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2012 DSA Annual Meeting In South Carolina A Great Success!

Nick Donnelly <tdonelly@binghamton.edu>

On a late afternoon Thursday, 4 May, the house manager of the Florence, South Carolina, Springfield Suites had a somewhat astonished look on her face as the tidy lobby of her hotel began to fill with a rowdy crowd of people, most of whom seemed to know each other. Participants on the annual pre-meeting trip for the Dragonfly Society of the Americas arrived one by one and joined the slightly more neatly dressed participants who had missed this field trip. In the next few days she would become used to stray nets and small muddy spots on the floor of her lobby.

The annual ritual of our meeting played itself out again in marvelous weather. The very early date (chosen by meeting leader Chris Hill mainly so that participants could find some of the early season dragonflies for which the Southeast is rightly famous) was a problem: we missed the few teachers in our group who could not attend because of conflicts near the end of their school years. The group of 69 attendees, though not a record, represented a substantial turn out.

There was another reason for this early meeting date. Every year the nearby town of Darlington hosts an annual festival (at which thousands of southerners sit in the hot sun, drink huge quantities of beer, and watch very fast cars turn left for several hours) that fills all the motel space for many miles around. In an opposite vein, we had all been warned about a notorious speed trap through which we would pass a few times during this meeting. Society Hill did not claim any victims this weekend, but we all were touched in some way by these two extremes of automotive speed.

The pre-meeting field trip, which I did not attend, had been very successful, based on the enthusiastic comments I heard, and yielded one state record for South Carolina: the Florida Bluet (*Enallagma pollutum*). (Later there were two additional state records: Big Bluet [*Enallagma durum*] by Chris Hill and Pygmy Snaketail [*Ophiogomphus howei*] by Ken Tennesen on the post-meeting trip).

On Friday, the official first day of the meeting, the entire group traveled about an hour's drive north to Cheraw, for a group field trip. The earliness of the season meant that several dragonflies (such as my favorite baskettails) had emerged early, lived their adult life, and died, presumably with tiny smiles on their faces, even before we arrived. But the group got good looks at many odes, with Clearlake Clubtails (*Gomphus australis*) and Piedmont Clubtails (*Gomphus parvidens*) especially popular. Many of us had visited this famous locality in previous years, but few of us knew about our next stop: Campbell Lake, an unadvertised portion of the park, only a few miles away. Campbell Lake had a greater diversity of odes, and several people found Diminutive Clubtails (*Gomphus diminutus*) and Cherry Bluets (*Enallagma concisum*) there.

We finished this exhausting but marvelous day by driving south in the late afternoon a considerable distance, through Florence, to Lynches River State Park, a boat launch site on a swift black-water river, for our annual group cook out. Chris and his wife Amy, assisted by their sons, provided a tasty dinner, eaten somewhat hastily so that the younger and more foolish of the participants could line the steep, wooded shoreline of this swift, treacherous river in the dusk and attempt to catch shad-

continued next page...

Calendar of Events

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

Event	Date	Location	Contact
Ohio Odonata Society	23 June 2012	Oak Opening, Ohio	Bob Glotzhober <bglotzhober@ohiohistory.org>
European Congress on Odon.	2–6 July 2012	Belgrade, Serbia	<ecoo2012@nhmbeo.rs>
DSA Northeast Meeting	6–8 July 2012	Sault St. Marie, Ontario	B. Pfeiffer <bryan@dailywing.net>
CalOdes Dragonfly Blitz	3–5 Aug. 2012	Del Norte Co., California	Kathy Biggs <biggsnest@sonic.net>



continued from previous page...

owdragons without falling in. Amazingly, a few Umber Shadowdragons (*Neurocordulia obsoleta*) were caught in the near dark. More amazingly, no one fell in. As the dusk turned into complete dark, the weary crowd dribbled back to Florence, except for a few who lingered behind to watch caddisflies being lured towards UV lights perched on automobile hoods.

Saturday was the official meeting, held indoors back at Cheraw State Park. Participants who had sweated, swung nets and swatted flies the previous day now sat patiently in the dark for various discussions. After a mercifully brief business meeting, we heard several presentations. Chris Hill gave an overview of the odonate fauna of South Carolina, and urged all the participants to try to increase the county totals for the state. (The late Duncan Cuyler had previously collected North Carolina so thoroughly that the bordering states by comparison seemed almost uncollected on published distributional dot maps). Pam Hunt presented a summary of the very successful New Hampshire survey, which had been recently completed. Fredy Palacino, a guest of the DSA from Colombia, presented a discussion of his project on pondhawks (genus *Erythemis*), for which he intended to visit several United States museum collections after this meeting. Dennis Paulson gave a talk on Curaçao odonates, featuring the field photographs of a retired resident of the island, and showing the utility of photographic records. I presented a discussion of the significance of widespread hybridism among several groups of North American odonates. Finally Celeste Mazzacano discussed an ambitious project for the study of dragonfly migration.


While all this was going on, a silent auction attracted several participants. Chris Hill announced that the person

who contributed the largest number of new county records would win the prize of a very lovely colored illustration of Edmund's Snaketail (*Ophiogomphus edmundi*), done by Ed Lam. This prize was eventually won by Steve Krotzer, who added no less than 38 new county records. (There were 68 new county records *in toto* for the entire group).

On Sunday the group dispersed, with many headed to the post-trip meeting centered on the Chattooga River (border with Georgia). Urged by Chris Hill to add to the species totals for the less collected counties of the state, many of us stopped at various places to do just that. I actually netted a *Pachydiplax longipennis* (the first in several decades) in what turned out to be the mistaken belief that it would be a new record for Lee County!

Marion Dobbs is writing up the post-meeting trip, but I feel I have to pass on my personal "high" for this sojourn: watching a very new Pygmy Snaketail (*Ophiogomphus howei*) (found by Alison Van Keuren) complete its emergence, finally flying upwards as breathless onlookers fumbled with their cameras.

Having added another very successful meeting to our skein, we now look forward to 2013, when we will gather in mid-July in northern Saskatchewan, where we have been invited by David Halstead to enjoy again the delights of Canadian dragonflies.

The task of hosting a Dragonfly Society annual meeting is daunting, taking energy and concentration on detail, and much prayer concerning the weather. Chris Hill and Marion Dobbs did a splendid job and deserve congratulations and many thanks. 

DSA 2012 Post-Meeting Trip

Marion Dobbs, <ecurlew@mac.com>

The DSA 2012 post-meeting trip destination was the Chattooga River of "Deliverance" fame. This National Wild and Scenic River forms a part of the border between Georgia and South Carolina, and there was potential for county records from two different states. Base of operations was Clayton, Georgia, and loosely organized groups of people drifted from the river to some of its tributaries to the nearby Black Rock Mountain State Park just north of Clayton and back again over the course of two, three, or four days.

The Chattooga is a pristine rocky mountain river rising in the Blue Ridge Mountains in North Carolina and eventually joining the Tallulah River at Tugaloo Lake to form the Tugaloo River. Much of it is remote, but we accessed it at

the U.S. 76 bridge crossing, a popular spot for kayak and raft put-ins. Sitting atop the Eastern Continental Divide, Black Rock Mountain State Park is Georgia's highest at 3640' and home to 17-acre Black Rock Lake, one of the few accessible still water habitats in the area.

Everything about the post-meeting trip was great—except the weather. On the day when almost no one had arrived, it was excellent. On the day when most of the crowd had departed, it was beautiful. The two days in between tended toward the gloomy and cool with occasional pulse-racing suggestions of sunshine.

Nevertheless, for this area of limited habitat types, we had

quite a respectable species list, a few early flight dates, a county record or two, some good finds, and one super-duper find. I've received notice of 33 species from Rabun County, Georgia, and the total species list for the post-meeting trip, at last count, numbered 44. That would include South Carolina species, both in Oconee County on the river and during travels to and from Florence. If anyone still has lists to submit, Chris or I would be pleased to receive them.

Some favorites from the river:

Calopteryx angustipennis (Appalachian Jewelwing)
Gomphus (Hylogomphus) parvidens (Piedmont Clubtail; northern form)
Ophiogomphus edmundi (Edmund's Snaketail)
Ophiogomphus howei (Pygmy Clubtail)*
Ophiogomphus incurvatus incurvatus (Appalachian Snaketail)
Gomphus (Hylogomphus) viridifrons (Green-faced Clubtail)
Macromia margarita (Mountain River Cruiser)

From Sarah's Creek and Overflow Creek, small and medium-sized mountain streams respectively:
Gomphus rogers (Sable Clubtail)

In Pursuit of a Pygmy

Marion Dobbs <ecurlew@mac.com>

The big species of the DSA 2012 post-meeting trip was actually one of the smallest—*Ophiogomphus howei* (Pygmy Snaketail). This tiny challenger has outsmarted the “locals” for four years now, as we (Giff Beaton, Jerrell Daigle, Chris Hill, Steve Krotzer, and myself) gathered suspicious exuviae and dug unsuccessfully for nymphs and never had a glimpse of an adult.

It all started back in '08. On the 13th of May in that year, I crossed the Chattooga River, forming part of the border between Oconee Co., South Carolina, and Rabun Co., Georgia, on my way home from SE DSA 2008 in Cheraw, South Carolina. Not able to pass inviting-looking and unexplored waters, I pulled into the car park and ran down to the shoreline. Immediately I spotted an *Ophiogomphus* lolling on the “beach.” Turned out to be *O. incurvatus*. In a matter of moments, another *Ophiogomphus* appeared on a distant rock in the river itself, and then another. Surely these could not be *O. incurvatus*. And indeed they were not, but rather *O. edmundi*, a new watershed for the species and an exciting find. Naturally, this sparked interest among southeastern odonatists, of which there are few. On the 22nd of that same month, Giff Beaton found


Stylogomphus albistylus (Eastern Least Clubtail)

From the park:

Lanthus vernalis (Southern Pygmy Clubtail)
Ophiogomphus incurvatus incurvatus (Appalachian Snaketail)

We started the trip with 22 attendees, many more than I had expected when I set aside six hotel rooms in January! And there were a good solid dozen remaining on the last night for our final Mexican meal. The restaurant employees and patrons took it in stride when certain of our table made a successful attempt to audibly reproduce all the lyrics for the theme from the old TV show “The Beverly Hillbillies” with increasing volume for each new verse.

A good time was had by me and I hope by all.

* [See “In Pursuit of a Pygmy” for the full tale of how *O. howei* came to be discovered and confirmed on the Chattooga River.] 

exuviae at the Chattooga that looked like *Ophiogomphus*, but were very small. Steve Krotzer took a look and said, “They might be *O. howei*.” Ken Tennessen took a look and said, “They might be *O. howei*.” One difficulty was that the exuviae showed little “bumps” along the dorsal surface inconsistent with northern individuals, which showed no hooks at all. And so the species was dubbed “*O. howei?*”

And thus it remained over the course of the next three years. On sporadic visits, no one found any further evidence that this species existed. Then, in 2011, when SE DSA was held in Clayton, Georgia near the Chattooga, several attendees found tiny suspicious exuviae. Still no adults, no nymphs.

