberry Lake show that Autumn Meadowhawks have a distinctive three–step egg–laying process. They dip to attach a drop of water to the end of the female's abdomen, she lays eggs in the drop as the pair hovers, they then slam with force against shoreline vegetation to dislodge the egg-bearing droplet. Lone males try their best to participate in the process, even if it means going through the motions with no female attached. By satisfying themselves with this displacement activity, the lone males reduce stress and conflict within the group as a whole.

Acknowledgements

I would like to thank Dennis Paulson for pointing out the article by McMillan, and for generously taking the time to scan and send it to me. I would also like to thank him for generously sharing his thoughts on my observations, and for his kind encouragement of my interest in dragonflies.

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Online Material

Walker, J. S. YouTube. Slow-motion videos of Autumn Meadowhawks laying eggs can be found on the YouTube channel thedragonflyguy.

Specific videos of interest are as follows: Autumn Meadowhawk Egg Laying Plus Collision; Autumn Meadowhawks Egg Laying + Displacement Activity 2; and Autumn Meadowhawks Lay Eggs—Darner Attacks!

In Memoriam: John Belshe (1935–2011) and Linden Trial (1950–2012)—Two Missouri Odonatologists Who Will be Hard to Replace

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In the last two years, the study of odonates in Missouri experienced a significant loss with the passing of Dr. John Belshe in 2011 and Linden Trial in 2012. Both were actively involved in the study of the state's damselflies and dragonflies, regularly participated in the Missouri Hine's Emerald Dragonfly Workgroup, and provided significant input on an updated checklist of Missouri odonates that is currently being drafted by this author and other contributors. Significant progress was made on our knowledge of the history and distribution of the state's odonates through John and Linden's efforts and contributions and it is impossible to measure their loss. Both had an intense desire to see a published and expanded update on a checklist of Missouri's odonates and those of us who worked with them most closely are committed to seeing the realization of that vision. We will miss but never forget their camaraderie, friendship and appreciation for the rich diversity of the state's odonate fauna. To honor their lives and their contributions, the tributes below are given in two parts. The first is a short history of their lives and careers and the second contains personal comments provided by friends and colleagues.

Dr. John Belshe

John Belshe was born and raised on a small farm in Malta Bend, Saline County, Missouri, where he acquired a love for horses that he maintained throughout his life. He received a BSE from Central Missouri State College in 1957 and a Master's and Ph.D. in Biology from the University of Miami, Florida. Shortly thereafter he taught at Miami Dade Community College before joining the faculty at Central Missouri State College (CMSU) in 1965. He was Professor of Biology at CMSU until his retirement in 2000. He was a member of numerous professional organizations and societies including having served as president of Missouri Academy of Science and the UCM Emeriti Association. He was also a member of the Johnson County Historical Society, Johnson County Democratic Club, the Missouri River Outfitters of the National Santa Fe Trail Association and many wildlife–related societies. In addition to studying odonates, John was an active birder who was the compiler for the Montrose Audubon Christmas Bird count for 45 years and participated in other bird counts annually.

John was a great story teller who was always anxious to share memories of his many experiences and this interest led him to be a member of the Warrensburg Writers for several years. He enjoyed working on his farm, hunting and fishing, and he showed horses with his family in the Missouri State Saddle Club Association from 1978 to 2002.

John had a long interest in odonates and spent considerable time reviewing much of the historical records for Missouri, especially ones where data on the collection or observation were lacking or incomplete. In 2002, John coauthored the first atlas and checklist of Missouri odonates with Linden (Trial and Belshe 2002) that Linden subsequently revised in 2005 (Trial 2005).

John was particularly fascinated with the evidence of odonates in the archaeological record and had a keen interest in *Tachopteryx thoreyi* (Gray Petaltail). His interest in *Tachopteryx* led to one of the few published accounts on the distribution, habitat association and physiochemical data of selected Missouri sites (Ferro and Belshe 1999) for this species. Ironically, in collecting data for the Ferro and Belshe (1999) manuscript, John was at Grasshopper Hollow 24 June 1999, five days before Linden (see below) discovered the federally listed *Somatochlora hineana* (Hine's Emerald Dragonfly), new to Missouri!

