

ISSN 1061-8503

ARGIA

The News Journal of the Dragonfly Society of the Americas

Volume 25

17 September 2013

Number 3



Published by the Dragonfly Society of the Americas

<http://www.DragonflySocietyAmericas.org/>

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Front cover: *Somatochlora hudsonica* (Hudsonian Emerald), taken in West Castle River Valley near Beaver Mines, Alberta, Canada, 6 July 2013. Photo by Jim Johnson.

DSA 2013 Annual Meeting in Prince Albert, Saskatchewan

Nick Donnelley <tdonelly@binghamton.edu>

The annual meeting of the society took place during 12-14 July 2013 in and around Prince Albert, which is nearly in the exact center of Saskatchewan. Although Saskatchewan is a "Prairie Province", this was a boreal forest adventure for all of us. Adding two days of pre-meeting and three days of post-meeting trips, the approximately forty participants experienced eight days of fine weather, great collecting and photographing, and lots of chat—especially in the "Bog" of the Travelodge. In the "old days" (before marvelous little cameras), participants would gather in the evenings and swap tall tales, show the odd specimen, and recall wondrous events that may never have happened quite that way. The protocol today is for everyone to bring their laptops to a meeting room and download the day's pictures, many of which were pretty spectacular. Add the occasional live general *Stylurus* (clubtail) held in a container improvised from two transparent beer cups taped together, and you have the gist of today's bug meeting. A silent auction in the Bog of miscellaneous items earned \$369 for OdonataCentral, the website of the Society. Kudos to the organizers!

David Halstead, of the Saskatchewan Institute of Applied Science and Technology (SIASST), assisted by Blair Hunter, Roy Hunter, and several hard-working young volunteers (Jeanette Delisle, Rory Doerksen, Ericka Donald, and Nicole Pillipow), organized what turned out to be one of the most successful meetings ever of the Society. The meeting was also sponsored by SIASST, Prince Albert Destination Marketing, and Tourism Saskatchewan. Our formal meeting was held in one of the classrooms of SIASST, and began with the introduction of Jim Johnson as the next president of DSA. We were then treated to the presentation by Steve Valley of a much-deserved plaque to Ken Tennessen, for his years of service to the Society and to the study of North American odonates.



A Boreal Snaketail (*Ophiogomphus colubrinus*) points the way to Prince Albert. David Halstead.

A series of oral presentations followed: Celeste Mazzacano (Migratory Dragonfly Partnership); Erland Nielsen (European Fauna Through My Lens); Scott King (Meadowhawks: From Field Observations to Phylogenetics and Back Again); Nick Donnelley (*Erythemis collocata* and *simplicicollis*: subspecies and surprises!); and Ken Tennessen (The distribution of *Stylurus scudderi*).

This was followed by a wonderful cocktail hour at the local municipal golf club and an excellent dinner sponsored by SIASST. Has the Society ever been treated so royally? We are all grateful to David and his support team for all the meeting arrangements and the dinner.

The field trips were, as always, the highlights of the meeting. Several pre-meeting trips were held. The first day we all went to the beautiful Gem Lakes lakes in the Narrow Hills Provincial Park, where we found many emeralds (including the huge *Somatochlora cingulata*, Lake Emerald) and enough *Aeshna* (darners) and *Coenagrion* (pond damsels) to satisfy everyone. The second day the group divided; some went to local lakes and others to a marvelous bog, where an

continued next page...

Calendar of Events

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

Event	Date	Location	Contact
CalOdes Annual Blitz	4–7 Oct. 2013	Yuma, Arizona	Bob Miller <bob.miller@mindspring.com>; Kathy Biggs <bigsnest@sonic.net>
2014 DSA Annual Meeting	13–15 June 2014	Bruce, Wisconsin	Ken Tennessen <ktennessen@centurytel.net>



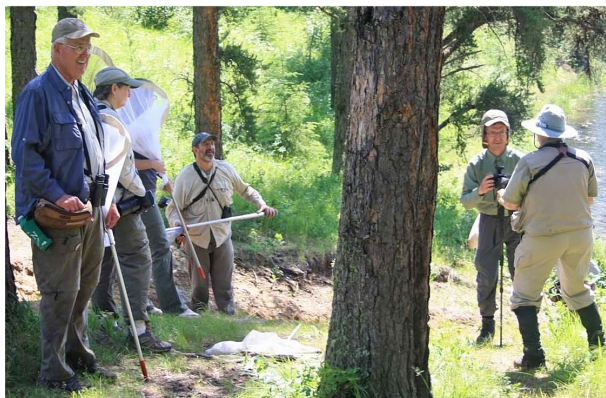
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abundance of orchids diverted us from our odonatological duties. The three-day post-meeting trip was several hours north of Prince Albert (La Ronge/Missinipe area). This is about as far north as one can drive safely, although many of us continued another 80 kilometers on a dirt road, where we had to dodge mining trucks from time to time. During the meeting itself, we visited Prince Albert National Park, more than an hour north of Prince Albert. As a diversion from this entomological meeting, a local ornithologist, Harold Fisher, took a van load of people on a bird trip one morning, and again on a later evening to watch saw-whet owlets being banded. What a treat!

The selection of the venue for this meeting was Northern Saskatchewan, a region in which the records of odonate collection are thin. There are several species considered to be trans-continental but with an apparent central gap in their distributions. Finding the status of these species was one of the main goals of the participants, and their efforts were well rewarded. For example, Jim Johnson took an *Aeshna tuberculifera* (Black-tipped Darner), a species whose distribution map in Sid Dunkle's fine "Dragonflies Through Binoculars" shows a gap in its range. *Somatochlora kennedyi* (Kennedy's Emerald) is another example of a species we found with a very thin record in this part of its broad range.

Several gomphids, including *Ophiogomphus severus* (Pale Snaketail), *Stylurus intricatus* (Brimstone Clubtail), and *S. notatus* (Elusive Clubtail) had been poorly known in central Saskatchewan, but multiple catches established them quite firmly in this area. The very common *Ophiogomphus colubrinus* (Boreal Clubtail), which nearly everyone saw, had not even been listed for the province in Edmund Walker's 1940 paper, which was the first account of the Odonata of this province.

Among other finds were the rarely-taken *Leucorrhinia patricia* (Canada Whiteface) and the always sought-after boreal species *Coenagrion interrogatum* (Subarctic Bluet).



The group at Jade Lake on the first day of pre-meetings. Photo by David Halstead.



An *Aeshna interrupta lineata* (Variable Darner) helps us buy gasoline in Prince Albert. Photo by Nick Donnelly.

Probably most participants were surprised to find *Ischnura damula* (Plains Forktail), larger than in the more southern part of its range, where it is found in very different (hotter and drier) habitats throughout the western U.S. Its cousin *I. verticalis* (Eastern Forktail) was found in two places, both far north of previous records. It shows what a squad of eager collectors can find in a previously under-surveyed region. The group took eight species of *Aeshna* (including *A. juncea*, Sedge Darner; *A. subarctica*, Subarctic Darner; and *A. sitchensis*, Zigzag Darner) and eight of *Somatochlora* (including *S. albicincta*, Ringed Emerald; *S. franklini*, Delicate Emerald; and *S. hudsonica*, Hudsonian Emerald). A complete species list follows this article.

The most startling find of the trip was Cary Kerst's *Dorocordulia libera* (Racket-tailed Emerald), hitherto known no closer than (and one climatic zone colder than) southeastern Manitoba. When he netted it, I don't know who was more surprised: Cary or the *Dorocordulia*!

All in all, this was one of my best adventures in quite a while. It was well worth the many hundreds of miles I drove, and we'd go again like a shot.