Then this year, the “outsiders” swooped in for the DSA post-meeting trip, and the fun began. The stars and planets and comets and meteors all aligned such that we exactly hit peak emergence for tiny suspicious *Ophios*. On the very first day, actually pre-post-meeting, the 6th of May, Ken collected a number of exuviae and found a failed emerger with hamules and appendage intact and three additional emerging *O. howei?* on the 7th.

Over the course of the meeting, numerous reports poured in. Here's how they looked:

Ken: see above

Giff: not in attendance

Jerrell: species seen on the 6th-7th

Steve: female found in shoreline vegetation

Many other attendees: lots of observations—Oh yes, I was sitting on the beach and one crawled up and emerged on my big toe; And I found three in the McDonald's parking lot; Well, I had one sleeping at the foot of my bed last night; and so forth or so it seemed.

Chris & Marion: We two, in a final effort, went out early on the last morning. We gave it our all, and one of us almost died trying! Chris had crossed the river in search of the elusive *O. howei* and had vanished around a bend and out of sight, laboring under the false assumption that I was not an idiot and could take care of myself. I soon understood him to shout, "Got one!" I made an instant and foolhardy decision to cross the river right then and there complete with big monster camera and tripod on my shoulder. Bad choice. The river got deeper and the current faster as I slowly approached the halfway point and suddenly I had the first of two opportunities to choose between my camera and me. I've never felt frightened on a river before;



Figure 1. Ken Tennessen pointing to the elusive Pygmy Snaketail (*Ophiogomphus howei*) on the Chattooga River. Photo by Marion Dobbs.

there's always a first time. Somehow I remained standing then and during the second assault. I started up again inching along and muttering "help, help, help, Chris help, help, help". No point in calling out, impossible for anyone to hear. It was just a sort of mantra. Finally, I reached a semi-stable standing rock and couldn't see a way forward and wasn't about to go back. So I stood frozen to the spot until Chris drifted into view, took in the scene, and called, "I'm coming." He was able to talk me in and relieve me of my camera so that it wouldn't be late afternoon by the time we slogged back upriver to the bridge.

In summary, he had not "got one" and neither had I. But just wait until next year!


Postscript: Ken took his specimens back to Wisconsin and compared them to numerous individuals from Wisconsin, Virginia, and North Carolina and found no structural differences other than the aberrant dorsal hooks. Now our *Ophio* is a puzzle no longer, but officially *O. howei*. 



Figure 2. Pygmy Snaketail (*Ophiogomphus howei*) emerging along the banks of the Chattooga River. Photo by Ken Tennessen.

Call for Papers for BAO

The Bulletin of American Odonatology needs your manuscript submissions. The last issue of BAO was published more than two years ago. Please help us keep BAO the vehicle for timely reporting of research results on Odonata of the New World.

If you have questions about submission guidelines, please see the last page of this issue of ARGIA or contact Ken Tennessen, Editor, BAO, <ktennessen@centurytel.net>.

A Survey of the Odonata Fauna of Zion National Park

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Introduction

In October 2010, my wife, Linda, and I decided to spend the weekend in southern Utah and hike the Kolob Canyon area at the northern end of Zion National Park. From the Taylor Creek Trailhead, our destination was Double Arch Alcove, a fairly easy five mile hike (round trip) along Taylor Creek. Yellow poplars and red maples flickering in the morning sun at the base of high, red sandstone monoliths framed by deep blue sky provided a beautifully stunning landscape for our hike. As we paralleled the clear, bubbling stream, I kept an eye out for dragonflies. With the canyon beginning to warm, we began to observe large mosaic darners cruising along the stream at regular intervals. I realized they were likely *Aeshna persephone* (Persephone's Darner), a species of small desert canyon streams ranging from Mexico, north through Arizona and into southern Utah.

Having spent the better part of the past five summers working on the distribution of Odonata throughout the state of Utah, it was apparent that Zion National Park held critical habitat for odonates that had not yet been surveyed. Although many entomologists have studied in Zion NP in the past, none have focused exclusively on odonates.

With the help of Leslie Courtright (Museum Curator) and Claire Crow (Wildlife Program Manager) from Zion NP, I was able to obtain a research permit to collect in the park during 2011. In April 2011, my wife and I visited Zion NP to obtain the permit and shore up the details. We also took the opportunity to hike to the Emerald Pools and walk the Temple of Sinawava Trail along the North Fork of the Virgin River to the Narrows. As we walked along the river, I looked up at the towering sandstone walls of Zion Canyon and realized that I would be doing research in one of the most beautiful places on the earth.

Literature Review

During the winter 2011, a review of the literature containing information on odonates in Zion NP was completed along with a search of the collections at University of Utah, Utah State University, Brigham Young University, Dixie State University and Northern Arizona University (website data only).

Woodbury (1933) published a list of Odonata from Zion National Park produced by Vasco M. Tanner that

contained seven species: *Hetaerina americana* (American Rubyspot), *Archilestes grandis* (Great Spreadwing), *Cordulegaster diadema* (Apache Spiketail), *Libellula nodisticta* (Hoary Skimmer), *L. saturata* (Flame Skimmer), *Erythemis collocata* (Western Pondhawk) and *Sympetrum corruptum* (Variegated Meadowhawk). Although Tanner and Woodbury listed habitats for these species (streams or ponds), neither listed any specific collection locations in Zion NP. In Brown (1934), three more species were listed from Zion NP, *Cordulegaster dorsalis* (Pacific Spiketail), *Hetaerina vulnerata* (Canyon Rubyspot) and *Plathemis subornata* (Desert Whitetail), bringing the total odonates recorded from the park to ten species. In his master's thesis, "The Dragonflies (Anisoptera) of Utah," Larsen (1952) recorded two additional species from Zion NP, *Paltothemis lineatipes* (Red Rock Skimmer) and *Pantala flavescens* (Wandering Glider). Musser (1962) completed a survey of the "Dragonfly Nymphs of Utah" with collection data and in the process collected and identified five species of dragonfly nymphs from Zion NP. Two species from the Family Cordulegastridae, *Cordulegaster diadema* (Apache Spiketail) and *C. dorsalis* (Pacific Spiketail), were collected from the stream below Weeping Rock while *Libellula saturata* (Flame Skimmer) was collected from two locations, the Narrows and a slough ¼ mile south of the Temple of Sinawava in Zion Canyon. Two other species that Musser collected were new additions to the Zion NP list, an exuvia of *Oplonaeschna armata* (Riffle Darner) at the stream below Weeping Rock and nymphs of *Aeshna umbrosa* (Shadow Darner) from both Weeping Rock and a slough, ½ mile south of the Temple of Sinawava. In his survey of the damselflies of Utah, Provonsa (1975) found *Argia lugens* (Sooty Dancer) and *A. vivida* (Vivid Dancer) in Zion NP, bringing the literature total to 16 species.

A search of the collections at the University of Utah added *Pantala hymenaea* (Spot-winged Glider) to the list, while *Ischnura denticollis* (Black-fronted Forktail) and *Libellula pulchella* (Twelve-spotted Skimmer) were found in the collections at Utah State University. Researchers from the National Aquatic Monitoring Center at Utah State University collected nymphs of *Hetaerina americana* (American Rubyspot) and *Brechmorhoga mendax* (Pale-faced Clubskimmer; new Zion NP record) along the East Fork of the Virgin River and nymphs of *Oplonaeschna armata* (Riffle Darner) in LaVerkin Creek. The collections at Brigham Young University produced several species from Zion NP including four new unpublished records: *Amphiagrion abbreviatum* (Western Red Damsel), *Anax junius* (Common Green Darner), *Aeshna persephone*

(Persephone's Darner), and *Rhionaeschna multicolor* (Blue-eyed Darner). A list of Odonata records containing five identified species was obtained from the Zion National Park Arthropod Collection, Northern Arizona University website on 17 Jan 2011. None were new additions to the overall species list.

From the literature and the collections listed above, a preliminary list of 24 odonate species was assembled for Zion NP in March 2011 prior to this survey in the summer of 2011.

Purpose

The purpose of this project was to survey the Odonata of Zion National Park in order to add to our overall knowledge of the distribution of Odonata in the state of Utah. Although this study provided useful information about the distribution and habitat preferences of Odonata within Zion National Park, it was not an exhaustive study of the Odonata within the park.

The Survey

During the summer of 2011, four trips were made to Zion NP in June, July, August and September, to seven different locations, on a total of seven collecting days. Some sites were visited only once while others were visited three different times. The seven sites were: Taylor Creek, North Creek (Right Fork), East Fork Virgin River, Pine Creek, Weeping Rock Creek, North Fork Virgin River and a small pool/waterfall across the North Fork Virgin River near the Temple of Sinawava Trailhead. Results are discussed by location. See Table 2 for a list of species documented from each location.

Taylor Creek (Kolob Canyon)

Taylor Creek is located in the scenic Kolob Canyon Area in the northern part of Zion National Park, 15 miles south of Cedar City. The creek is located in a deep ravine accessed from the Taylor Creek Trailhead (5500 ft.) less than two miles from the Kolob Canyon, Zion NP entrance. The trail parallels the creek with multiple crossings passing between high sandstone canyon walls leading to Double Arch Alcove about 2.5 miles from the trailhead.

Taylor Creek is a small (2 to 4 meters wide), shallow, permanent stream with a rocky substrate ranging in size from cobble to large boulders. Pools and small sand bars are found intermittently along the stream. Few areas of the stream have shoreline emergent vegetation. Occasional flash flooding keeps the overhanging trees, which line the stream along its entire length, further back from the main

stream course in most places. The creek has three forks: the north, middle and south fork. Each fork drains a deep canyon with high red sandstone cliffs. The middle and north fork appear to have more permanent water and are best for odonates. There are approximately 3.5 miles of quality habitat for lotic odonate species along the middle fork of Taylor Creek and about 1 mile along the north fork.

Three visits were made to Taylor Creek with the first on 23 June 2011. On that day large, broad-winged *Paltothemis lineatipes* (Red Rock Skimmer) males were patrolling up and down the stream about 1 to 3 feet above the stream bed. The only other odonate species found that day was the bright bluish-purple damselfly *Argia vivida* (Vivid Dancer) perching on the rocks or dead branches trapped in the stream bed. Voucher specimens were collected of each species.