Comments on John from friends and colleagues:

"I could have written many good stories about John Belshe when we were graduate students together at the University of Miami in the early 60s, but those memories have been clouded by time. We shared an office with several other nature–loving Ph.D. candidates, and as I recall it, during the school year, we were out every weekend pursuing our dissertation research or fishing or hunting snakes or birding. The summer allowed us to shift over to full–time "recreation," as I think all of us considered our Ph.D. studies. It was a carefree time, and we managed to get everything accomplished for our academic needs as well as having a heckuva lot of fun.

John was one of my most constant accomplices when I decided that learning about dragonflies was my route to a Ph.D., and likewise I helped him throughout his studies of the pikeminnow, *Belonesox belizanus*, recently introduced from Yucatan. We were members of a small group of students going through the process at the same time. We liked each other, partied at each other's houses, and

were always willing to give each other a hand. Doing so usually meant going out on a field expedition. South Florida nature was wonderful in the 60s, and fortunately it still is, although dramatically changed in some ways.

The number of specimens from the Westwood Lake part of Miami in my collection testifies to John's enthusiasm for dragonflies. He was out day after day to sample the species around his house, which in those days wasn't all that far from the edge of the Everglades. What I remember best about him was his willingness to work hard and play hard, from pulling a seine through stagnant water to looking for fossil shark teeth on the banks of Joshua Creek or driving up to Lake Okeechobee at night to listen to frog choruses, not to return home before the wee hours. And yes, we even studied for exams and wrote dissertations.

But then when we got our degrees, all the members of our tight group dispersed to the four winds to postdocs or jobs, and—long before the days of e-mail—failed to be as good correspondents as we were friends. Because of John's interest in dragonflies, we did a better job of staying in touch, at least by occasional letters and then as his interest in Odonata resurged later in life, by electronic means. I was really pleased to spend time with him at the Missouri DSA meeting and make up for just a little while for all the years out of touch. That brought back a lot of my memories of why I liked and respected John so much." (Dennis Paulson).

"I had the interesting opportunity to get to know John through several different types of relationships and each was unique. The first was an undergraduate student, from 1988–1992. I avoided his classes as much as I could. He was a super–knowledgeable professor but he could be very intimidating to me. Then I entered graduate school in 1993–1995; he seemed so much less intimidating now and would share humor and help as needed. A fellow grad student and I would often help him put up hay in the evenings where he would drive the tractor and we would load the trailer. When done with these jobs he would hand us a beer and write us checks for our work. Wow—one beer could make you half loopy after three hours of putting up hay! The final relationship I got to experience with John was while I was working for MDC some 10 years after grad school. I would work to get landowner permission for John to conduct surveys on their land and sometimes I would go with him. In this final relationship he was all smiles and help. The last time we looked at a property together he gave me a bottle of his homemade elderberry wine and a "Belshe Family" cookbook. I would bet that John positively influenced well over 10,000 students directly and countless more indirectly during his life—and the numbers are still growing." (John George).

"John was my friend and colleague in the Biology Department at the University of Central Missouri. He was a dedicated teacher and researcher and his commitment as a field biologist was exemplified by his investigating dragonfly biology (and many, many other things) long after his retirement. He was also a great inspiration to a number of students." (Stephen W. Wilson).

"John was a dogged researcher. He and his student Mike Ferro worked on the distribution of *Tachopteryx thoreyi* in the Missouri Ozarks. Through his efforts, we were able to document that *T. thoreyi* was relatively common in the Ozarks and that the species utilized fens for breeding sites in addition to stream headwaters." (Jane Walker).

"John Belshe contributed to the Hine's Emerald Dragonfly surveys by covering fens in the western part of the state. He was an independent sort and an investigator that followed his own drum beat. John contributed a lot to our information on odonates in Missouri." (Joe Smentowski).

"When I was working with Dr. Belshe as an inexperienced undergraduate I was blown away, he knew everything. I've moved on, grown up, traveled, taught, done research, published, got a Ph.D. myself, and when I look back I realize—he knew everything!

I've seen some pretty good feats of observation, and wowed a few people with my own, but the best one I've ever seen was from Dr. Belshe. We were at Big Buffalo Creek Conservation Area walking back to the truck at full speed when he came to an abrupt halt and took a step back. He said, "I saw a four-leafed clover" and bent down over an area covered with clover. About ten seconds later he found it. Amazing.