Species List for DSA 2013 Meeting:

Calopterygidae (Broad winged Damsels)

Calopteryx aquabilis, River Jewelwing

Lestidae (Spreadwings)

Lestes congener, Spotted Spreadwing

L. disjunctus, Northern Spreadwing

L. dryas, Emerald Spreadwing

L. forcipatus, Sweetflag Spreadwing

L. unguiculatus, Lyre-tipped Spreadwing

Coenagrionidae (Pond Damsels)

Coenagrion angulatum, Prairie Bluet
C. interrogatum, Subarctic Bluet
C. resolutum, Taiga Bluet
Enallagma boreale, Boreal Bluet
E. annexum, Northern Bluet
E. clausum, Alkali Bluet
E. ebrium, Marsh Bluet
E. hageni, Hagen's Bluet
Ischnura damula, Plains Forktail
I. verticalis, Eastern Forktail
Nehalennia irene, Sedge Sprite

Aeshnidae (Darners)

Aeshna canadensis, Canada Darner
A. eremita, Lake Darner
A. interrupta, Variable Darner
A. juncea, Sedge Darner
A. sitchensis, Zigzag Darner
A. subarctica, Subarctic Darner
A. tuberculifera, Black-tipped Darner
A. umbrosa, Shadow Darner
Basiaeschna janata, Springtime Darner

Gomphidae (Clubtails)

Ophiogomphus colubrinus, Boreal Snaketail
O. severus, Pale Snaketail
Stylurus intricatus, Brimstone Clubtail
S. notatus, Elusive Clubtail

Corduliidae (Emeralds)

Cordulia shurtleffii, American Emerald
Dorocordulia libera, Racket-tailed Emerald
Epitheca canis, Beaverpond Baskettail
E. spinigera, Spiny Baskettail
Somatochlora albicincta, Ringed Emerald
S. cingulata, Lake Emerald
S. franklini, Delicate Emerald
S. hudsonica, Hudsonian Emerald
S. kennedyi, Kennedy's Emerald
S. minor, Ocellated Emerald
S. walshii, Brush-tipped Emerald
S. williamsoni, Williamson's Emerald

Libellulidae (Skimmers)

Leucorrhinia borealis, Boreal Whiteface
L. glacialis, Crimson-ringed Whiteface
L. hudsonica, Hudsonian Whiteface
L. intacta, Dot-tailed Whiteface
L. patricia, Canada Whiteface
L. proxima, Belted Whiteface
Ladona julia, Chalk-fronted Corporal
Libellula quadrimaculata, Four-spotted Skimmer
Sympetrum costiferum, Saffron-winged Meadowhawk
S. danae, Black Meadowhawk
S. internum, Cherry-faced Meadowhawk
S. madidum, Red-veined Meadowhawk
S. obtrusum, White-faced Meadowhawk



Dragonfly Society of the Americas
2013
Prince Albert, Saskatchewan

Upcoming SE California/SW Arizona Dragonfly Blitz, 4–7 October 2013

Bob Miller <bob.miller@mindspring.com>; Kathy Biggs <Bigsnest@sonic.net>

The Blitz will be centered in Yuma, Arizona with oding on both sides of the California/Arizona border. On the California side of the Colorado River, we will go from Senator, Washington south to Imperial Dam, West Pond, Bard Valley and Winterhaven; on the Arizona side of the Colorado River, from Imperial Dam and Hidden Shores south to a new wetlands project, Mitty Lake, Betty's Kitchen and Yuma Valley. We intend to spend some time east of Yuma on the Gila River, from the Welton-Mohawk Valley, west around the foot of Gila Mountain past McPhaul Bridge to its confluence with the Colorado River just outside of Yuma. This Gila River portion will depend on how much water is flowing at the time, as the Gila River can run dry in some years.

Our goal is to find many of the unique southern species of odes and to discover distribution records. Arrangements for lodging are with the Super 8 Motel at 1688 S. Riley Ave., Yuma, Arizona. This motel is so new that it does not yet appear in Google Map imagery! It is only a few blocks from Interstate 8 and 16th Ave (which is Hwy 95). This is a very convenient location for getting in and out of town yet it is in the heart of all amenities. There are eight nearby restaurants, each of which offers a 20% discount for Motel 8 residents. Our discount price is \$52.00 + 10.4% tax, per room, per night. The rate is good for a room with 2 queen beds or 1 king bed. They offer complimentary breakfasts and have a swimming pool in which we can cool down in mid-afternoon. October is the start of snowbird season for this area and the population of Yuma more than triples every winter. The motel should not be full yet in the first weekend of October, but we highly recommend that you go ahead and reserve a room soon! Call the front desk at 928-782-2000 and mention "Ode Blitz Group Discount", and you'll be directed to Mollie <mdodgen@h1hotels.com>. They have a 24 hr. cancellation policy. It will still be HOT at this time of year, so prepare accordingly. On Friday night Kathy may give a presentation on the dragonflies of the area.

Yuma has its own international airport and is also about a 2 ½ hr. drive from the San Diego airport on I-8. For folks heading in from points within California, Yuma is a 2 hr. 20 min. drive from Indio alongside the Salton Sea, where a stop at Dos Palmas en route would be possible. From Lake Havasu City in Nevada, the route takes about 2 ¾ hr. From within California, Yuma is 7 ¼ hr. from Bishop and 9 ½ hr. from Sacramento.

Some of the southern specialties we'll be looking for include:

Russet-tipped Clubtail [Western version] (*Stylurus plagiatus*)
Brimstone Clubtail (*S. intricatus*)
Red-tailed Pennant (*Brachymesia furcata*)
Plateau Dragonlet (*Erythrodiplax basifusca*)
Comanche Skimmer (*Libellula comanche*)
Marl Pennant (*Macrodiplax balteata*)
Roseate Skimmer (*Orthemis ferruginea*)
Mexican Amberwing (*Perithemis intensa*)
Desert Whitetail (*Plathemis subornata*)
Striped Saddlebags (*Tramea calverti*)
Red Saddlebags (*T. onusta*)
Powdered Dancer (*Argia moesta*)
Blue-ringed Dancer (*A. sedula*)
Paiute Dancer (*A. alberta*)
Double-striped Bluet (*Enallagma basidens*)
Desert Forktail (*Ischnura barberi*)
Citrine Forktail (*I. hastata*)
Rambur's Forktail (*I. ramburii*)

We'd especially like to find Great Pondhawk (*Erythemis vesiculosa*) and Filigree Skimmer (*Pseudoleon superbus*) in California again. The following species would be records; each is found in at least one adjoining county and known to fly in October:

Key: no record in Imperial Co. (I), Yuma Co. (Y), California state (C), or Arizona state (A).

Darners (Aeshnidae): Persephone's Darner (*Aeshna persephone*) I, Y, C; Walker's Darner (*A. walkeri*) I, Y, A; Giant Darner (*Anax walsinghami*) I, Y; Riffle Darner (*Oplonaeschna armata*) I, Y, C; Arroyo Darner (*Rhionaeschna dugesi*) I, Y, C; Turquoise-tipped Darner (*R. psilus*) I, Y; Malachite Darner (*Remartinia luteipennis*) I, Y, C

Clubtails (Gomphidae): Grappletail (*Octogomphus specularis*) I, Y, A; Serpent Ringtail (*Erpetogomphus lampropeltis* ssp.; *lampropeltis/natrix*) I, Y

Cordulegastridae (Spiketails): Pacific Spiketail (*Cordulegaster dorsalis*) I, Y

Macromiidae (Cruisers): Western River Cruiser (*Macromia magnifica*) I, Y

Libellulidae (Skimmers): Great Pondhawk (*Erythemis vesiculosa*) I, Y; Neon Skimmer (*Libellula croceipennis*) I, Y; Eight-spotted Skimmer (*L. forensis*) I, Y; Twelve-spotted Skimmer (*L. pulchella*) I, Y; Four-spotted Skimmer (*L. quadrimaculata*) I, Y; Straw-colored Sylph (*Macrothemis inacuta*) I, Y, C; Carmine Skimmer (*Orthemis discolor*) I, Y, C; Filigree Skimmer (*Pseudoleon superbus*) I; Cardinal Meadowhawk (*Sympetrum illotum*) I; Red-veined Meadowhawk (*S. madidum*) I, Y; Antillean Saddlebags (*Tramea insularis*) I, Y, C; Common Whitetail (*Plathemis lydia*) I, Y

Dancers (Argia): California (*A. agrioides*) Y; Paiute (*A. alberta*) Y; Variable (*A. fumipennis*) I, Y, C; Lavender (*A. hinei*) I, Y; Kiowa (*A. immunda*) I, Y, C; Sooty (*A. lugens*) I, Y; Aztec (*A. nabuana*) I, Y; Springwater (*A. plana*) I, Y, C; Tonto (*A. tonto*) I, Y, C; Vivid (*A. vivida*) Y, A

Bluets (Enallagma): Northern (*E. annexum*) I, Y; Boreal (*E. boreale*) I, Y; Baja (*E. eiseni*) I, Y, C; Tule (*E. carunculatum*) I, Y; Arroyo (*E. praevarum*) I; Claw-tipped (*E. semicirculare*) I, C

Forktails (Ischnura): Black-fronted (*I. denticollis*) I;

2013 NE DSA Meeting

Bryan Pfeiffer <bryan@bryanpfeiffer.com>

In Haddam, Connecticut, at the Salmon River Boat Launch, which is little more than a gravel parking lot and two docks extending into the Connecticut River, a dozen wet-footed souls withdrew from their vehicles, grabbed nets and cameras, and spied on one of those docks a prize for any self-respecting odonatist: a male *Gomphus fraternus* (Midland Clubtail). Just sitting there.