On the second trip (16 July 2011), *Paltothemis lineatipes* (Red Rock Skimmer) was again the dominant odonate along the stream. *Aeshna interrupta* (Variable Darner) was also a fairly common sight patrolling along the stream about chest high, with the occasional *Oplonaeschna armata* (Rifle Darner) patrolling more slowly at about knee high level. One *O. armata* was collected in the north fork of Taylor Creek along with a pair of large, black and yellow *Cordulegaster dorsalis* (Pacific Spiketail) cruising down the narrow creek. Two damselfly species were also collected, *Argia vivida* (Vivid Dancer) and the larger smoky-winged *A. lugens* (Sooty Dancer). One teneral specimen of *Sympetrum pallipes* (Striped Meadowhawk) was taken along Taylor Creek while one *Rhionaeschna multicolor* (Blue-eyed Darner) was netted from a swarm of darners hawking along the Kolob Canyon Road near the Taylor Creek trailhead. These two were likely products of the wetlands on the valley floor west of the park. Other lentic species may also use the canyons of Zion NP to "hawk" for insects.

The third trip to Taylor Creek (24 Sept. 2011) produced a few *Argia vivida* (Vivid Dancer) and the large, late season damselfly *Archilestes grandis* (Great Spreadwing). The latter was commonly observed hanging from the shoreline trees and vegetation, many in tandem pairs. The prize of the day was another late season odonate, *Aeshna persephone* (Persephone's Darner). I counted at least a dozen of these large darners patrolling along a 0.5 mile stretch of the stream. Three were retained for voucher records. It appears that Taylor Creek has excellent habitat for this usually uncommon darner. There are at least two other known canyons west of Zion National Park in Washington County (Leeds Canyon and Red Cliffs) that also contain populations of *Aeshna persephone* (Persephone's Darner). I also believe that it may be found in similar nearby can-

yons to the north of Zion National Park in adjacent Iron County.

North Creek

North Creek joins the Virgin River near the town of Virgin (UT Hwy 9) about 6 miles east of LaVerkin and 15 miles from the south entrance to Zion National Park. To reach the portions of North Creek within Zion NP, you must turn north at Virgin on the Kolob Reservoir Road and travel approximately 6.5 miles to the Right Fork Trailhead. The Left Fork of North Creek contains the famous section known as the Subway where the creek has carved out a tube-like pathway through the deep sandstone canyon. The 9.5 mile hike, which requires a backcountry permit, begins at the Wildcat Canyon Trailhead where the trail eventually drops into the narrow canyon and requires several rappels over waterfalls and short swims through narrow slots before reaching the $\frac{1}{4}$ mile long Subway section. One photo record of *Cordulegaster diadema* (Apache Spiketail) exists from the Left Fork in the Subway area. Although the Right Fork does not require a backcountry permit or rappelling skills, the hike is not for the faint hearted. From the trailhead, the "trail" drops 400 feet down through steep, rugged basalt cliffs to the stream bed. It is not much of a trail really, just a series of trail markers (piles of rocks) at intervals to indicate the best route down through the cliffs. The Left and Right Forks of North Creek converge approximately 0.25 miles upstream from where the Right Fork Trail meets North Creek. North Creek is more open at this location flowing over sandstone boulders and solid rock formations with intermittent deep pools. However, one rather large boulder right in the middle of the stream turned out to be a large tree trunk of petrified wood! Sand bars have formed in the slower areas of the stream and may be lined with emergent and shoreline vegetation.

Two trips were taken into the Right Fork of North Creek. On the morning of 15 July 2011, I found *Argia lugens* (Sooty Dancer) to be common all along the creek with an occasional *A. vivida* (Vivid Dancer). A few *Hetaerina vulnerata* (Canyon Rubyspot) were also observed on one side branch of the creek. *Paltothermis lineatipes* (Red Rock Skimmer) was again the dominant dragonfly, flying low over the stream bed. In areas where there were larger pools, several *Libellula saturata* (Flame Skimmer) were patrolling over the pools or perched at the end of overhanging branches. One *L. pulchella* (Twelve-spotted Skimmer) was also observed but not captured. Just after entering the Right Fork, I collected my first gomphid in Zion NP, a *Progomphus borealis* (Gray Sanddragon) perched on a gravel bar. I soon obtained three voucher specimens of this species. I missed catching *Oplonaeschna armata* (Riffle

Darner) two or three times and never did get one from North Creek on either trip. On one long stretch of pools, I came upon several *Anax walsinghami* (Giant Darners) working their way up and down the stream. I tried for over two hours to net one and probably missed over ten times! They dodged my net using a rather large repertoire of maneuvers that had me pretty twisted. I swear I had them hemmed in against the stream bank or pinned down against the rocks but they still managed to escape. At least twice they suddenly turned and came straight at me, flying right over my shoulder while I fumbled to get my net in a position to swing. I think they all got together on the rocks above and laughed at me afterwards. I left humiliated. It had to be one of the most frustrating experiences collecting dragonflies that I can remember. I never did collect one that day and only saw one on a second trip taken on 13 Aug. 2011. The second trip yielded similar odonates as the first trip with the addition of a second gomphid, *Erpetogomphus compositus* (White-belted Ringtail). To my knowledge, these are the first two species of the Family Gomphidae identified from Zion NP. The National Aquatic Monitoring Center at Utah State University has collected nymphs of the Family Gomphidae in Zion NP but has not identified them below the Family level. I believe that at least two more species will eventually be located in Zion NP, *Ophiogomphus severus* (Pale Snaketail) and *Stylurus intricatus* (Brimstone Clubtail).

East Fork, Virgin River (Parunuweap Canyon)

The East Fork is the second largest stream in Zion NP draining a large watershed extending many miles to the east and north of the park. Just a few miles north of Kanab, the East Fork flows down through Parunuweap Canyon which, in places, becomes a very tall, narrow slot canyon with deep water. Eventually, the canyon opens up into a wide valley with beautiful canyon vistas. Here, the river winds through a sandy floodplain leaving the park and passing through Trees Ranch, before entering the main fork of the Virgin River at the town of Springdale. I received permission from Laurie Robinson, the ranch manager, to pass through this beautiful 2000 acre ranch in order to access the areas of the East Fork within Zion NP. The East Fork at this location is very different habitat from that of Taylor Creek and North Creek with its sand and silt covered bottom, which in many places is lined with tall, thick stands of the invasive species *Phragmites australis* (Common Reed).

I had initially avoided the larger East Fork of the Virgin River earlier in the season because of high water levels created by a record snowpack the previous winter and a long, cool, wet spring. My only trip to the East Fork was on 12 Aug. 2011. Rubyspots were common, with males

dancing in circles at intervals along the stream. Because of the habitat, I expected them to be the more common *Hetaerina americana* (American Rubyspot). The National Aquatic Monitoring Center at Utah State University collected and identified nymphs from the East Fork as *H. americana* (American Rubyspot). However, upon examination, I realized that the adults that I had collected were all *H. vulnerata* (Canyon Rubyspot). In fact, I did not collect *H. americana* (American Rubyspot) anywhere in the park, although there is one older adult specimen from Zion NP in the BYU collection. Three species of *Argia* (dancers) were found on the East Fork, *A. lugens* (Sooty Dancer), *A. vivida* (Vivid Dancer) and *A. moesta* (Powdered Dancer), the last a new Zion NP record. One other Zygoptera species was found along the East Fork, *Enallagma civile* (Familiar Bluet), also a new park record.

The dominant dragonfly along this portion of the East Fork was *Brechmorhoga mendax* (Pale-faced Clubskimmer) and three specimens were easily obtained for study. *Erpetogomphus compositus* (White-belted Ringtail) was fairly common perched on gravel and sand bars while several *Tramea lacerata* (Black Saddlebags) were observed floating high over the floodplain away from the stream in search of small insects. One landed close enough to be netted. One *Libellula pulchella* (Twelve-spotted Skimmer) was also observed but not collected along the East Fork.

Pine Creek

Pine Creek begins east of Zion Canyon cascading over a sandstone cliff near the mile long tunnel section of UT Hwy 9, then parallels Hwy 9 until it joins the Virgin River near the junction (round-about) of Hwy 9 and the Zion Canyon Road. From the cliff, there are only 1.5 miles of odonate habitat along this small, steep gradient stream. Large boulders create small waterfalls that cascade into deep pools making travel along the stream difficult. The best access point is the turnout just before the first switch-back on Hwy 9 leading up to the tunnel.

Seven species of odonates were obtained (six Zygoptera and one Anisoptera) during three trips (June, July and September) along Pine Creek. Two dancers, *Argia lugens* (Sooty Dancer) and *A. vivida* (Vivid Dancer) were collected along with two bluets, *Enallagma annexum* (Northern Bluet) and *E. praeverum* (Arroyo Bluet). Both bluets were new additions to the Zion NP list. The other two Zygoptera were *Hetaerina vulnerata* (Canyon Rubyspot) and *Archilestes grandis* (Great Spreadwing). The only dragonfly collected was *Libellula saturata* (Flame Skimmer). During early August, a flash flood sent a wall of water seven feet high down Pine Creek. I was curious to examine the damage during my September visit to Pine

Creek but saw little of concern. The only obvious damage was that the invasive plant *Phragmites australis* (Common Reed), which had been dense in some places, was flattened down, making some areas of the stream more accessible than on previous visits.

Weeping Rock Stream (Zion Canyon)

Weeping Rock is a popular tourist stop for park visitors to Zion Canyon. A short but steep hike of 0.5 miles on a paved trail will take you to a platform beneath an undercut of a tall sandstone cliff with water dripping off a beautiful hanging garden of greenery. Although this small trickle of a stream is less than 0.5 miles in length from the cliff face to the North Fork Virgin River, it was the most productive location in Zion NP for odonates, with twelve species collected (Table 2). *Argia hinei* (Lavender Dancer) was found in August and September and added to the Zion NP list along with *Lestes congener* (Spotted Spreadwing), found at the junction of the stream with the Virgin River. Two dragonflies from the Family Aeshnidae were found here on separate trips, *Oplonaeschna armata* (Riffle Darner) in August and *Aeshna persephone* (Persephone's Darner) in September. One interesting note was that in August, I observed and collected specimens of *Cordulegaster dorsalis* (Pacific Spiketail), while one month later in September, at the same pool, I observed and collected only *C. diadema* (Apache Spiketail).

Being so close to park visitors at Weeping Rock provided me with an opportunity to point out some of the more interesting dragonflies and damselflies that typically go unobserved by tourists. Both children and adults were fascinated by the beautiful Canyon Rubyspots perched on branches overhanging the small stream. I told one family that was hiking along the stream to look for large black and yellow dragonflies (Apache Spiketails) flying slowly just above the water's surface. On their return trip, they were excited to tell me they had seen two of these stunning dragonflies working their way along the creek.