Dr. Belshe's homemade hatchet planimeter was the closest thing to witchcraft I've ever encountered, and it worked!

We were at Ozark Underground Laboratory for a field trip. Despite Dr. Belshe's warning, the last night one of the students had a little too much to drink, was a minor nuisance, and was very hung over in the morning. Our trip home was not on the straight, smooth highway 65 (before you get to 13), instead we took a fantastic tour of the Ozarks on some of the windiest roads around.

When we went to Ozark Underground Laboratory for a field trip Dr. Belshe would wear his Protem hat when we visited the Protem Country Store and he would shift his accent a bit when talking to the locals. Dr. Belshe was the best damn teacher I ever had. I owe much of my professional success to his help and influence." (Mike Ferro)

Linden Trial

Linden Trial was born in Kansas City, Missouri but lived as a child in Saudi Arabia, where her father worked in the oil business until 1959 when the family returned to the states and settled in Columbia. She received a Bachelor's degree in Agriculture from the University of Missouri in 1972, and a Masters degree in Entomology from the University of Missouri in 1980.

Linden worked for the Missouri Department of Conservation from 1972 until her retirement in 1999. She spent her first years on benthic entomology projects, and specialized in adult dragonfly research during the last third of her working years. Her passion for Missouri odonates led to the publication of an atlas and checklist of damselflies and dragonflies in the state (Trial and Belshe 2002; Trial 2005). Linden traveled much of state collecting and cataloging Missouri odonates where she gained considerable knowledge on the distribution, seasonality, abundance and identification of many species. Certainly one of her strengths was her willingness to instruct and train others. She was always very patient and helpful to many of us when we first started studying odonates and enjoyed the company of others. Her identification skills and knowledge of the damselflies and dragonflies of Missouri steadily increased throughout the final years of her career and reached a zenith in 1999 when she discovered the federally listed Hine's Emerald Dragonfly at TNC's Grasshopper Hollow in Reynolds County. This discovery documented the southernmost extant site for Hine's Emerald Dragonfly in North America and initiated an intense survey for the species in the state.

In addition to her work on the Missouri Odonata Atlases in 2002 and 2005, Linden authored a number of articles published in the Missouri Conservationist magazine. She made her home on a farm just outside Columbia where she cultivated native wildflowers, tall-grass prairie plants, and other native species. She was a member of the Missouri Wildflower Association and volunteered for Missouri Prairie Foundation projects. For several years Linden was a member of the Missouri Goat Producer's Association, raising goats and making goat cheeses.

She had a talent for handcrafts, especially decorative gourds, was an active member of the Show–Me Gourd Society, and participated in many workshops and exhibitions. She also worked in ceramics, mosaics and watercolor.

A lover of reading, Linden was a great supporter of Daniel Boone Regional Library, and supported the University of Missouri as a life member of the alumni association.

Despite a diagnosis of ovarian cancer in 2002, and years of surgery and chemotherapy, she continued her artwork and nature preservation.

Comments on Linden from friends and colleagues:

"Back in the late 1980s (date forgotten) I got a call from Linden. She was a chief zoologist for the Missouri Department of Conservation and made major contributions to Missouri's Natural Heritage Database, as I recall, and she had been informed by the head office in Virginia that henceforth all natural heritage programs in each state would add odonates to their animal categories for conservation tracking purposes. She told me her background was in herps (as I recall) and she wondered how to proceed. I listed a few books she would get, gave her a few tips for collecting, and I said I would check her determinations. In the next few years several large boxes went back and forth and I was amazed how quickly she became skilled at identifications. She really got into it and found scads of good stuff. But what really impressed was the speed with which she became really competent.

This experience was repeated for several other state units (notably West Virginia and New York). Seeing how her skills and enthusiasm developed was truly one of the most important episodes of my entire career. I will miss her very much." (Nick Donnelly).

"I first met Linden at Washington University Tyson Research Center when she visited the site at my invitation to help me identify and understand my beginning fascination with odonates. From there began a long association that included joining the contribution to the overall knowledge of odonate distribution in Missouri for the Dot Matrix Project, being invited to the Hine's Emerald Dragonfly Workshop in Wisconsin, and surveying for the species in Missouri.