After only brief consultation, it fell to the group's veteran, Nick Donnelly, to walk out and retrieve the beast. In khaki pants wet to the calf, Nick strolled out with ease and determination. From shore the group looked on like a silent crowd gathered to watch a bowler roll that twelfth consecutive strike. Nick eased his long-handled net into position a few feet over the clubtail.

Elsewhere, along the Flat River across the border in Rhode Island, the other half of our gathering sacrificed, for the moment, the pursuit of something rare for the pleasure of watching something familiar. There on the rip-rap sat a *Hagenius brevistylus* (Dragonhunter), freshly emerged, still that odd green ground color, and preparing for his maiden flight.

Western (*I. perparva*) I, Y; Mexican (*I. demorsa*) I, Y, C

Pond spreadwings (Lestes): Plateau (*L. alacer*) I, Y, C; Spotted (*L. congener*) I, Y

Stream spreadwings (Archilestes): California (*A. californicus*) I, Y; Great (*A. grandis*) I, Y

Also, Painted Damsel (*Hesperagrion heterodoxum*) I, Y, C; Western Red Damsel (*Amphiagrion abbreviatum*) I, Y; and Canyon Rubyspot (*Hetaerina vulnerata*) I, C.

Information about these species, including images, can be found at <<http://southwestdragonflies.net/>>. Information on a prior Blitz in this general area in 2005 can be found at <<http://southwestdragonflies.net/caphotos/CalOdesBlitzII.html>>.

Contact either co-leader for more information: Bob Miller <bob.miller@mindspring.com> and Kathy Biggs <Biggsnest@sonic.net>.

Study up and hope to see you there!



Calopteryx dimidiata (Sparkling Jewelwing). Bryan Pfeiffer.

After posing for a few photos, the dragon lifted off for a purposeful life of flying around, killing things, and having sex. Off he sailed over the river, with the odonatists looking on. At which point a Gray Catbird launched and zoomed in from the other side determined to cut short that Dragonhunter's promising existence.

So went the drama during the 2013 gathering of the Northeast chapter of the Dragonfly Society of the Americas, which divided its time between Connecticut and Rhode

Island from 20–23 June. Along rivers and coastal plain ponds, in wetlands and on woodland trails, we tallied 89 species, including Connecticut’s first *Epitheca semiaquea* (Mantled Baskettail), netted by Kevin Hemeon.

In a meeting spectacularly organized by Mike Thomas, Ginger Brown, and Charlie Brown, everything seemed to go right. Even the monsoons of New England this summer temporarily abated for us. Among the highlights:

- An evening feeding frenzy of *Neurocordulia* (shadowdragons) among a swarm of emerging mayflies on the Connecticut River. We watched hundreds of them, and netted a grand total of three, all *N. obsoleta* (Umber Shadowdragon).
- Fourteen species of gomphid, including three species of snaketails, as well as that *Gomphus fraternus* (more on him later), *G. vastus* (Cobra Clubtail), *G. adelphus* (Mustached Clubtail), and perhaps the highlight of the meeting: a male *G. quadricolor* (Rapids Clubtail) captured by Steve Roble on the Shetucket River.
- The addition of a second Rhode Island population of *Neurocordulia obsoleta*, Umber Shadowdragon (at Beach Pond). Rhode Island now has the species on two lakes.
- “Life” *Enallagma weewa* (Blackwater Bluet) and *Calopteryx dimidiata* (Sparkling Jewelwing) for many meeting participants. (Those two species are always highlights for host Ginger Brown as well). Not only that, they were flying within walking distance of a spectacular bakery and coffee shop in West Kingston, Rhode Island.
- An *Anax longipes* (Comet Darner) rocketing around at the skating pond in East Haddam, Connecticut.
- Three species of orchids: Grass Pink (*Calopogon tuberosus*), Rose Pogonia (*Pogonia ophioglossoides*), and Pale Green Orchid (*Platanthera flava*, not to be confused with *Pantala flavescens*).
- A (deceased) short-tailed weasel at Devil’s Hopyard in Connecticut.

This meeting was also notable for odonate conservation.



Hagenius meets catbird. Photo by Betsy Leppo.

Coinciding with the gathering was a productive working session of the Conservation Assessment of Odonata in the Northeastern Region <<http://rcngrants.org/content/conservation-assessment-odonata-dragonflies-and-damselflies-northeastern-region>>. With funding from a Regional Conservation Needs grant <<http://rcngrants.org/>>, the project’s steering committee collaborated with DSA members at the meeting to refine its risk analysis for odonates of greatest conservation concern in the region.

The project, which has compiled county-level data on odonate distribution across the northeast, is assessing conservation priorities using a matrix that considers regional responsibility, conservation concern, and vulnerability. For more information, contact Erin White at the New York Natural Heritage Program <elwhite@gw.dec.state.ny.us>

Meanwhile, back on the Connecticut River, Nick really never broke stride or motion on his way toward that sitting *Gomphus fraternus*. After all, nobody actively catches a gomphid while standing around with a still net. Donnelly delivered with grace, to cheers from the assembled



Nick Donnelly catches *Gomphus fraternus* (Midland Clubtail). Photo by Bryan Pfeiffer.

bowling league, including the exhortation from someone in the group that, “Of course, Nick’s still got it!”

Same goes for the Gray Catbird. Without breaking stride, er, flap, the catbird snatched the Dragonhunter in flight and proceeded to land onshore. But be careful of what you wish for. Presented with the most massive odonate in the region, the catbird set aside the prey for a bit of contemplation, and then, like a heron swallowing a fish, oriented the ode head-first and swallowed it whole.

Hagenius, we hardly knew ye. “Turnabout is fair play,” said Pam Hunt. “Earlier in the afternoon we had seen a *Hagenius* eating a *Gomphus exilis*.” For more northeastern drama, mark your calendar: the 2014 Northeast DSA meeting will be in Binghamton, New York, 26–29 June 2014.

The 2013 meeting’s final species list follows, from sites covering southeastern Connecticut and a bit more than the western half of southern Rhode Island.

Damselflies (Suborder Zygoptera)

Broad-winged Damsels (Family Calopterygidae)

River Jewelwing, *Calopteryx aequabilis* Say
Sparkling Jewelwing, *C. dimidiata* Burmeister
Ebony Jewelwing, *C. maculata* (Beauvois)
American Rubyspot, *Hetaerina americana* (Fabricius)

Spreadwings (Family Lestidae)

Amber-winged Spreadwing, *Lestes eurinus* Say
Elegant Spreadwing, *L. inaequalis* Walsh
Slender Spreadwing, *L. rectangularis* Say
Swamp Spreadwing, *L. vigilax* Hagen in Selys

Pond Damsels (Family Coenagrionidae)

Violet Dancer, *Argia fumipennis violacea* (Hagen)
Powdered Dancer, *A. moesta* (Hagen)
Aurora Damsel, *Chromagrion conditum* (Selys)
Azure Bluet, *Enallagma aspersum* (Hagen)
Attenuated Bluet, *E. daeckii* (Calvert)
Turquoise Bluet, *E. divagans* Selys
Atlantic Bluet, *E. doubledayi*
Big Bluet, *E. durum* (Hagen)
Marsh Bluet, *E. ebrium* (Hagen)
Stream Bluet, *E. exulans* (Hagen)
Skimming Bluet, *E. geminatum* Kellicott
New England Bluet, *E. laterale* Morse
Little Bluet, *E. minusculum* Morse
Scarlet Bluet, *E. pictum* Morse
Orange Bluet, *E. signatum* (Hagen)
Slender Bluet, *E. traviatum* Selys
Vesper Bluet, *E. vesperum* Calvert
Blackwater Bluet, *E. weewa* Byers
Citrine Forktail, *Ischnura hastata* (Say)
Lilypad Forktail, *I. kellicotti* Williamson
Fragile Forktail, *I. posita* (Hagen)
Eastern Forktail, *I. verticalis* (Say)
Sphagnum Sprite, *Nehalennia gracilis* Morse
Sedge Sprite, *N. irene* (Hagen)

Dragonflies (Suborder Anisoptera)