North Fork, Virgin River (Zion Canyon)

The North Fork of the Virgin River is the largest stream in Zion National Park. Draining the high basins to the north, its tributaries flow through deep slot canyons including the famous Zion Narrows accessed at the end of the Temple of Sinawava (River Walk) Trail in Zion Canyon. From the Narrows, it flows through Zion Canyon for several miles before exiting the park at the town of Springdale where it joins with the East Fork becoming the Virgin River.

Due to high, swift waters, the North Fork of the Virgin

River was not very accessible or productive for odonates during 2011. Woodbury (1933) called the North Fork an “Aquatic Desert” because of its paucity of life due to the periodic flash flooding that scours the river bed. That statement certainly holds true today even more than in the past due to its more channelized stream bed. However, early photos (Woodbury 1933) show a more braided river allowed to flood over the larger flood plain reducing the energy and scouring at any given area and creating oxbows and sloughs, more lentic-type habitat that has nearly disappeared along the river today. Although more surveying along this stretch of river is certainly needed, Tanner (Woodbury 1933) recorded several lentic odonate species that were not found during this study in 2011. Only *Argia vivida* (Vivid Dancer) was directly collected along its banks with two others, *A. nahuana* (Aztec Dancer) and *Lestes congener* (Spotted Spreadwing) which were found in wetland seeps or side streams within the flood plain of the river. Both were new records for Zion NP. Only one other location was surveyed in Zion NP, a tall waterfall across the river near the Temple of Sinawava Trailhead. The water falls several hundred feet into a series of small pools where *Argia vivida* (Vivid Dancer), *Paltothermis lineatipes* (Red Rock Skimmer), and *Libellula saturata* (Flame Skimmer) were collected.

Summary

During the summer of 2011, 25 species of Odonata were documented from Zion National Park, belonging to seven families and 17 genera (Table 1). Thirteen of these were previously unrecorded from Zion NP (Table 1). This brings the Zion National Park list of Odonata to 37 species belonging to seven different families and 23 genera. The family totals are: Calopterygidae (2), Lestidae (2), Coenagrionidae (11), Aeshnidae (6), Gomphidae (2), Cordulegastridae (2) and Libellulidae (12). No new additions were added to the Utah State Odonata Checklist. Although many streams in Zion NP were not surveyed, a better understanding of the distribution and habitat preferences of odonates in Taylor Creek, North Creek, Pine Creek, Weeping Rock Stream and the East Fork Virgin River was obtained from this study in Zion National Park. Several of the odonates found in Zion NP have narrow habitat requirements and it is comforting to know that, at least here,

these habitats and the precious water they contain are protected. Due to their natural state and inaccessibility, many of the streams in the Virgin River drainage (165.5 river miles) have been designated as “Wild and Scenic Rivers” by the Omnibus Public Lands Management Act of 2009.

**Table 1. Zion National Park Odonata Checklist, 12 November 2011
37 total species, 25 (#) documented 2011, 13 (*) new additions 2011**

Scientific Name	Common Name
Calopterygidae	
# <i>Hetaerina vulnerata</i> Hagen 1853	Canyon Rubyspot
<i>Hetaerina americana</i> (Fabricius) 1798	American Rubyspot
Lestidae	
# <i>Archilestes grandis</i> (Rambur) 1842	Great Spreadwing
*# <i>Lestes congener</i> Hagen 1861	Spotted Spreadwing
Coenagrionidae	
<i>Amphiagrion abbreviatum</i> (Selys) 1876	Western Red Damsel
*# <i>Argia hinei</i> Kennedy 1918	Lavender Dancer
# <i>Argia lugens</i> (Selys) 1854	Sooty Dancer
*# <i>Argia moesta</i> (Hagen) 1861	Powdered Dancer
*# <i>Argia nahuana</i> Calvert 1901	Aztec Dancer
# <i>Argia vivida</i> Hagen 1865	Vivid Dancer
*# <i>Enallagma annexum</i> (Hagen) 1861	Northern Bluet
*# <i>Enallagma civile</i> (Hagen) 1861	Familiar Bluet
*# <i>Enallagma praevarum</i> (Hagen) 1861	Arroyo Bluet
<i>Ischnura denticollis</i> (Burmeister) 1839	Black-fronted Forktail
Aeshnidae	
*# <i>Aeshna interrupta</i> Walker 1908	Variable Darner
# <i>Aeshna persephone</i> Donnelly 1961	Persephone's Darner
<i>Aeshna umbrosa</i> Walker 1908	Shadow Darner
<i>Anax junius</i> (Drury) 1770	Common Green Darner
*# <i>Anax walsinghami</i> MacLachlan 1882	Giant Darner
# <i>Oplonaeschna armata</i> (Hagen) 1861	Riffle Darner
# <i>Rhionaeschna multicolor</i> (Hagen) 1861	Blue-eyed Darner
Gomphidae	
*# <i>Erpetogomphus compositus</i> Hagen 1858	White-belted Ringtail
*# <i>Progomphus borealis</i> (MacLachlan) 1873	Gray Sanddragon
Cordulegastridae	
# <i>Cordulegaster diadema</i> Selys 1868	Apache Spiketail
# <i>Cordulegaster dorsalis</i> Hagen 1858	Pacific Spiketail
Libellulidae	
# <i>Brechmorhoga mendax</i> (Hagen) 1861	Pale-faced Clubskimmer
<i>Erythemis collocata</i> (Hagen) 1861	Western Spiketail
<i>Libellula nodisticta</i> Hagen 1861	Hoary Skimmer
<i>Libellula pulchella</i> Drury 1770	Twelve-spotted Skimmer
# <i>Libellula saturata</i> Uhler 1857	Flame Skimmer
# <i>Paltothermis lineatipes</i> Karsch 1890	Red Rock Skimmer
<i>Pantala flavescens</i> (Fabricius) 1798	Wandering Glider
<i>Pantala hymenaea</i> (Say) 1839	Spot-winged Glider
<i>Platthemis subornata</i> Hagen 1861	Desert Whitetail
<i>Sympetrum corruptum</i> (Hagen) 1861	Variegated Meadowhawk
*# <i>Sympetrum pallipes</i> (Hagen) 1874	Striped Meadowhawk
*# <i>Tramea lacerata</i> Hagen 1861	Black Saddlebags

Table 2. Zion National Park Odonata Survey 2011 (25 species; 13 new additions [*])

Scientific Name	Common Name	Taylor Creek	Temple of Sinawava Trailhead, waterfall	North Creek	Pine Creek	East Fk. Virgin R.	Weeping Rock	North Fk. Virgin R.
* <i>Aeshna interrupta</i>	Variable Darner	●						
<i>Aeshna persephone</i>	Persephone's Darner	●					●	
* <i>Anax walsinghami</i>	Giant Darner			●				
<i>Oploniaeschna armata</i>	Riffle Darner	●					●	
<i>Rhionaeschna multicolor</i>	Blue-eyed Darner	●						
<i>Cordulegaster diadema</i>	Apache Spiketail						●	
<i>Cordulegaster dorsalis</i>	Pacific Spiketail	●					●	
* <i>Erpetogomphus compositus</i>	White-belted Ringtail			●		●		
* <i>Progomphus borealis</i>	Gray Sanddragon			●				
<i>Brechmorhoga mendax</i>	Pale-faced Clubskimmer					●		
<i>Libellula saturata</i>	Flame Skimmer		●	●	●		●	
<i>Paltothermis lineatipes</i>	Red Rock Skimmer	●	●	●				
* <i>Sympetrum pallipes</i>	Striped Meadowhawk	●						
* <i>Tramea lacerata</i>	Black Saddlebags					●		
<i>Hetaerina vulnerata</i>	Canyon Rubyspot			●	●	●	●	
* <i>Argia hinei</i>	Lavender Dancer						●	
<i>Argia lugens</i>	Sooty Dancer	●		●	●	●		
* <i>Argia moesta</i>	Powdered Dancer					●		
* <i>Argia nahuana</i>	Aztec Dancer							●
<i>Argia vivida</i>	Vivid Dancer	●	●	●	●	●	●	●
* <i>Enallagma annexum</i>	Northern Bluet				●		●	
* <i>Enallagma civile</i>	Familiar Bluet					●		
* <i>Enallagma praevarum</i>	Arroyo Bluet				●		●	●
<i>Archilestes grandis</i>	Great Spreadwing	●			●		●	
* <i>Lestes congener</i>	Spotted Spreadwing						●	●

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Literature Cited

- Brown, C.J.D. 1934. A preliminary list of Utah Odonata. Occasional Papers, Museum of Zoology, University of Michigan, 29 1: 1-17.
- Larsen, W.P. 1952. The Dragonflies (Anisoptera) of Utah, Unpublished Master's Thesis, Dept. Zoology, University of Utah, pp. 1-95.
- Musser, R.J. 1962 Dragonfly nymphs of Utah (Odonata: Anisoptera) University of Utah Biological Series, 12: 1-74.
- Provonsa, A.V. 1975. The Zygoptera (Odonata) of Utah, with notes on their biology, Great Basin Naturalist, 35: 379-390.
- Woodbury, A.M. 1933. Biotic relationships of Zion Canyon, Utah, with special reference to succession, Ecological Monographs, 3: 147-246. 

When is it too cold for *Sympetrum vicinum* and *Ischnura hastata*?

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Were it not for *Sympetrum vicinum* (Autumn Meadowhawk) and a few other species, Odonata enthusiasts in the northeastern United States could put away their cameras, nets, and binoculars in late September or early October. In recent years, early December sightings of *S. vicinum* have become almost expected. There are records for New Hampshire for 4 December (Mirick, 2001) and as late as 14 December for Ohio (Rosche, 2006). The 16 December 1998, sighting by Fred Sibley in Fairfield, Connecticut (Sibley, 1999) is the perhaps the latest Northeast record.

A century ago, Philip P. Calvert also kept track of the end of the flying season by observing the last date each year he observed *S. vicinum* at a small pond on the University of Pennsylvania campus (Calvert, 1926). Between 1898 and 1925, his latest date was 23 November, which is considerably earlier than the dates of recent records. Perhaps this is due to a warming climate or more likely the increased number of observers monitoring a much larger area. Calvert tried to relate his latest observation each year to the lowest temperature before and after each of his late dates, but he found little if any correlation and concluded that other factors such as food availability must also play an important role. However, as Calvert noted, his temperature records came from a weather station on top of a 123 foot tall Philadelphia building. One could imagine that temperatures at that site could be significantly warmer than near ground level away from the city on clear calm nights with radiational cooling. Clearly there must be a lower temperature limit for the survival of *S. vicinum*. Our observations in northern Delaware suggest that limit is between 20 and 22°F (-6.7 to -5.6°C). We observed flight activity on a day that the air temperature reached a maximum of 41.3°F (5.5°C).