Linden really started the effort to find Hine's Emerald Dragonfly in Missouri. We initially convened the Annual Fen Muckers Convention in Doniphan, Missouri in 2002. Linden was the first recipient of the Fen Muckers Award, a baked crayfish turret with a dried crayfish claw coming out of the top waving a flag saying "I surrender." She loved it and kept it on her desk at work.

Linden was a quiet, reticent person with a wonderful chuckle. She was collecting odonates through 2011 and had talked to me about possibly collecting this summer. She never stopped working on the projects she loved." (Jane Walker).

"I first met Linden through correspondence many years

ago when I taught 7th graders aquatic ecology. We sent some insects and other invertebrates to her for identification. She not only identified most of our specimens to genus/species, she also gave us detailed natural history notes on each group. Her ending comment was "don't hesitate to call or write."

After the U.S. Fish and Wildlife Service meeting in Wisconsin about Hine's Emerald Dragonfly, Linden and our contingent returned to Missouri to start surveying the state for the species. Linden was a methodical investigator. She felt it was important to the project to establish whether crayfish burrows were present at Grasshopper Hollow, but also to identify the species. So Linden, Ron Oesch (a crayfish expert), and I visited Grasshopper Hollows to trap crayfish with a trap Ron had designed along with a trap Linden had obtained from Clemson University. We collected crayfish using both traps, and identified our crayfish as *Cambarus diogenes*, the same species of crayfish found at the Door County, Wisconsin Hine's Emerald Dragonfly sites." (Joe Smentowski).

"Linden was a sweet, kind, and unpretentious person. When I started working for MDC, even though I was a mere student and hourly employee, she was kind and generous and made me feel accepted. I have fond memories of the time when Linden and I made goat stew for lunch in the lab at the old MDC Research Center on College Ave. Linden raised goats so she provided the goat meat. We cooked the stew on the hot plate I used for mounting otoliths on lab slides. The stew was delicious! When I was enrolled in Aquatic Entomology, Linden patiently led me through the identification keys many times. May she rest in peace." (Phil Pitts).

"Linden will be greatly missed. Her contributions to our knowledge of Missouri odonates and other invertebrates are legendary. She was a fantastic individual who never complained and was always gracious to everyone. She was one of the most unassuming persons I ever met and was an absolute delight to be around." (Paul McKenzie).

"Linden gave me my first job in this field 17 years ago. It was because of her I got my Master's in entomology working on dragonflies. She may have been the single large influence on my career path, and a major influence on my life. Thank you Linden." (Brett Landwer).

"I will miss Linden. I met her when I was a young conservation agent. We worked together several times on the streams and lakes in Iron County. She taught me a lot about flying critters around the water. I am proud to have known and worked with her." (Bob White).

"I, like many others, was first hired into MDC by Linden. She was a great mentor and taught me a lot about stream critters. Though I was just a benthos sorter (i.e., picked bugs out of a pan of gravel) she took time to introduce me to other biologists which greatly influenced my career. Thirty some years later I still hold Linden as a big part of my career; my sympathy on the loss of a fine lady." (Larry Heggemann).

"Without Linden's discovery of Hine's Emerald Dragonfly, it is highly doubtful this endangered species would be known from Missouri at all." (Tim Vogt).

John and Linden will both be greatly missed. May they never be forgotten and may their enthusiasm and appreciation for damselflies and dragonflies continue to generate interest in the study of Missouri odonates for many generations to come.

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Call for Papers for BAO

The Bulletin of American Odonatology needs your manuscript submissions. The newest issue of BAO was just published in August, after a gap of more than two years.

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New Additions to Iowa Odonata

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Little work has been done to formally inventory and document odonate species in Iowa. Work by Cruden and Gode (1998) provided a list of odonate species observed in the state since 1997 and a more comprehensive study outlined species distributions in relation to Iowa landforms (Cruden and Gode 2000). Since then, several species have been added to the state list and one formal study inventoried Odonata on private lands in south–central Iowa (Johnson and Kinkead 2007).