Darners (Family Aeshnidae)

Common Green Darner, *Anax junius* (Drury)
Comet Darner, *A. longipes* (Hagen)
Springtime Darner, *Basiaeschna janata* (Say)
Fawn Darner, *Boyeria vinosa* (Say)
Swamp Darner, *Epiaeschna heros* (Fabricius)
Harlequin Darner, *Gomphaeschna furcillata* (Say)
Cyrano Darner, *Nasiaeschna pentacantha* (Rambur)
Spatterdock Darner, *Rhionaeschna mutata* Hagen

Clubtails (Family Gomphidae)

Lilypad Clubtail, *Arigomphus furcifer* (Hagen)
Unicorn Clubtail, *A. villosipes* (Selys)
Black-shouldered Spinyleg, *Dromogomphus spinosus* Selys
Moustached Clubtail, *Gomphus adelphus* Selys
Lancet Clubtail, *G. exilis* Selys
Midland Clubtail, *G. fraternus* Say
Ashy Clubtail, *G. lividus* Selys
Rapids Clubtail, *G. quadricolor* Walsh
Cobra Clubtail, *G. vastus* Walsh
Dragonhunter, *Hagenius brevistylus* Selys
Brook Snaketail, *Ophiogomphus aspersus* Morse
Maine Snaketail, *O. mainensis* Packard
Rusty Snaketail, *O. rupinsulensis* (Walsh)
Eastern Least Clubtail, *Stylogomphus albistylus* (Hagen in Selys)

Spiketails (Family Cordulegastridae)

Delta-spotted Spiketail, *Cordulegaster diastatops* (Selys)
Twin-spotted Spiketail, *C. maculata* Selys
Arrowhead Spiketail, *C. obliqua* (Say)

Cruisers (Family Macromiidae)

Stream Cruiser, *Didymops transversa* (Say)
Swift River Cruiser, *Macromia illinoensis illinoensis* Walsh

Emeralds (Family Corduliidae)

Racket-tailed Emerald, *Dorocordulia libera* (Selys)
Common Baskettail, *Epithea cynosura* (Say)
Prince Baskettail, *E. princeps* (Hagen)
Mantled Baskettail, *E. semiaquea* (Burmeister)
Uhler's Sundragon, *Helocordulia uhleri* (Selys)
Umber Shadowdragon, *Neurocordulia obsoleta* (Say)

Skimmers (Family Libellulidae)

Calico Pennant, *Celithemis elisa* (Hagen)
Halloween Pennant, *C. eponina* (Drury)
Banded Pennant, *C. fasciata* (Drury)
Martha's Pennant, *C. martha* Williamson
Eastern Pondhawk, *Erythemis simplicicollis* (Say)
White Corporal, *Ladona exusta* (Say)
Chalk-fronted Corporal, *L. julia* (Uhler)
Frosted Whiteface, *Leucorrhinia frigida* Hagen
Dot-tailed Whiteface, *L. intacta* (Hagen)
Bar-winged Skimmer, *Libellula axilena* Westwood
Spangled Skimmer, *L. cyanea* Fabricius
Slaty Skimmer, *L. incesta* Hagen
Widow Skimmer, *L. luctuosa* Burmeister
Twelve-spotted Skimmer, *L. pulchella* Drury
Four-spotted Skimmer, *L. quadrimaculata* Linnaeus
Painted Skimmer, *L. semifasciata* Burmeister
Elfin Skimmer, *Nannothemis bella* (Uhler)
Blue Dasher, *Pachydiplax longipennis* (Burmeister)
Spot-winged Glider, *Pantala hymenaea* (Say)

Eastern Amberwing, *Perithemis tenera* (Say)
Common Whitetail, *Platthemis lydia* (Drury)
Cherry-faced Meadowhawk, *Sympetrum internum* Mont-
gomery
Carolina Saddlebags, *Tramea carolina* (Linnaeus)
Black Saddlebags, *T. lacerata* Hagen

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NE DSA 2013 group photo. Bryan Pfeiffer.

New Records of *Cordulegaster sayi* Selys (Odonata:Cordulegastridae), Say's Spiketail, in Bay and Washington Counties, Florida

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A survey for *Cordulegaster sayi* (Say's Spiketail) nymphs was conducted along 79 perennial ravine seepage streams in the karst region of Bay and Washington counties, Florida from 2008 through 2012. The habitat of *C. sayi* nymphs consisted of brown to reddish-brown or rarely blackish soupy muck, sometimes covered with leaves, along or adjacent to the stream channels. Two locations for *C. sayi* were found in Bay County, and 25 locations were found in Washington County. Washington County appears to support the largest number of locations known from any county in Florida. Nymphs of *Ladona deplanata* (Rambur), Blue Corporal, were collected from the same mucky material as *C. sayi* at 70% of the locations.

Introduction

The earliest records of *Cordulegaster sayi* in Florida are

from 1896 and 1897 from Lake City, Columbia County (Westfall, 1953). Mauffray (1995) recorded *C. sayi* nymphs and adults intermittently across the northern part of Florida from Clay County west to Santa Rosa County.

My objective was to search for *C. sayi* along the ravine seepage streams in the karst region of Bay and Washington counties in the Florida Panhandle (Fig. 1). I collected a *C. sayi* nymph from a mucky pool adjacent to a ravine seepage stream in the karst region of Washington County in 2008 and continued the survey from October 2008 through December 2012 in the karst region of the two counties.

I concentrated my search activities on nymphs of *C. sayi* because adults have a short flight season, from late February through late April in Florida (Dunkle, 1994; Mauffray

1995). and can be difficult to find. However, according to Dunkle (1994) and Stevenson *et al.* (2009), *C. sayi* has a semivoltine life cycle that probably lasts for several years. As a result, nymphs of various sizes are present year-round in the proper habitat.

Methods

The short adult flight season resulted in an emphasis on collecting nymphs (only two adults were collected). The locations selected to search for *C. sayi* nymphs were based on the ravine seepage stream habitat at the first collection location in Washington County. The survey included areas with similar habitat visited previously. Additional areas to survey were located by searching USGS topographic maps and aerial photographs of the karst region of Bay and Washington counties for areas with similar significant topographic relief and perennial ravine seepage streams. Latitude and longitude for each ravine seepage stream surveyed was determined with a Garmin GPS map 76CSx.

The search for *C. sayi* nymph habitat in each ravine began at or near the head of the seepage stream and consisted of walking the stream for 50–75 m and investigating lateral seepages to the main stream if present. If *C. sayi* habitat was present, as evidenced by areas of brown to reddish-brown soupy muck, it was usually located near the origin of the stream or toward the entrance of side seepages to the main stream. However, if habitat was not found near the origin of the stream, the ravine was re-entered downstream and searched for habitat for a distance of about 50–75 m upstream and downstream. As a result, entire lengths of the seepage streams were not searched.

Nymphs were collected by passing a dip net through areas of soft to soupy brown muck and washing the muck through the net or placing it on the bank and examining it for nymphs. No attempt was made to quantify populations. Although nymphs of various sizes were collected at most locations, only the first one or two nymphs about 25–30+ mm long were collected and retained as voucher specimens for a particular ravine in order to disturb the habitat and affect the population as little as possible. Nymphs were placed in labeled containers with a small amount of water and brought back to the laboratory for identification and preservation.

Nymphs were killed and preserved in 70% isopropyl alcohol. All specimens are presently in my collection. Identification was based on the keys in Richardson (2003) and Needham *et al.* (2000). Specimens were verified by Kenneth Tennesen and R. Stephen Krotzer.

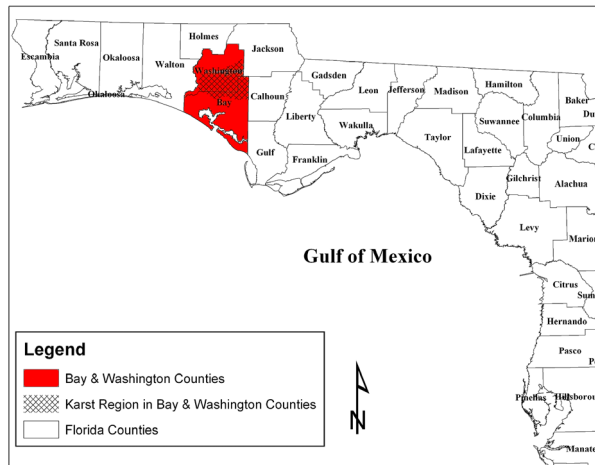


Figure 1. Location of the survey area and karst region in Bay and Washington counties, Florida.