Along the Chesapeake and Delaware Canal, there are several settling ponds where spoils from dredging the canal once were dumped. We monitored a *S. vicinum* population by one of these shallow ponds on the north side of the canal 0.72 mi (1.15 km) east of the Maryland state line in December 2011. The pond is more or less rectangular with greatest dimensions approximately 400 ft by 600 ft (130 m by 210 m) and has emergent sedges over its entire surface. Away from the edges

beneath a thin layer of sedge roots lies a thick “bottomless” layer of unconsolidated silt akin to quicksand. At the north side of this pond is a steep south-facing, 20 feet high eroding embankment (39.5429° N, 075.7663° W; 65 feet) that functions like a solar cooker (Fig. 1). On a bright sunny day (10 December) with air temperatures barely above 40° F, the temperature measured on the ground and protected from the wind approached 90° F near the top of this embankment beneath a slight overhang. It was there *S. vicinum* perched on the near vertical surfaces on the coldest days (Fig. 2). We last observed about 10 males on 11 December 2011 after a night when the temperature dipped to 22°F.

Two miles to the south and five miles to the north are weather stations (KDEMIDD5 39.506° N, 075.764° W; 55 feet and KDEBEAR3, 39.592° N, 075.732° W; 80 feet) (www.wunderground.com). The reported temperatures from these sites north and south of the study site are in close agreement, differing from each other by less than a degree most of the time (Table 1). Between 1 and 14 December, there were only three nights that the air temperature did not drop below freezing. During that period of warm cloudy days, ~2.3 inches of rain fell. The morning before our last sightings, the low temperatures at the recording sites were 21.8 and 21.9°F. Ice, a half inch (~1 cm) thick, formed on exposed puddles and persisted through the day in shaded locations. The following night



Figure 1. Broad view of the south-facing bank where *Sympetrum vicinum* perch on cold December days. The shallow sedge-covered tailings pond is in the foreground.

was the coldest, registering 20.0 and 19.9°F, respectively. Unfortunately, we were unable to survey for *S. vicinum* on 12 December. On 13 December, after another cold night of 22.4 and 22.1°F, no adult dragonflies were seen and several subsequent visits failed to find any. The average air temperatures for 11–13 December were below freezing and temperatures were below freezing for more than half of each of those days. Because the days were mostly sunny to clear, the microhabitat along the embankment would have been well above freezing during the day (83.4°F measured on 11 December) despite air temperatures barely above 40°F, so the abrupt disappearance of *S. vicinum* would be associated with low nighttime temperatures.

It is evident that *S. vicinum* has evolved behavioral and postural adaptations to elevate its head and body temperatures well above ambient temperature on cool days (May, 1998). But after sunset, large temperature differences disappear. It is not known where *S. vicinum* spends the night and whether they somehow locate protected places a few degrees warmer than the ambient air. The possibility that the species has a cryoprotective molecule like glycerol is also unknown.

Sibley observed that among 70 individuals he marked



Figure 2. Close-up view of the upper several feet of the embankment where temperatures in the sun and protected from the wind can approach 90°F when air temperatures near 40°F. A male *Sympetrum vicinum* is perched near the center of this photograph taken December 10, 2011.

on 9 December 1998 in Connecticut, all were males and no females were seen (Sibley, 1999). Among the approximately 25 individuals we saw on 4 December 2011, only one was female and thereafter only males were seen. Given May's observations that female *S. vicinum* have a slightly lower body temperature than males and that females

	Back Creek, Middletown, DE (KDEMIDD5)		Bear, DE (KDEBEAR3)				Sedge Meadow, C&D Canal
	39.506° N, 75.764° W; 55 ft		39.592° N, 75.732° W; 80 ft				39.5429° N, 75.7663° W; 65 ft
Date	Max °F	Min °F	Max °F	Min °F	Max Δ°F	Min Δ°F	Notes
12/1/2011	50.5	30.5	50.6	30.9	-0.1	-0.4	
12/2/2011	54.8	25.0	54.2	26.5	0.6	-1.5	
12/3/2011	48.7	25.8	48.3	27.0	0.4	-1.2	
12/4/2011	57.3	27.7	57.0	27.5	0.3	0.2	>25 <i>S. v.</i> seen, all but one ♂
12/5/2011	58.2	36.4	57.7	37.8	0.5	-1.4	
12/6/2011	61.4	58.3	62.0	57.7	-0.6	0.6	
12/7/2011	61.0	39.6	61.4	38.4	-0.4	1.2	2.2 inches of rain
12/8/2011	45.3	29.0	45.4	29.6	-0.1	-0.6	
12/9/2011	51.4	25.8	51.1	25.8	0.3	0	
12/10/2011	44.5	29.2	45.0	27.5	-0.5	1.7	6-8 ♂ seen
12/11/2011	40.8	21.8	41.3	21.9	-0.5	-0.1	~10 ♂ seen
12/12/2011	43.5	20.0	42.2	19.9	1.3	0.1	
12/13/2011	36.1	22.4	37.9	22.1	-1.8	0.3	none seen
12/14/2011	51.3	28.3	51.4	30.9	-0.1	-2.6	none seen
12/15/2011	58.5	45.6	58.0	45.9	0.5	-0.3	
Avg	50.89	31.03	50.90	31.29	-0.013	-0.267	

Table 1. Maximum and minimum air temperatures at weather stations north and south of the *Sympetrum vicinum* study site along with observations of adult sightings and other weather information. Temperatures below freezing are displaced to the right and italicized in boldface font.

have a slightly poorer thermoregulatory ability, it is possible that females perished differentially during a cold period in November.


During the summer, *S. vicinum* is infrequently seen except for recently emerged teneral that quickly disperse. The earliest date we have for emergence at this site is 21 June 2008 and the latest is 3 August that same year. A few fully mature adults appear before the end of August and do not become common until the fall. Where the adults are in July and most of August is not known.

Sympetrum vicinum is not the only late-season odonate at the wet sedge meadow. About 15 *Ischnura hastata* (Citrine Forktail) were present in the sedges on 4 December and all but two of them were female. After that date, we did not look for them again until the noon hour on 22 December, an unusually warm day (62°F) with bright sun and little wind. The water temperature was 46°F, while in the sun on the ground of the south-facing embankment the temperature reached 96°F. During a long search, we found 13 dead female *I. hastata* floating on the water surface and one live adult female. This is the latest date by far for any adult odonate in Delaware. The dead individuals were fairly fresh and most were fully articulated. There was no evidence of feeding by scavengers. Though possible, it seems unlikely they froze on the cold nights of 11–13 December and remained so well preserved for a week and a half. The preponderance of females late in the season is striking and contrasts with the preponderance of late season male *S. vicinum*. The lack of male *I. hastata* makes

one wonder about parthenogenesis, because this species is parthenogenic in the Azores (Cordero Rivera *et al.*, 2005).

While the wet meadow does not experience great increases above ambient temperatures during the day, the shallow water does warm on sunny days and provides a heat sink that would keep temperatures close to the surface warmer during the night. It is possible that adult *I. hastata* partially or completely submerge during the evening though that has not been observed. Whatever strategies these species have are for surviving subfreezing night time temperatures, they are different for *S. vicinum* and *I. hastata*.

References

- Calvert, P.P. 1926. Relations of a Late Autumnal Dragonfly (Odonata) to Temperature. *Ecology* 7(2): 185–190.
- Cordero Rivera, A., M.O. Lorenzo Carballa, and V. Vieira (2005) Parthenogenic *Ischnura hastata* (Say), Widespread in the Azores (Zygoptera: Coenagrionidae). *Odonatologica* 34: 1–9.
- May, M.L. 1998. Body Temperature Regulation in a Late Season Dragonfly, *Sympetrum vicinum* (Odonata: Libellulidae). *Internat. J. Odonatology* 1(1): 1–13.
- Mirick, S. 2001. NE Odes list serve 4 December 2001 “Meadowhawk in New Hampshire!”
- Rosche, L. 2006. Larry Rosche, e-mail note 14 December 2006 “Dragons”.
- Sibley, F. 1999. A Beginners Observations on Winter Dragonflies. *ARGIA* 11(1): 13–15. 

Pardon me. I trod your toes. (Vietnam 2012)

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Readers of *ARGIA* have now discovered that I have a fascination for foreign phrase books. Some are intended for English-speaking visitors, and others are intended for the natives who will have to deal with their visitors. Some are trendy, intended especially for hip travelers, and others seem a bit staid, perhaps belonging to another era. In Vietnam this April I found a Vietnamese phrase book in the driver's door pocket. It even had a chapter on ballroom dancing. I am still trying to imagine how useful this is in a modern Asian country. Anyway, the title comes from this chapter.

Ailsa and I returned to Hanoi this April to join our chums for another three weeks of insect collecting. Joined by our son Malcolm in Danang we became nearly half of the group (led by John Heppner), which otherwise sought moths and butterflies. We had long since discovered that

the larger the insect prey, the smaller and lighter the gear necessary for their study. The lepidopterists carry heavy electrical generators for their nocturnal light trapping, huge nets, and quantities of rancid bait for their elaborate traps, while we hunters of the giants of the insect world are armed only with light nets and tiny boxes.

This year we traveled south from Hanoi to Danang (about in the middle of the country) in the hot month before the monsoon starts. This is not the ideal time for insect collecting, but we were fairly successful, finding 64 species, of which eight or nine were either undescribed, or at least recently described species (I have some literature search ahead of me to confirm these), or otherwise mysterious.

Cuc Phong, a very popular national park, and only a few hours south of Hanoi, was the first destination. The park

is in forested karst country, and had a limited odonate fauna in the last days of the dry season. I reveled in the beautiful *Rhyothemis variegata* (which in previous trips in southeast Asia I had found only one at a time, and on few occasions), which was abundant over the wet, long grass meadows. They seemed to aggregate in groups of a few dozen in selected places. In the late afternoon the sky was literally full of these beautifully marked dragonflies, which fly exactly like butterflies. The other attraction at this park was the huge *Epophtalmia elegans*, looking like a *Macromia* on steroids. A lake dweller, males of this species fly swiftly around and around the small lake at the park entrance. They fly swiftly and close to the water, so that they are very challenging to net. I felt lucky to take a few.

It was really too early in the season for gomphids, but I did find a young *Asiagomphus* (very like our *Gomphurus* species) in the meadow. Unfortunately it is a female, but I can't match it to any of the known species. At a nearby river we found several patrolling gomphids, one of which I finally was able to net. It is a *Nihonogomphus lieftincki*, which Fred Sibley took last year further north. It belongs in the group of gomphids that in North America is represented by *Ophio-* and *Erpetogomphus*, and which is the dominant group of eastern Asian gomphids.