The Iowa Multiple Species Inventory and Monitoring (MSIM) Program <http://www.iowadnr.gov/Environment/WildlifeStewardship/NonGameWildlife/DiversityProjects/MSIM.aspx> began in 2006 with a pilot field season and was expanded statewide in 2007 on public lands. It was started by the Iowa Department of Natural Resources and is now a cooperative project between the Iowa DNR and Iowa State University. The MSIM program is a standardized statewide survey with the goal of providing a basic inventory of Iowa's wildlife. It involves surveys for nine taxa, Odonata included, and will provide a baseline for future monitoring of Iowa's wildlife. The survey protocol for Odonata involves visual encounter surveys (VES) where technicians spend four person–hours at each property searching appropriate habitats for odonates and recording each species observed and the number of individuals observed per species. Each property is visited six times between April and October, with two visits occurring from April to mid–June, two visits occurring from mid–June to mid–August, and two occurring from mid–August to the end of October. Visits to a single property are separated by two weeks within and between seasons. These surveys allow us to document the presence or absence of species at each property throughout the survey season and multiple visits during each season allows us to effectively account for variability in flight times of different species. Below we describe records of three odonates new to Iowa found by technicians with the MSIM program.

An individual *Ladona deplanata* (Blue Corporal) was observed and collected by Casey Bergthold and Ryan Rasmussen on 16 May 2011 at Eldon Wildlife Management Area in Davis County (OdonataCentral record #328917). The individual was collected on a small pond within the Wildlife Management Area that has a small drainage area with no outflow and is surrounded by a band of emergent cattails (*Typha* spp.). The pond is approximately 0.7 acres with the total natural drainage area of the pond encompassing approximately 0.8 acres. Due to agricultural terraces diverting water into the pond, it is possible that the drainage area could be up to 1.6 acres in size. Several males and females were observed at the location and females were observed laying eggs. Individuals were observed at this site on 6 April 2012 by Rasmussen. Two additional populations of this species were observed by MSIM technicians in 2012: one on 25 April at the Donnellson Unit of Shimek State Forest in Lee County and another on 26 April at Big Hollow Creek Recreation Area in Des Moines County. Both males and females were observed at constructed ponds on each property and specimens were photographed at each property. The nearest regular site for this species according to OdonataCentral (Abbott 2007) is Garth Nature Area in Boone County, Missouri, approximately 150 miles south of the observed location. We believe this to represent a breeding population of this species in Iowa.

An individual *Celithemis fasciata* (Banded Pennant) was collected by Rasmussen on 23 June 2011 at Eldon Wildlife Management Area in Davis County (OdonataCentral record #328914). The individual was collected at the same pond on the Wildlife Management Area as mentioned in the Blue Corporal record. Six more individuals were observed by Rasmussen at this site later in 2011. Both males and females were observed, but breeding has yet to be observed at this location. On 21 June 2012, Rasmussen observed two more individuals at Fox River Wildlife Management Area in Van Buren County. The nearest record of this species according to OdonataCentral (Abbott 2007) is Little Dixie Conservation Area in Callaway County, Missouri, approximately 160 miles southwest of Fox River Wildlife Management Area and south of Eldon Wildlife Management Area. Breeding of this species in Iowa has not yet been confirmed, but this is likely evidence of a range expansion.

An individual *Didymops transversa* (Stream Cruiser) was collected by Rasmussen on 5 May 2012 at Lacey–Keosauqua State Park in Van Buren County (OdonataCentral record #377530). Rasmussen observed three males cruising along the surface of the water near the dam on Lake Lacey, located within the park. A second individual was collected by Rasmussen and observed by Harms on 10 May 2012. It is difficult to tell at this point whether this is a range expansion of this species or if the individuals observed were vagrants to the state. The nearest record of this species according to our knowledge is in Boone County, Missouri, approximately 150 miles south of Lacey–Keosauqua State Park. Their range, according to Paulson (2009), skirts along the eastern edge of Iowa following the Mississippi River.

Other documented state records found by the MSIM program include an individual *Libellula semifasciata* (Painted Skimmer) collected by Joshua Otten in 2008 at Horseshoe Bend Division of Port Louisa National Wildlife Refuge in Louisa County (Rasmussen *et al*. 2010; OdonataCentral record #321974) and Westfall's Snaketail (*Ophiogomphus westfalli*; OdonataCentral record #321975), which is in the process of being confirmed through specimen collected in the years following the MSIM surveys by other colleagues. Collectively, these records add to our growing knowledge of the Odonates of Iowa. Iowa now has confirmed records for 116 species of Odonata, and more additions can be expected in the future. Specimens collected to document these records were deposited at the Iowa Department of Natural Resources Boone Wildlife Research Station located in Boone, Iowa.