Survey Area

The area surveyed in Bay and Washington counties is an approximately 350 square mile portion of the central Panhandle karst region or sandhills area (Fig. 1) that contains numerous ravine seepage streams. Keppner (2012) provided a description of the physiography of Bay and Washington counties and the water bodies present in this karst region. The xeric, well-drained sandy uplands are dominated by sand pine (*Pinus clausa*) silviculture. Some areas are in the process of restoration to the historic natural biotic community of longleaf pine (*Pinus palustris*)-turkey oak (*Quercus laevis*)-wiregrass (*Aristida stricta*). The undeveloped portion of the approximately 28 square miles of the Sunny Hills subdivision is dominated by the longleaf pine-turkey oak-wiregrass native biotic community with numerous ravine seepage streams.

The ravine slopes are steep and generally vegetated with upland hardwood forest that stabilizes the slopes and protects water quality in the seepage streams from forestry practices and other human activities. The Florida Natural Areas Inventory (2010) described Upland Hardwood Forest as a well-developed, closed-canopy forest dominated by deciduous hardwood trees on mesic soils in areas sheltered from fire. It typically has a diverse assemblage of deciduous and evergreen tree species in the canopy, shade-tolerant shrubs in the mid-story, and a sparse groundcover. Characteristic canopy trees in the survey area included southern magnolia (*Magnolia grandiflora*), pignut hickory (*Carya glabra*), laurel oak (*Quercus hemisphaerica*), wild olive (*Osmanthus americanus*), and American beech (*Fagus grandifolia*). The midstory included younger canopy species and shrubs such as blueberry (*Vaccinium* spp.), and vines such as greenbrier (*Smilax* spp.). I occasionally observed titi (*Cyrilla racemiflora*) at the base of the slope at the edge of the stream floodplain. The narrow floodplain and

stream edge supported Florida anise (*Illicium floridanum*) and a groundcover composed of shade-tolerant herbs and graminoids where sufficient sunlight reached the ground. Sphagnum occurred periodically along the streams.

A narrow, shallow, clear-water, sand-bottomed seepage stream was present in the bottom of each ravine surveyed with occasional side seepages entering the main stream. The streams flowed to lakes, ponds, creeks, and rivers. Leaves from deciduous trees and shrubs on the slopes accumulated in areas adjacent to and in the ravine seepage streams, where slow decomposition of the constantly saturated litter forms an organic muck habitat (Means, 2000) that is used by many species including *C. sayi*, other invertebrates, and salamanders. The habitats necessary for *C. sayi* to complete its life cycle in the survey area were provided by the xeric forested upland for adults and ravine seepage streams for nymphs. The locations of the seepage ravines surveyed for *C. sayi* in the karst region of the two counties are shown in Figure 2.

Results and Discussion

Positive locations for *C. sayi*: Nymphs of *C. sayi* were found at 27 of the 79 (34%) ravines surveyed (Figure 2). I informed the Florida Natural Areas Inventory (FNAI) of 17 of the locations, but two private property owners requested that the 10 locations on their property not be provided to FNAI at this time. Additional locations may be present in the seepage ravines that were not surveyed or were not walked for their entire length. Therefore, the number of seepage ravines found to support *C. sayi* reported herein is considered a minimum number.

The 79 seepage ravines surveyed for *C. sayi* nymphs were considered in pristine condition with little evidence of human alteration with the exception of sediment runoff from sand-clay roads that had altered the headwater substrate at two seepage ravines. Feral pig (*Sus scropha*) rooting in *C. sayi* habitat was observed in a few of the seepage ravines.

Habitat: The habitat of *C. sayi* in Florida was described by Dunkle (1994) as silt-bottomed spring seepages in hardwood forest with nearby weedy clearings for foraging by adults. The nymphs bury themselves in silt with only the head, front legs, and tip of the abdomen exposed.

Mauffray (1995) described the habitat of *C. sayi* as clear-water hill-side seepage areas, forming streamlets of 1–12 in. wide and 1–3 in. deep, usually at the base of a sandy soil hill, partially to mostly shaded, and with varying amounts of organic debris both in and adjacent to the seepage areas; sphagnum moss and sedges were usually present in the

seepages. He stated nymphs have been collected from decaying leaves within seep heads, runs, and pools. Adults frequent forest edges, openings and fields adjacent to the breeding areas.

Stevenson *et al.* (2009) proposed classifying *C. sayi* as a Longleaf Pine ecosystem endemic. They stated that the Vidalia Uplands physiographic province in southeastern Georgia, a vast sandhill area where moderate relief produces numerous seepages, is an important area for *C. sayi* and classified *C. sayi* habitat as “sandhill-bay swamp seepage” or a “hardwood bluff-ravine seepage”. They stated that longleaf pine-turkey oak or historically longleaf pine-turkey oak habitat was adjacent to all of their sites in Georgia. Only nine of their 17 *C. sayi* sites were in currently intact sandhill habitat, indicating to them that *C. sayi* populations may persist at sites where the native upland adult habitat has been altered.

Stevenson *et al.* (2009) described the nymphal habitat of *C. sayi* in Georgia as 1st- to 2nd-order mucky, perennial seepages surrounded by forest. The peaty muck habitat was reddish-brown or brown in color; often a slight, nearly imperceptible current of water flowed over the muck. The seepages form narrow (1-2 m wide) shallow rivulets that flow downslope toward hardwood swamps. Bay swamp vegetation typically occurred adjacent to the mucky seeps, and sphagnum moss often fringed the margins of the seeps. They described the uplands adjacent to

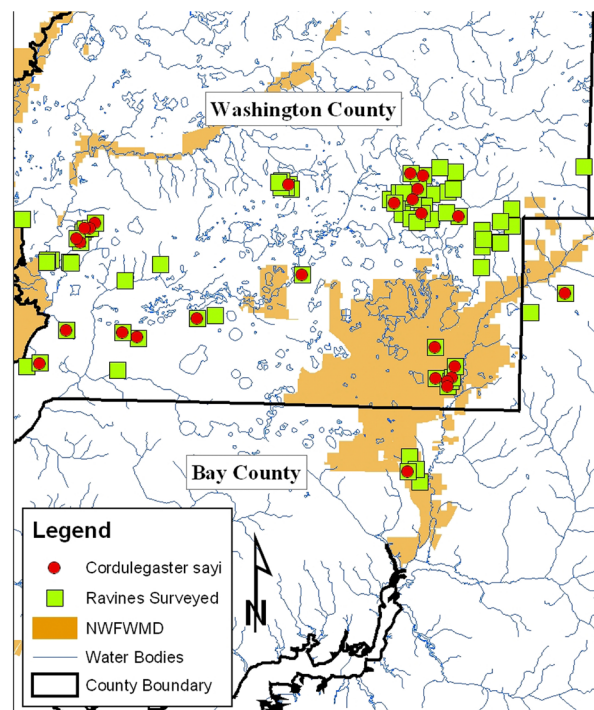


Figure 2. Locations for *C. sayi* and ravines surveyed in Bay and Washington counties, Florida.

the seepages as intact sandhills habitat occurring on sandy, xeric uplands that were dominated by longleaf pine (*Pinus palustris*), turkey oak (*Quercus laevis*), and wiregrass (*Aristida stricta*) or unintact sandhills habitat that lacked these species.

In Bay and Washington counties, I collected nymphs from 27 narrow, shallow, sand-bottomed, clear-water ravine seepage streams from 1–3 m wide with predominately closed-canopy, hardwood slopes similar to the hardwood bluff-ravine seepage described by Stevenson *et al.* (2009). Nymphs were found along the streams in areas of soupy brown, reddish-brown, or blackish-brown muck, often with decaying leaves on the surface adjacent to, but not in, the sandy-bottomed stream channels. Sphagnum was abundant to sparse in places along the seepage streams, and grasses and sedges were restricted to small areas where sufficient sunlight reached the bottom of the ravine. Most of the streams that were negative for *C. sayi* nymphs at the areas surveyed had an incised channel with almost vertical walls about 0.5–1 m high.

Nymphs were also collected from four Washington County ravines in habitat similar to the sandhill-bay swamp seepage described by Stevenson *et al.* (2009). The positive ravines at Dogwood Acres, White Oak Creek, and Voyager Court in Sunny Hills supported some elements of baygall forest such as a few tupelo (*Nyssa* sp.) and sweetbay (*Magnolia virginiana*) along the stream channel and in areas of the floodplain. The Daniels Lake seepage stream was in baygall forest similar to the sandhill-baygall habitat described by Stevenson *et al.* (2009). The origin of the baygall seepage stream at Daniels Lake supported sweetbay, sparse tupelo, Carolina willow (*Salix caroliniana*), and sweetpepper bush (*Clethra alnifolia*).