Damselflies were not abundant. The most common were the species of the platycnemidid *Copera*. Teneral specimens of three species were abundant and were ghostly white, with dark markings. There were also a few coenagrionids, such as old friends *Ischnura* and *Pseudagrion*.

It was a two-day drive south to Danang (where we were joined by our son Malcolm), where we intended to collect in the Bach Ma National Park. Alas, the park road was being entirely reconstructed, so we had to confine our efforts to streams right at the park entrance. There were not any odonates visible on two hot days, but Malcolm found what might be a new species of *Pseudothemis* (a dark Oriental libellulid with a bright yellow band around the base of the abdomen). Ailsa netted a huge *Gomphidia*, a genus we take sparingly, which does not correspond to any species familiar to us. John Heppner found a female of *Philoganga vetusta* in the woods. This is a very large, evidently primitive damselfly genus, which I have encountered only a few times previously. Malcolm found a small *Aciagrion occidentale*, which I had found in Australia decades ago, and which is rare in Vietnam. Elsewhere in the Old world, species of this genus tend to occur mainly in the dry season, often in wooded places.

Along the main highway, we stopped briefly at some small mountain streams, which looked promising. I found several especially lovely *Euphaea* (an Old World damselfly genus

somewhat related to polythorids like *Cora*) with bright green flashes on their black wings. Malcolm took the single *Chlorogomphus* specimen we captured on this trip. I was relieved that this one had actually been described, if only from a single specimen. It was the Chinese *C. kit-awakii*, a recently named species. I still have taken more undescribed than described species of this genus.

Our final motel was a small beach "resort" near Danang lacking anyone on the staff who knew a single word of English (it is amazing how much you can do with charades). The entire Danang fishing fleet seemed to be devoted to catching squid and our resort was Ground Zero for their activity. While we ate our dinner (usually squid) each night, the fleet, each boat with bright lights, lurked immediately off the beach (we could have thrown a rock, or perhaps a squid, and hit them) catching next night's meal. Squid and beer is a great combination.

The local habitat destination was a "forest reserve" which our leader thought had a good potential for Lepidoptera. For us, it was too dry, and we figured on several days with limited ode interest. Along the road we found a really tiny stream flowing in granitic bedrock in scrub forest. There were a few damselflies, including several *Devadatta cyanocephala*, which had been found and named only a few years previously. More interesting were several males and a few females of an undescribed species of *Coeliccia*, a southeast Asian forest damselfly genus we were familiar with from previous trips. These are slightly larger but otherwise similar to New World tropical *Protoneura*, mainly black, with lovely yellow and blue markings.


The Lepidoptera people were growing restive and obviously wanted to go north in hopes that recent rain showers would make their collecting better than at the beginning of the trip. We were scheduled to leave from the Danang airport, and so we suggested that they return north and just leave us on our own for the last few days. This turned out to be easier than we had thought. If you are on your own in Vietnam, translation is surprisingly available. If you hop into a cab (the driver will speak no English, I guarantee), you tell the driver (in English) where you want to go. He takes out a cell phone, speed-dials a number, and hands you the phone. You simply speak English into it, and the translator at the other end then tells you to hand the phone back to the driver, who then hears the translated message.

One of the neatest attractions in the Danang area is a new hotel located on top of a mountain (1500 meters) just west of town. Reached by a cable car (apparently a world-class long and high ride), it proved to be a wonderful place to look for dragonflies. We spent our last two days at

the summit of this mountain. At the summit itself there were several strong-flying dragonflies. My son Malcolm showed remarkable prowess in netting several. The large aeshnid turned out to be *Polycanthagyna erythromelas*, a big darner mainly known from its red-abdomened female. They were conspicuous, flying somewhat lower than the swallows and swifts and also feasting on the insects flying at the summit. A slightly smaller and less vigorous species was the large libellulid *Zygonyx*, which was represented by an undescribed species with lovely yellow markings. We also saw, and Malcolm netted, two *Macromia pinratani*, which flies near the summit, but curiously in tight places along paths in the forest, and not out in the open air. Alas, we could not net any of the *Chlorogomphus* males and females also summiting here.

The most interesting odonates, however, were not these large aerial predators, but some damselflies. In one of the most interesting tropical experiences in my career, we found a cluster of hilltopping *Indocnemis* (a very large platynemidid damselfly), which belong to an undescribed species. The forest just beneath the summit is very dry, but there was a place, no more than a hundred feet across, at which many *Indocnemis* males and females were evidently aggregating just off the trail. There being absolutely no water around, I wondered where they intended to mate and lay their eggs. They would eventually have to descend

to find suitable oviposition habitat in the tiny forest streams that are eventually found a hundred meters or so lower in elevation. I found this aggregation at the summit remarkable. There was no feeding, courtship, territorial, or any sort of behavior at all. I have never seen anything like this behavior.

We want to return to Vietnam next year. With any luck we will be able to lure one of our sons to accompany us. You can't beat the youthful vigor and enthusiasm that they bring to a trip. 

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.

Having a Blast in Barbados!

Fred C. Sibley <fcsibley@empacc.net>

In late October, Jerrell J. Daigle joined Peggy and me on Barbados to do a two-week survey of the island. Most of the tourist accommodations in our price range are on the SW corner of the island in and around the capital of Bridgetown. We picked the Gemini House B&B close to the airport and east of most of the sprawl from Bridgetown. The B&B was a real gem and Steve and Geri, who run the place, were wonderful hosts—Geri does a superb banana bread. Jerrell is talking of going back just to have breakfast!

There are other things to do besides catch dragonflies so we visited the vast dripping underground Harrison Cave, a couple of old plantation houses (Jerrell found rare tree snails), the highest point on the island—570 feet, Cherry Tree Lane—the trees turned out to be mahogany, not cherry, but what do you expect after George Washington's visit? A very good museum exists at the house where George slept when he visited for a few months in 1751. Flying fish and marlin dinners at Oistins Fish Market, Mount Gay Rum Factory where rum was invented,

Cadrington College, St. Nicholas Abbey, beaches, light-houses and a trillion acres of sugar cane were other highlights of the trip.

Eddie Massiah, co-author of *Birds of Barbados*, was a wonderful local guide. He took time off both weekends and guided us to streams, ponds and hunting clubs. The island is small and well covered with roads but matching the map names to the signposts proved to be a traumatic experience. One day we went 0 for 40 on making choices at T-intersections. On top of that, many of the best sites are only accessible by one of the many one lane tracks leading into a brushy area or across cane fields. Without Eddie we would still be going in circles. The islanders are very courteous drivers and very helpful when asked for directions, but you have to have some knowledge of the terrain and local vocabulary. During the week we drove a rental car back to sites Eddie had taken us to or explored for sites we could match to the Google Earth printouts we had brought.

The whole island is either houses or sugar cane but the north end and SE corner are the flattest and here there are concentrations of hunting clubs. During the season, the hunting clubs pump water into half dozen or more shallow ponds and shoot shorebirds and ducks that are lured there by decoys. We photographed the club where the last known Eskimo Curlew was shot. Our visit in late October was timed to arrive after the hunting season ends (October 15) but before the ponds dry up. Some of the ponds already had grass emerging from the water and most clubs had areas outside the manicured ponds that were marshy or vegetation clogged. Some clubs have permanent ponds. Both the permanent ponds and marshy areas were generally more productive than the hunting ponds. Make sure hunting season is over before you explore the premises!

There are numerous limestone sinks with either temporary or permanent ponds and without Eddie's help we would have missed a lot of these. Permanent streams are uncommon, all on east side of island, and uniformly disappointing for odonates. Everything found on the streams was more common in the ponds. Small ponds in some of the gardens and even some roadside ditches presented seemingly ideal habitat for *Micrathyria* and *Telebasis*. Streams looked good for *Argia* and *Enallagma* but there was no hint of any of these being present.

We are pretty sure we found all the possible species on the island. We diligently explored a lot of various habitats, and we have a pretty good idea of what is and what is not on the island. We found a total of 12 species, including two new island records, *Tholymis citrina* and *Tramea calverti*.

The updated species list is as follows:

Ichnura ramburii (Rambur's Forktail)
Lestes forficula (Rainpool Spreadwing)
Brachymesia furcata (Red-tailed Pennant)
Brachymesia herbida (Tawny Pennant)
Dythemis sterilis (Brown Setwing)
Erythemis vesiculosa (Great Pondhawk)
Erythrodiplax umbrata (Band-winged Dragonlet)
Orthemis macrostigma
Pantala flavescens (Wandering Glider)
Tholymis citrina (Evening Skimmer)
Tramea abdominalis (Vermilion Saddlebags)
Tramea calverti (Striped Saddlebags)

We have removed the following species due to misidentification and lack of appropriate habitat:

Lestes spumarius (Antillean Spreadwing)
Anax amazili (Amazon Darner)
Miathyria simplex

Tramea binotata (Sooty Saddlebags)

Jerrell noted that the *Dythemis sterilis* looks different from *D. sterilis* from South America. We suspect it might have to be called *Dythemis sterilis multipunctata* or something similar as some preliminary DNA work shows it to be different genetically from the Central and South American populations. Also, the postfrons is of typical orange coloration, not metallic purple as in *D. sterilis* populations from St. Vincent.

While the *Orthemis macrostigma* looks like typical *O. macrostigma* from nearby northern islands, especially in the female thoracic patterns, we did see some slight color differences in the labium and venter pattern that looked like some *O. sulphurata* from southern islands. It is possible that there is or was some mixing of the two species. More work needs to be done with these two species as well as the rest of the *Orthemis* group.

Before arriving we had compiled a list of 11 species recorded from the island: 8 from the check list of Lesser Antillean Odonates compiled by François Meurgey and Celine Poiron and 3 from photographs sent to Dennis Paulson. A 1985 paper by Bennett and Alam listed two additional species for a total of 13 species.


Ichnura ramburii, *Brachymesia herbida*, *Erythemis vesiculosa*, *Orthemis macrostigma* and *Tramea abdominalis* are common and found on almost any body of water including streams. *Lestes forficula* and *Brachymesia furcata* were at fewer ponds but sometimes common. *Erythrodiplax umbrata* is abundant but in marshy or even damp areas of grass, not in the open ponds. *Dythemis sterilis* was very local but common at input and output streams at one large water reservoir. A few *Tramea calverti* were found mixed with the widespread *Tramea abdominalis*. *Pantala flavescens* were also widespread but always in small numbers. *Tholymis citrina* was found at five different localities. Since it is an evening flier and we were not often out at this time of day, it would have to be considered common.