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Strange Bedfellows

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I had a bit of a freak odonate event happen this summer and was able to photograph it. While not the best photo, I thought the readers of Argia might be interested.

The photos depict a Blue-fronted Dancer (*Argia apicalis*) attempting tandem with a Common Sanddragon (*Progomphus obscurus*). The Common Sanddragon was one which I had pancaked on a gravel sandbar in the Salt Fork of the Vermilion River south of Homer, Illinois. It struggled in the net for a few minutes while I went to shoot another clubtail, and when I returned to let it out it was pretty stressed. Its wings were partially closed over its back and a couple of pairs of its legs were pulled up. It was still alive, however, so I set it down on the gravel and left it for a few minutes to revive.

When I came back to it about 10 minutes later, it did not seem much better, but it was still alive. While I was crouched down beside it this dancer started dive-bombing it several times. When I finally wised up to what was happening, I was able to snatch a photo. The clubtail was moving its mouthparts and head during the attempt, but not its wings or legs.

Figure 1. Blue-fronted Dancer attempting tandem with Common Sanddragon.

New Edition of Dragonflies of North America by Needham, Westfall and May

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Finally announcing the new edition of Dragonflies of North America by James G. Needham, Minter J. Westfall, Jr., & Michael L. May, including numerous additions and corrections for all the currently known species of North American dragonflies (Anisoptera) from Alaska to northern Mexico and the Greater Antilles. The text is completely revised, with keys, figures and drawings for all the species (including larvae) known as of 2012; as well as, updated checklist to all species, a bibliography, glossary, distribution table, and index.

The projected date for the next edition is January 2013. The list price according to the publisher is estimated to be $135.00. Advance orders are be taken now with FREE shipping and handling for $130 US deliveries, $142 Canada & Mexico, $152.00 elsewhere (includes shipping and handling). Florida residents must add 6.25% sales tax.

All funds are U.S. and must be paid in advance by check or money order made payable to "International Odonata Research Institute" or I.O.R.I. All profits will go to the International Odonata Research Institute.

VISA/MC card orders can use Paypal to pay online, with only a 3% surcharge (use the formula X/0. 97). E-mail your order to iodonata@bellsouth.net and you will be reverse billed though your e-mail—a Paypal account is not necessary using this method. Or send a check (U.S. funds only) to: I.O.R.I. % 4525 NW 53RD LN Gainesville, Fl 32653 USA, Attn: Bill Mauffray.

Need a Haircut?

Peter Post ran across the perfect place in Croton-on-Hudson, New York.

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 John C. Abbott, University of Texas Insect Collection, 3001 Lake Austin Boulevard, Suite 1.314, Austin TX, USA 78703, <jcabbott@mail.utexas.edu>; material for BAO must be sent to Steve Hummel, Lake View, Iowa, USA 54982, <shummel@iowatelecom.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 over-sized 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.)

The Dragonfly Society Of The Americas

Business address: c/o John Abbott, Section of Integrative Biology L7000, University of Texas at Austin, 2907 Lake Austin Blvd., Austin, TX, USA 78703

Journals Published By The Society

Argia, the quarterly news journal of the DSA, is devoted to non-technical papers and news items relating to nearly every aspect of the study of Odonata and the people who are interested in them. The editor especially welcomes reports of studies in progress, news of forthcoming meetings, commentaries on species, habitat conservation, noteworthy occurrences, personal news items, accounts of meetings and collecting trips, and reviews of technical and non-technical publications. Membership in DSA includes a subscription to Argia.

Bulletin Of American Odonatology is devoted to studies of Odonata of the New World. This journal considers a wide range of topics for publication, including faunal synopses, behavioral studies, ecological studies, etc. The BAO publishes taxonomic studies but will not consider the publication of new names at any taxonomic level.

Membership in the Dragonfly Society of the Americas

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

Back cover: **(upper)** Female Painted Damsel (*Hesperagrion heterodoxum*) photographed on the Rio Bonito in Lincoln Co., New Mexico on 4 August 2012 by Cliff Powell. **(lower)** Male Red Rock Skimmer (*Paltothemis lineatipes*) photographed at Jemez Springs River, New Mexico on 7 June 2012 by J. Hatfield.