The native upland community of longleaf pine-turkey oak-wiregrass used by adult *C. sayi* was intact in the Sunny Hills area, in the process of being restored along some seepage ravines in other areas, and replaced by dense sand pine silviculture in most of the areas. The observations of *C. sayi* in longleaf pine-turkey oak-wiregrass habitat, and the species' persistence in the survey area where the uplands are predominantly sand pine silviculture support the statements by Stevenson *et al.* (2009) that *C. sayi* is a Longleaf Pine ecosystem endemic, and *C. sayi* populations may persist where the native upland community has been altered.

Associated Species: Stevensen *et al.* (2009) stated that larvae and adults of the Dusky Salamander (*Desmognathus fuscus conanti*), Southern Two-lined Salamander (*Eurycea cirrigera*), Red Salamander (*Pseudotriton rubra*) and/or Mud Salamander (*P. montanus*) were characteristic

of *C. sayi* habitat in Georgia, that fish were absent from the seepages, and other species of odonates were virtually never encountered.

During this survey, *Ladona deplanata* (Rambur) nymphs (Blue Corporal) were collected from the same soupy muck habitat in 19 of 27 (70%) seepage ravine streams from which *C. sayi* was collected, and from muck in four ravine seepage streams negative for *C. sayi*. I collected *Cordulegaster maculata* Selys (Twin-spotted Spiketail) nymphs from fine, silty material at the edge of 19 ravine seepage stream channels, eight of which supported *C. sayi* in typical muck habitat. I collected *Cordulegaster obliqua* (Say) nymphs (Arrowhead Spiketail) from black soupy muck at three small hillside seepage streams where *C. sayi* was not found. I observed crayfish (*Procambarus* sp.) and salamander larvae (*Desmognathus* sp., *Eurycea* spp., and *Pseudotriton* sp.) in almost all of the ravine seepage streams visited during the survey. Small minnows were observed in many of the seepage stream channels from which *C. sayi* was collected.

Distribution in Florida: Dunkle (1994) stated that there were eight known localities for *C. sayi* in five Florida counties (Clay, Alachua, Columbia, Liberty, and Santa Rosa). Mauffray (1995) provided results of a survey for *C. sayi* in Florida and Georgia and locations for the species in Florida in Clay County (Gold Head Branch State Park, Camp Crystal, and Keystone Heights Airport); Liberty County (Torreya State Park); Santa Rosa County (Blackwater River State Forest); Alachua County (San Felasco Hammock State Preserve and Rock Creek Subdivision); and Columbia County (Lake City).

Mauffray (1997) described a large population of *C. sayi* from Jennings State Forest in Clay County, Florida and stated that *C. sayi* will be found wherever a combination of hardwood seeps associated with turkey oak sand hills is found in a strip of land from near Eustis, Florida to Aiken, South Carolina. Richardson (2003) listed nymphs from Santa Rosa, Okaloosa, Liberty, Clay, and Alachua counties in Florida. Abbott (2012) had records for *C. sayi* in eight Florida counties including a record from Bay County that I submitted, and FNAI (2012a) provided their records.

Based on the information available, *C. sayi* currently occurs in nine Florida counties (see Fig. 3) with 46 individual locations, as best as I can determine (25 in Washington, two in Bay and 19 in the other counties of record). The locations and their sources are provided in Table 1. The specific locations in Bay and Washington counties are shown in Figure 2, and coordinates for 17 of those locations have been forwarded to FNAI. The majority of locations for *C. sayi* are in six counties from Liberty County

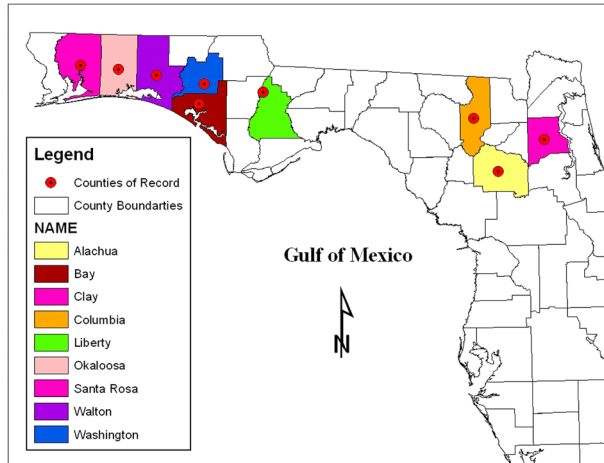


Figure 3. Distribution of *C. sayi* in Florida by county.

west to Santa Rosa County. The locations reported herein from Bay and Washington counties represent 59% of the *C. sayi* locations reported from Florida. The gap in the distribution from Liberty County eastward to Columbia and Alachua counties appears to have been undersurveyed for the species or locations have not been made available.

Distribution in the U.S.: Stevenson *et al.* (2009) provided detailed information regarding the distribution, status, and ecology of *C. sayi* in Georgia, documenting it from 17 locations in 11 counties in southeastern Georgia and stating there were approximately 25 known sites range-wide. They provided a range map for the species that included Florida from Alachua and Clay counties through the northern Panhandle counties to Santa Rosa County including the northern part of Bay and almost all of Washington County. They concluded that the species is uncommon and locally distributed, albeit widespread in Georgia. The locations provided herein for Washington and Bay counties fall within their interpretation of the range of *C. sayi* in the U.S. and supports their statement the species can be abundant and relatively common in a small survey area. It may prove more abundant if access can be obtained to all ravine seepage streams in the present survey area in the future.

The total number of known locations for *C. sayi* in the U.S. is approximately 63 (46 in nine counties in Florida and 17 in 11 counties in Georgia). The karst region of Washington and Bay counties apparently has the largest number of locations (27 [43%] of the total known locations) within the presently known range of the species. The distribution of the locations for *C. sayi* within its known range is fragmented, with those in southeastern Georgia separated from those in northeastern Florida, which are separated from those in the Panhandle of Florida.

Species Status: *C. sayi* has a history of being considered as imperiled by a number of experts and organizations. A petition to list *C. sayi* as endangered under the Endangered Species Act was submitted to the U.S. Fish and Wildlife Service (FWS) in 1994. FWS (1995) prepared a 12-month finding for that petition that included a summary of the information then available and concluded that the listing of the species as endangered was not warranted.

Dunkle (1994) considered *C. sayi* to be threatened in Florida because the species was not common even at its localized, scattered habitats. Dunkle (1995) stated that the International Union for the Conservation of Nature (IUCN) had placed *C. sayi* on a world-wide list of only 19 species of odonates considered for particular conservation attention due to taxonomic isolation or unusual biology.

Bick (2003) summarized existing information on at-risk species of odonates in the conterminous United States and designated *C. sayi* as rare (a species with rare habitat and/or a small geographic range) based on the existence of 20 locations with many protected, new populations expected, and no range-wide threat. Stevenson *et al.* (2009) concurred with Bick (2003) in designating *C. sayi* as “rare” and recommended monitoring of known sites and conducting surveys for new sites.

Abbott (2007) reviewed *C. sayi* for the IUCN and stated the species has a very limited range and is threatened

Table 1. Florida counties, sources, and locations of *C. sayi*.

County	Source	Location
Alachua	Mauffray 1995; Abbott 2012 DOT Map; FNAI 2012a	San Felasco Hammock State Preserve; NW Terrace Street; Rock Creek Residential Development
Bay	Abbott 2012 DOT Map, FNAI 2012a; Present Survey	Deep Springs County Park; NWFWM
Clay	Mauffray 1997; Abbott 2012 DOT Map;	Goldhead Branch State Park; Jennings State Forest; Camp Blanding; Keystone Heights Airport; Camp Crystal
Columbia	Abbott 2012 DOT Map, FNAI 2012a	Lake City
Liberty	Abbott 2012 DOT Map, FNAI 2012a	Torreya State Park; Little Sweetwater Creek; Apalachicola Bluffs Preserve; 2 records with specific locations not provided
Okaloosa	Abbott 2012 DOT Map	Specific loc. not provided
Santa Rosa	Abbott 2012 DOT Map, FNAI 2012a	Blackwater River State Forest; Second Creek/Riley's Bluff Blackwater
Walton	Abbott 2012 DOT Map, FNAI 2012a	Specific loc. not provided
Washington	Present Survey	25 loc. in karst region; see Fig. 2 for specifics

by housing and urban development. As a result of the review, the IUCN (2012) listed *C. sayi* as vulnerable (not endangered or critically endangered but facing a high risk of extinction in the wild in the medium-term future, as defined by any of the provided list of criteria).