Our records of *Tholymis citrina* and *Tramea calverti* were new for the island. We did not find *Micrathyria aequalis* (Spot-tailed Dasher), which was reported by Bennett and Alam. We checked a number of ponds that seemed like ideal habitat for it. Both this and *Tramea binotata* may be represented by specimens in Alam's collections (dispersed to several institutions on Barbados) but we did not check these collections for several reasons. Bennett and Alam list both *Orthemis ferruginea* and *O. sulphurata* but there is only *Orthemis macrostigma* on the island. Meurgey and Poiron list *Anax amazili* for the island. The absence of *Anax* was surprising, as we would have expected a number

of individuals if not several species.

This was a wonderful island to visit. One does not need a permit to collect insects, travel was easy although slow, accommodations and weather were very good, islanders are friendly. However, the lack of diversity on this geologically young island, and absence of species in seemingly ideal habitat gives little reason for a return visit. Additions to the island list will almost certainly be either very local or accidentals. All in all, Barbados is really nice place to visit!

Literature Cited

- Bennett, F.D. and M.M. Alam. 1985. An annotated checklist of the insects and allied terrestrial arthropods of Barbados. Caribbean Agricultural Research and Development Institute. Bridgetown, Barbados. 81pp.
- Meurgey, F. and C. Poiron. 2011. An updated checklist of Lesser Antillean Odonata. Société d'Histoire Naturelle L'Herminier. 

Deformed Antennae on *Ophiogomphus carolus* (Rifle Snaketail) Nymph

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While examining nymphs of *Ophiogomphus carolus* Needham (Rifle Snaketail) from northern Wisconsin (Price County, North Fork Jump River), I noticed through my hand lens that one had an odd-looking left antenna. Close examination at home under the microscope revealed that the third segment (or 3rd antennomere, abbreviated "antm3") was grossly constricted. Typically antm3 is of even width, with a slight basal and apical taper and with the outer margin slightly convex (Fig. 1a). In this specimen, antm3 was concave on both the inner and outer margins, roughly from mid-length to three-fourths its length (Fig. 1b). The constriction made the segment appear bulbous at its distal end. In lateral view, the antenna was almost normally shaped (elongate rectangular) although the apical fourth was more upturned, slightly twisted and somewhat swollen.

This is the first deformed antenna I have noticed in the genus *Ophiogomphus*. In a preliminary literature search,

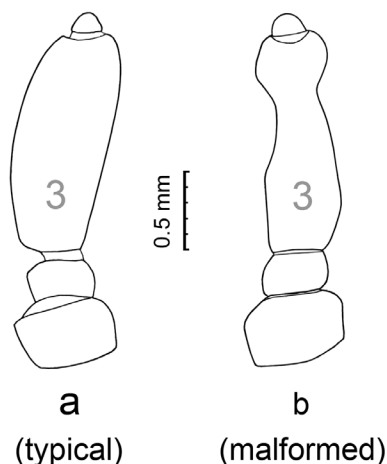


Figure 1. Outline drawing of left antenna of two female nymphs of *Ophiogomphus carolus* from northern Wisconsin (setae omitted).

the only reference I have found thus far alluding to any such deformity was by Steffens (2001), who reported a number of "abnormalities" in exuviae of *Ophiogomphus rupinsulensis* Walsh from Minnesota; the antennal deformities ranged from shortened segments to "misshapen" or "clubbed" segments. He also reported abnormalities in mouthparts, lateral spines and anal appendages of *O. rupinsulensis* and several other species of gomphids, and speculated that an incidence of 1–2% was probably normal for gomphid nymphs. However, at one locality he studied, over 4% of the exuviae had some sort of deformity. I have looked at several thousand specimens of Gomphidae, and I would also conclude that deformities are rare in gomphid nymphs. One of the most noticeable cases was the distorted labium of a *Gomphus vastus* Walsh (Cobra Clubtail) exuvia from northern Wisconsin (Fig. 2): the deformed palpal lobes, missing ligula and constricted prementum appear to have been caused by a developmental problem. I assumed the adult that emerged from this exuvia was viable, as I did not find it anywhere near the exuvia. If deformities in gomphids are to be evaluated for higher than normal incidence at a particular locality, more work on background levels will be needed.

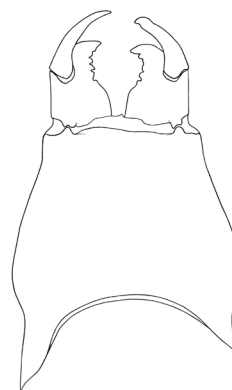



Figure 2. Outline drawing of deformed prementum of *Gomphus vastus* from northern Wisconsin.

I doubt that I'll ever be able to determine what caused the *O. carolus* antenna to be formed the way it was, but I surmise it was due to some sort of injury in an earlier instar, possibly a predator grabbing the nymph by its antenna. Gomphid nymphs conceal

themselves below the substrate, so it is possible that the predator was another gomphid. I did not see deformities on any other part of the specimen. It seems improbable that the deformed antenna would have been a detriment to the survival of this nymph; however, my dip net was. I would appreciate hearing from anyone who has seen antennal deformations in Odonata nymphs.

Literature Cited

Steffens, W. P. 2001. Status Survey for *Ophiogomphus anomalus* Harvey, an early-season dragonfly inventory of western Superior National Forest rivers. Report submitted to Superior National Forest and Minnesota DNR Natural Heritage and Nongame Research Program, January 2001. 13 pp. 

The Dragonflies (Insecta: Odonata) of Sierra Las Damas, Sancti Spíritus Province, Cuba

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Within the insects, dragonflies and damselflies, or odonates, are one of the best known groups after butterflies. They are often used and represented in drawings, embroidery and other artistic objects. They are at the top of the insect food chain and are important in the control of biting flies such as mosquitos. The nymphs are equally efficient predators in the water, capturing large numbers of insects that can be harmful to man (Alayo 1968). For these reasons, I wanted to explore the fauna of Sierra Las Damas.

Sierra Las Damas is a karstic hill which is situated near the municipality of Cabaiguán and Taguasco, in the Sancti Spíritus province, inside the Central Region of Cuba. The area is divided in two by the Zaza river and the soils are formed in essence by massive beds of cretaceous limestone. The average air temperature is 25°C, and the relative humidity is 70%. In 1991, the area was designated a local monument.


Collections were made during the months of January through March, May through July, and October through December in 2011. All material examined was deposited in the author's collection. The relative abundance was estimated according to Ramos (1999).

The odonate fauna of Sierra Las Damas is represented by 26 species of dragonfly (30.5% of the cuban species), including 6 species of Zygoptera and 20 species of Anisoptera. The fauna of Sierra Las Damas may increase with additional sampling.

Taxonomic list and abundance of the dragonflies from Sierra Las Damas

Scientific Name	Abundance
Family Coenagrionidae	
<i>Enallagma coecum cardenium</i> Hagen in Selys	Very common
<i>Ischnura caproleus</i> (Hagen)	Scarce
<i>Ischnura hastata</i> (Say)	Scarce
<i>Ischnura ramburii</i> (Selys)	Very common
<i>Leptobasis vacillans</i> Hagen in Selys	Very common
<i>Telebasis dominicana</i> (Selys)	Common
Family Aeshnidae	
<i>Anax junius</i> (Drury)	Scarce
<i>Coryphaeschna adnexa</i> (Hagen)	Scarce
<i>Gynacantha ereagris</i> Gundlach	Scarce
<i>Gynacantha nervosa</i> Rambur	Very common
Family Libellulidae	
<i>Brachymesia herbida</i> (Gundlach)	Scarce
<i>Crocothemis servilia servilia</i> (Drury)	Common
<i>Dytthemis rufinervis</i> (Burmeister)	Common
<i>Dytthemis sterilis</i> Hagen	Common
<i>Erythemis plebeja</i> (Burmeister)	Scarce
<i>Erythemis simplicicollis</i> (Say)	Common
<i>Erythemis vesiculosa</i> (Fabricius)	Very common
<i>Erythrodiplax fervida</i> (Erichson)	Very common
<i>Erythrodiplax justiniana</i> (Selys)	Very common
<i>Erythrodiplax umbrata</i> (Linnaeus)	Very common
<i>Macrothemis celeno</i> (Selys)	Common
<i>Miathyria marcella</i> (Selys)	Scarce
<i>Orthemis ferruginea</i> (Fabricius).	Very common
<i>Pantala flavescens</i> (Fabricius)	Common
<i>Tholymis citrina</i> (Hagen)	Common
<i>Tramea calverti</i> Muttkowski	Common

Literature Cited

Alayo, P. 1968. Las libélulas de Cuba. (Insecta: Odonata) Part. 1 texto. Torreia, Nueva serie, 2: 3-102.
 Ramos, J. 1999. List of the odonata (Insecta: Odonata) from Cayo Caguanes and Cayo Palma, Sancti Spíritus province, central Cuba. ARGIA 11(3): 15-17. 

2012 Collecting Trip to St. Vincent—In the Search for *Brechmorhoga*

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This year, our studies on the Lesser Antillean dragonfly fauna led us to St. Vincent for a two-week collecting trip (30 March to 14 April 2012). Our main objective was to update the known checklist of Odonata species recorded by Meurgey (2010) which included 8 species and to search for the vexing *Brechmorhoga praecox/archboldi*. This species was found in St. Lucia in 2011 and a subspecies *Brechmorhoga praecox grenadensis* is present in Grenada. We also tried to gather ecological and biological data for a new book on the Lesser Antillean Dragonflies.

This trip was also devoted to collecting other insects and to document the fauna of the island, gathering material for further studies by specialists. We had success in collecting a great variety of insects belonging to different orders, such as Coleoptera, Lepidoptera, Hymenoptera, and Orthoptera with a lot of endemic and new species.

As in 2010, we stayed at the Tranquillity Beach Apartments right on the beautiful beach at Indian Bay, a really nice place run by Lucelle and Hazelann. Walking in the backyard, with caution because of snakes (according to the owner they are common here), we had the opportunity to observe *Orthemis sulphurata* Hagen and *Erythrodiplax umbrata* Linné (Band-winged Dragonlet).

Along with new localities, we also prospected several spots visited two years ago such as Wallilabou Falls, where we found 6 species in 2010 in a seepage along the main road. We were surprised to see that the vegetation had grown so much that the stream was nearly closed off. We observed 5 species here: *Argia telesfordi* Meurgey, *Ischnura ramburii* Selys (Rambur's Forktail), *Dythemis sterilis multipunctata* Kirby (Brown Setwing), *Erythrodiplax umbrata* and *Orthemis cf. sulphurata*.

The first day, we rented a car at the airport and visited Fitzroy Springer, who drove us all over the island last year. In 2010 the focus was on coastal areas and easily accessible areas. This year our objective was to mainly explore the rain forest.