The Florida Fish and Wildlife Conservation Commission (FWC, 2005) prepared Florida's Wildlife Legacy, and FWC (2011) provided a preliminary revised list of Species of Greatest Conservation Need and included *C. sayi* with a status and trend of this species in Florida as unknown.

The Center for Biological Diversity (2010) submitted a petition to FWS to list 404 species of plants and animals from the southeastern U.S. under the Endangered Species Act, including *C. sayi*. FWS (2011) issued a partial 90 day finding on the petition and included *C. sayi* as one of 374 species chosen for a status review from the initial 404 species in the petition.

FNAI serves as the Heritage Program for Florida and independently, and in conjunction with state and federal agencies, evaluates the species of plants and animals in Florida, assigns a level of imperilment in Florida based on their criteria, and tracks the known locations of the listed species. FNAI (2012b) lists *C. sayi* as S2 (imperiled in Florida because of rarity, 6 to 20 occurrences or less than 3000 individuals, or because of vulnerability to extinction due to some natural or man-made factor).

The information regarding distribution of *C. sayi* in Bay and Washington counties provided herein may assist in the evaluation of the degree of imperilment of this species by all organizations involved with such evaluations, expand the knowledge of the distribution of this species in Florida and the U.S., and assist the state of Florida in managing the species' habitat.

Acknowledgements

I thank my wife, Lisa, for her help with collecting during the survey, her review of the manuscript, and her continuing support. I thank Dr. John Himes of the FWC for his invaluable assistance with collecting nymphs and examining salamander larvae, and Diana Pepe and Amy Raybuck also of the FWC for assistance with collecting. I thank Dr. Neil Lamb for obtaining access to, and help in collecting, at Hammond Lake steephead ravine. I thank the NFWFMD and Dogwood Acres for providing permission to collect on their properties, and I thank the private property owners for permission to collect on their property. Mr. R. Stephen Krotzer and Dr. Kenneth Tennessee verified identification of the nymphs collected during the survey, and I appreciate the time spent by Dr. Tennessee

and Mr. Krotzer for their editorial comments that greatly improved the manuscript.

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An Apparently Introduced Population of California Spreadwings (*Archilestes californicus*)

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I have been monitoring dragonflies at a series of wetlands at Magnuson Park, Seattle, King County, Washington, since they were constructed in early 2010. I began surveying them in May of that year and tried to visit them about once a week through each summer since then.

While conducting my survey in the second summer of the wetlands' existence, I was surprised to see an immature California Spreadwing (*Archilestes californicus*) above head height in a tree in nearby woodland on 13 August. This species had been known in Washington from eight counties in and around the Columbia Basin and Skamania and Clark counties in the lower Columbia River valley, thus was quite unexpected in the Puget Sound lowlands.

Subsequently the species became very common at the ponds, occurring especially in the larger ones. So far, no fish are present in any of them. Dates on which I saw the species during the first two summers were 13 August–27 October 2011 and 31 July–16 October 2012. By 2012, it was abundant at one end of the complex of ponds and sporadic at most of the others. Numerous pairs could be seen at any time ovipositing in the small willow trees that lined the ponds, and virtually every willow at the edge of the water had oviposition scars. The behavior was just as Kennedy (1915) described it from Satus Creek, Yakima County, Washington.



Archilestes californicus (California Spreadwing) pairs ovipositing. Photo by Dennis Paulson.

A large new pond was constructed in 2012, and it proved to be superb habitat for the species. In early summer I realized that there were spreadwing larvae everywhere in this pond, resting on algal mats and the open pond bottom. They swam away like little fish when I disturbed them. Spotted Spreadwing (*Lestes congener*) larvae were less common than California but could be recognized by their more slender gills and usually smaller size.

The first emergence from this pond was noted on 30 June 2013 during a period of very hot weather. Three teneral were flushed on a walk around the pond.

These wetlands were heavily landscaped with native vegetation, including many willows, in their first year of existence, and I have concluded that *Archilestes* eggs were brought in on these willows. I have tried in vain for three years to find out the geographic source of the willows, and the only answer has been “somewhere in Oregon.” The species is common and widespread in that state.

A supportive record comes from Richard Logan, who collected a male at Lacey, Thurston County, Washington, on 12 September 2009. I considered that a natural range extension at the time, but Logan subsequently informed me that this site was also a constructed wetland surrounded by planted willows, and I suspect the same thing happened there.

If I am correct in my assumption, this would be the first known case of an odonate population established outside its normal range in North America by such a transplant. It is surprising that this has not happened with more odonates due to wetland construction and planting. Perhaps the wetland plants in such situations have not been transplanted very far from home.

It is noteworthy that there is still only one non-native odonate in North America, the Scarlet Skimmer (*Crocothemis servilia*). But as that species is well established in the Greater Antilles, I now think it is just as likely that it was

there first and came to Florida on its own wing power along with other tropical species.

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Archilestes californicus (California Spreadwing). Photo by Dennis Paulson.

Gomphus lynnae (Columbia Clubtail) in New Mexico

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The geographic range of *Gomphus* (*Gomphurus*) *lynnae* Paulson, as currently reported, includes only small areas of Oregon and Washington (Tennessen and Valley, in press; Johnson and Valley, 2005). All recorded localities are in the Columbia River drainage basin, and indeed the species has been given the English name of “Columbia Clubtail.” It has one of the most restricted ranges of North America’s gomphid fauna.

In May of this year, while wading in the Gila River in southwestern New Mexico searching for dragonfly nymphs, I saw a large gomphid flit behind me and perch on some low bank vegetation very close by. Without a camera in hand, I reacted by dropping my dip net over it before it could disappear forever, an act at which gomphids are so adept. After carefully retrieving it from the stems and debris underneath my dip net, I saw it was a *Gomphurus* male and realized it could be a valuable record for this part of the country. My first thought was maybe *G. externus* (Plains Clubtail), which would be a slight western

range extension of that species. Then I noticed whitish pruinosity on the thorax, femora and anterior abdominal segments (Fig. 1) which *G. externus* doesn’t have. Also, the epiproct did not flare out as widely as in *externus*. The fact that the only *Gomphurus* species with pruinosity is *G. lynnae* stirred in my memory banks. My next thought was, how can this be?! But when I checked Dennis Paulson’s Western Guide, sure enough, it appeared to fit *G. lynnae*.

I preserved the specimen in order to study it more closely once I got home. Everything in color pattern, hamules, and anal appendages matched a *G. lynnae* male from the Yakima River in Washington. One difference is in eye color: the eyes of the New Mexico male were gray in life (Fig. 1) yet it appeared to be mature; the eyes of mature *G. lynnae* in Oregon and Washington are blue (Paulson 2009; Jim Johnson pers. comm.; also my own observations). However, Jim Johnson sent me a photo (Fig. 2) of a male he found on the Owyhee River this year that is mature but has gray eyes. I wonder if such individuals



Figure 1. Male of *Gomphus (Gomphurus) lynnae* (Columbia Clubtail) taken along the Gila River, Grant County, New Mexico, 19 May 2013. Photo by Ken Tennesen.



Figure 2. Male of *Gomphus (Gomphurus) lynnae* photographed along the Owyhee River, Malheur County, Oregon, 10 June 2013. Photo by Jim Johnson.

are still quite young (as the clear, intact wings would indicate) and having recently matured, their eyes have not yet attained the intense blue color.

The precise data for the New Mexico male is the Gila River, Grapevine Campground near the Forks (33.17997°N 108.20263°W), 19 May 2013 (OC #403120). This record is a 1300 km range extension in a SSE direction. The general Gila River landscape, with its shrub, desert-like environment, is very similar to areas along the John Day River in Oregon. The Gila River, though smaller than the John Day River, has similar series of riffle/runs and slow pool areas with low to sparse riparian vegetation. Marla Garrison and I searched for additional adults and also kick-netted slow, muddy habitats for nymphs and searched for exuviae in several 20–40 m stretches of bank but we did not find any further evidence of the species. It will be interesting to see if future surveys along the Gila River turn up *G. lynnae* again. And if so, do the eyes become blue as in the northern populations?