Then, we started collecting early on the 31st. The first site we visited was located on the windward side, near Orange Hill in the north of the island. This place consists of banana and coconut tree plantations with a vast open grassy area. We only found one *Erythrodiplax fervida* Erichson (Tropical Dragonlet) and despite further researches, failed to find additional specimens. This species was previously

only known from Grenada in the Lesser Antilles. St. Vincent constitutes the northernmost distribution of this species, as it is absent from St. Lucia. Other species seen here were *Erythrodiplax umbrata*, *Orthemis sulphurata* and *Ischnura ramburii*.

We also went to Black Point, a filming site of Pirates of the Caribbean, at the mouth of the Grand Sable River. No dragonflies there, but we saw a lot of birds nesting at the top of coconut trees, especially Blue Egret (*Egretta caerulea*), Cattle Egret (*Bubulcus ibis*) and Yellow-crowned Night Heron (*Nyctanassa violacea*). Their back and forth was a real show. We also noticed that *Polistes dominicus*, locally called Jack Spaniard, was abundant everywhere. Farmers are often afraid of this wasp and conscientiously avoid walking near a nest. This wasp is particularly aggressive and its sting can be very painful.

On April 4th we visited Dark View Falls on the leeward side, near Richmond in the north of the island. We saw numerous *Argia telesfordi* and one *Pantala hymenaea* Say (Spot-winged Glider) flying above a small clearing near the falls. This was a new record for the island (though the species is known from the French West Indies and Grenada). The third new species for St. Vincent was recorded three days later along a trail near Belle Isle Hill on the leeward coast. One female and several males of *Enallagma coecum* Hagen (Purple Bluet) were seen flying along the trail and one female was caught. We failed to find this one two years ago, and it seems that this species is uncommon on St. Vincent, being common on St. Lucia, Martinique, Dominica and Guadeloupe. It was not recorded from Grenada. *Enallagma coecum* was accompanied by several *Argia telesfordi*, *Erythrodiplax umbrata* and *Orthemis sulphurata*.

The need to homogenize the number of surveyed locations and to explore the rest of the island led us to Fancy, located on the far north of the island. Based on the map, several montane rivers and the famous Owia salt pond seemed to be interesting spots to visit. We parked the car at the end of the main road and took a trail through creole gardens to reach a cultivated semi-deciduous forest. We reached a clearing that seemed promising for *Brechmorhoga*. Suddenly, a big libellulid was seen flying around—a *Brechmorhoga*! Unfortunately, this shy dude went back and forth in front of us and disappeared behind a hill.... This was the only one and the last observation of this genus for the whole trip! Two beautiful butterflies

We observed the beautiful and endemic grasshopper *Phyllopectis crepitans* which has strange inflated leaf-like forewings. We also found a beautiful black and yellow membracid belonging to the genus *Enchenopa* in grasses at Belle Isle Hill on the north of the island and several Rhipiphoridae at the same place. We caught two distinct

Equipped with our maps (IGN 1984) we tried many trails in the rain forest (Belle Isle, Palmiste Park, Dark View Falls ...). But most (if not all) were fallow and inaccessible. None of the trails we took brought us to the primary forest. Pristine forests in St. Vincent remain mainly unexplored and may be interesting to explore in the future.

Forty-five locations were sampled in 2010 and only 11 species were recorded at that time (3 zygoptera and 8 anisoptera). The following list comprises species surveyed during this study and species observed by François Meurgey, Jerrell Daigle and P. & C. Guezennec in 2010. New records are in bold.


<i>Argia telesfordi</i>	<i>Erythrodiplax fusca</i>
<i>Ischnura ramburii</i>	<i>Erythrodiplax umbrata</i>
<i>Enallagma coecum</i>	<i>Orthemis sulphurata</i>
<i>Dythemis sterilis</i>	<i>Pantala flavescens</i>
<i> multipunctata</i>	<i>Pantala hymenaea</i>
<i>Erythrodiplax fervida</i>	<i>Anax amazili</i>

All in all, this trip was fruitful, with three new species added to the fauna of the island. *Enallagma coecum* presents its southern limit of distribution in the archipelago. *Erythrodiplax fervida* was known in the Lesser Antilles, from Grenada; St. Vincent is the northern limit of its range. As for *Pantala hymenaea*, this highly mobile species was observed at Dark View Falls, in the north of the island. We saw 8 of the 11 species recorded from St. Vincent, which remains the least diverse island for Odonata

in the Lesser Antilles. On St. Vincent, the lack of still water habitats determines the number of species, which are mainly restricted to rivers with some species living in slower river mouths (*Orthemis sulphurata*, *Pantala flavescens*) or seepages (*Erythrodiplax fusca*). Nearby Grenada has many stagnant water bodies like ponds, lakes, marshes, or reservoirs, which support many more species. One of the most surprising things is the lack of any *Tramea* species on St. Vincent. This genus is abundantly distributed all over the Lesser Antilles. We did not see any *Tramea* in 2010 or in 2012. Suitable habitats are present, even in few numbers on St. Vincent: Troumaka Dam, small pools and slow flowing low elevation rivers and the absence of this genus on the island could be due to the paucity of such habitats to maintain populations.

We also searched for protoneurids, but we failed to find any species even in very suitable habitats. We can now consider that the dragonfly fauna of the island is relatively well known and the possibility to find other species is feeble. Maybe some vagrant species could be added to the list such as *Tramea basilaris* or *Anax ephippiger* and perhaps further prospections in the centre of the island (montane rain forest) could be interesting.

Acknowledgements

This mission was granted by the L'Herminier Natural History Society (Natural History Museum of Nantes – France). 

MDP has gone digital!



The Migratory Dragonfly Partnership now has a Facebook page and web site. Find us at <<http://www.facebook.com/MigratoryDragonflyPartnership>> or search for “dragonfly” in Facebook to find the page. Give us a “like” and get information and updates about MDP projects and dragonfly migration.

You can also visit the MDP web site at <www.migratorydragonflypartnership.org/> and get more information and links for MDP initiatives, such as Pond Watch and the Stable Isotope Project, or to submit your own dragonfly migration and Pond Watch data. If you are already a registered user of OdonataCentral, the same user name and password will be recognized when you log in to the MDP home page. Visit us soon!

Occurrence of the Widow Skimmer (*Libellula luctuosa*) in Holmes County, Florida

Edwin J. Keppner <ekippner@bellsouth.net>.

On May 19, 2012, I visited Lake Victor in Holmes County, Florida (accompanied by John Himes of the Florida Fish and Wildlife Conservation Commission) to collect odonates as part of my attempt to develop a comprehensive list of species of odonates known from the County. Lake Victor is located south of State Highway 2 about three miles west of where the State Highway 2 bridge crosses the Choctawhatchee River and about three miles due south of the Florida – Alabama state line. Lake Victor is an artificial body of water formed by a levee placed across Limestone Branch River. The shoreline along the levee supports emergent and floating vegetation, and the levee slope is a large grassy meadow. Three dragonflies that appeared to be Widow Skimmers (two males and one female) were observed flying along the levee shoreline and perching on shoreline vegetation. After much swinging of nets, one of the males was collected as a voucher specimen. A photograph of the specimen was sent to Jerrell Daigle, and he confirmed the identification.


Abbott (2012), Dunkle (1992), Donnelly (2004), and Richardson (2003) were examined for records of *L. luctuosa* from Florida, but none were found. Jerrell contacted several

odonate people regarding sightings they may have made in Florida but no one reported seeing this species in Florida. It appears that this report of the occurrence of *L. luctuosa* in Holmes County is a new record for Florida. Abbott (2012) has mapped records of this species from Escambia, Houston, and Dale counties in southern Alabama that are not far north of the Florida – Alabama state line. The occurrence of *L. luctuosa* in Florida may be accidental. Lake Victor will be searched this fall and winter, if possible, for larvae of this species.

Literature Cited

- Abbott, J. C. 2012. OdonataCentral: An online resource for the distribution and identification of Odonata. Texas Natural Science Center, The University of Texas at Austin. Available at <<http://www.odonatacentral.org>> (Accessed: May 2012).
- Donnelly, T.W. 2004. Distribution of North American Odonata. Part II: Macromiidae, Corduliidae and Libellulidae. Bulletin of American Odonatology 8(1):1–32.

Dunkle, S.W. 1992. Distribution of Dragonflies and Damselflies (Odonata) in Florida. Bulletin of American Odonatology 1(2): 29-50.
Richardson, J. S. 2003. Identification Manual for the

Dragonfly Larvae (Anisoptera) of Florida. Florida Department of Environmental Protection, Biology Section, Bureau of Laboratories. Tallahassee, FL. 114 pp. 

Photos Needed

Do you have any high-quality photos of odonates that you'd like to share? 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).

Dragonfly Society of the Americas Annual Meeting 2012 Florence South Carolina, May 2-9



Pictured (from left to right):

Front row: Steve Valley, Mike Ready, Ken Lebo, Meena Haribal, Phoebe Harp, Marion Dobbs, Fredy Palacino, Chris Hill, Steve Krotzer, Dennis Washburn, Lois Stacey, Dennis Paulson, Paul Bedell, Steve Hummel, Ken Tennesen

Center row: George Harp, Carol Flint, Ollie Flint, Susan Olcott, Nick Donnelly, Jim Johnson, Marcia Hummel, Annette Oliveira, Nancy McIntyre, Hilda Flamholtz, Anne Wright, David Small (holding atlas), Celeste Mazzacano, Yvette Liautaud, Pam Hunt, Kathy Kozacky, Pat Roti-Roti, John Abbott, Peggy Sibley, David Fitch

Back row: Cary Kerst, David Halstead, Richard Groover, Ailsa Donnelly, Craig Lawrence, Linda (Stick) LaPan, Alison Van Keuren, Roy Morris, Jane Lawrence, Jim Edwards, Marla Garrison, Dan Irizarry, Steve Roble, Boris Kondratieff, Dave Leatherman, Rick Ladenberger, Jason Forbes, Joe Roti-Roti, Jerrell Daigle, Greg Lasley, David Bree, Fred Sibley, Chris Rasmussen

Photo by Steve Valley.

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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, Section of Integrative Biology, C0930, University of Texas, Austin TX, USA 78712, <jcabbott@mail.utexas.edu>; material for BAO must be sent to Ken Tennessen, P.O. Box 585, Wautoma, WI, USA 54982, <ktennessen@centurytel.net>.

Articles

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

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

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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

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Back cover: (upper) Male Hoary Skimmer (*Libellula nodisticta*) photographed 17 May 2012 at Fish Slough, 8 miles north of Bishop, California. Photo by R. Oriti. **(lower)** Female Filigree Skimmer (*Pseudoleon superbus*) at Llano Estacao Audubon Society Trail on the banks of the North Fork of Double Mountain Fork of the Brazos River in Lubbock Co., Texas. Photo by J. Hattfield.