Acknowledgement

I thank my long-time friend Steve Valley for making the trip to New Mexico and Arizona possible and for being such a great field companion.

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Photos Needed for ARGIA

Do you have high-quality photos of odonates that you would like to showcase? We are always looking for great photos to use on the front and back covers of ARGIA. Submitted photos may be saved for later issues; if so, the photographer will be contacted again at the time of use to be sure that publication of her/his photo is still allowed. Contact Celeste Mazzacano <celeste@xerces.org> if you'd like to make a contribution. Although ARGIA is now digital only, we still use high-quality images that will have good resolution when printed. Images in TIFF format are best, but JPEGs work too as long as they are high quality and compression artifacts are limited. Please check before sending that your images will have high enough resolution for printing. Resolution must be 300 ppi at about the sizes you see printed in this issue (no more than 6.5 inches in width). It is preferable that photos be sent as attachments (up to 15 MB) or via a file transfer service as opposed to being embedded in the body of an e-mail.

Cavorting in the Cayman Islands

Jerrell J. Daigle <jdaigle@nettally.com>

In early August, I took a trip to the Cayman Islands to see what species exist on Grand Cayman Island, the main island. I stayed at the Holiday Inn Resort Grand Cayman on the west end of the island, north of Georgetown, the capital. The North Sound Golf Course was right next to it and had several ponds complete with dragonflies, floating golf balls, shorebirds, and iguanas galore!

A species list was compiled in 2006 by Stafford, which listed 27 species of dragonflies and damselflies for the Cayman Islands, all on Grand Cayman Island. Seventeen species were found in a couple of recent surveys done in 1995 and 1997 by Dr. R.R. Askew. Only eight species were listed as common. I was able to confirm 10 species and add one new species to the islands. Several rare species appear to be vagrants or windblown from nearby Cuba or Jamaica.

I saw one *Anax junius* (Common Green Darner) male patrolling over the deep part of one pond. It would just not come in close for me to get a swing at it! I was hoping to get it for Celeste Mazzacano's wing isotope study. Maybe next time!

Brachymesia furcata (Red-tailed Pennant) was very common at all the ponds and it was the dominant dragonfly there. There were even teneral hanging outside my porch in the morning!

I only saw a few *Erythemis vesiculosa* (Great Pondhawk) at one pond, but I did catch one really skinny male. *E. simplicicollis* (Eastern Pondhawk) was recorded for the islands, but I did not see any.

At one pond close to the ocean, I found several *Erythrodiplax berenice* (Seaside Dragonlet) and I caught one for the record. This species prefers brackish water and will breed in mangrove swamps. Also, I saw several *E. umbrata* (Band-winged Dragonlet) at a canal close to the entrance of the golf course off the main highway, but I didn't attempt to catch any.

Macrodiplax balteata (Marl Pennant) was common at all the ponds and I caught one for the record. A single specimen was first recorded at Conch Point in 1995. This site was about five miles north of where I stayed. This species has since expanded its range and numbers.


Orthemis ferruginea (Roseate Skimmer) is listed as common for the islands, but all I saw was *O. schmidtii*

(Schmidt's Skimmer). I got several wary mature males at the golf ponds. They had a brilliant scarlet abdomen with no signs of pruinosity. A couple of young males and a young female were found in an orchard and abandoned field. They were orange-brown in color and I think they were waiting to mature before heading to the ponds. I once kept a young male alive for 17 days in my guest room, but it never changed color.

Pantala flavescens, the Wandering Glider, was true to its name, flying over the golf course in numbers and even over the resort swimming pool!

I only caught one *Tramea abdominalis* (Vermillion Saddlebags) despite really looking for it. I did get a male and female *T. onusta* (Red Saddlebags) in the orchard. That was it—just three *Tramea* for the entire trip. Usually, these species can be very common in the Caribbean.

As for damselflies, I only found one species, the very common *Ischnura ramburii* (Rambur's Forktail), which was at all the ponds in huge numbers.

I had a really great time! The resort staff was very helpful in all phrases. Torrey and Joel drove me around, helping me look for freshwater habitats. They even took me to the local supermarket for supplies. I think I want to go back this fall and survey the middle and east part of the Grand Cayman Island. There are remnant hardwood forests near Bodden Town with botanical gardens/ponds and freshwater swamps. Endemic butterflies and lizards are in this area. There is one resort there plus a nice bed and breakfast place. If anyone is interested in helping me survey this area, please let me know. Oh, by the way, everyone speaks English. If you have ever been to Barbados or the Bahamas, you will feel right at home. 'Til then! 

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First Record for *Libellula auripennis* (Golden-winged Skimmer) in Michigan

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On 14 June 2013, Curt Powell and I were walking a power line cut near the Nan Weston Preserve in Washtenaw County, Michigan looking for clubtails. This power line cut is about 45 meters wide and several hundred meters long running east to west. There is a bog/marsh at the east end of this cut and to the west the land gently rises to a dry meadow dominated by grasses and other low vegetation. Spatterdock Darners (*Rhionaeschna mutata*) were fairly numerous, as were Common Whitetails (*Plathemis lydia*), but we were only finding one or two of other species like Spangled Skimmer (*Libellula cyanea*), Slaty Skimmer (*Libellula incesta*), and Lancet Clubtail (*Gomphus exilis*).

We were near the upper end of the dry meadow when suddenly a flash of orange flushed ahead of me, and, recognizing that it was a Golden-winged Skimmer (*Libellula auripennis*), called for Curt to get on this dragonfly. I turned on my camera but the batteries were dead so I nervously fumbled changing to new batteries, hoping it wouldn't fly off before I could get some photographs. Luckily it was very cooperative and we both got good photographs for positive identification. As we were shooting, I said to Curt that this could possibly be a first state record, knowing



Libellula auripennis (Golden-winged Skimmer) in Michigan.

how rare it is in Ohio. My only previous experience with this species was Ohio's third and fourth records, which I found in the Oak Openings and Irwin Prairie in Lucas County, Ohio in 2008 and 2010. Prior to

that, there were records from 1895 and 1937 in two different parts of Ohio.

After taking enough photographs to confirm the identity, we discussed whether we should collect the specimen and knowing that Michigan requires a voucher specimen for a record to be accepted, we decided to collect it. After one botched attempt, the dragonfly flew up into the treetops and we feared we had lost it. Ten minutes later, when I found it again, a second attempt was made and we were just barely successful, snagging it on the unclosed portion of the net. Later that evening, the specimen was preserved in acetone and then eventually sent to Mark O'Brien, Collection Manager at the University of Michigan Museum of Zoology. The voucher has the catalog number UMMZI-00213643.

The range of *L. auripennis* extends through the southeastern states from Texas east to the Atlantic Ocean and north up the coast to Massachusetts. It's more of an inland dragonfly than its near lookalike, Needham's Skimmer (*L. needhami*), which tends to be found closer to the coast. This individual was likely just a vagrant as it was so far out of its normal range.

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First Records of the Western Pondhawk (*Erythemis collocata*) for Oklahoma

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During a mid-May 2013 visit to the International Odonata Research Institute (IORI), in Gainesville, Florida, we came across the first record of the Western Pondhawk (*Erythemis collocata*) for Oklahoma. Prior to finding this specimen, we had only speculated about the presence of the species in Oklahoma, but had not confirmed it. Part of our speculation came from seeing George H. Bick's note cards (Fig. 1) for the Eastern Pondhawk (*Erythemis simplicicollis*)—on two lines he had written “*collocata?*” aside certain specimen records from the Oklahoma panhandle (Cimarron, Texas, and Beaver Counties).

Bick's queries piqued our interest, so we decided that on our next visit to the collection we would review those specimens. MAP pulled all *E. simplicicollis* specimens from the panhandle, including Bick's five “*collocata?*” specimens (2♂, 3♀), while BSP worked on a different species. After a while MAP had BSP come to a table to examine specimens he had laid out at random. Without prompting, she zeroed in on the one and only specimen he thought was *E. collocata*, an adult ♂ collected by Lothar E. Hornuff at Black Mesa State Park, Cimarron County, on 5 August 1970 (Fig. 2 and 3). Because black cerci may be misleading—at times the cerci are merely stained—and abdominal shape could be distorted, which is sometimes the case in dried specimens, we re-read a description of *E. collocata* in Needham and Westfall (1955, details of which were carried forward in Needham *et al.*, 2000). In the key we noted a characteristic that had not caught our attention previously: “On the middorsal carina of segment 10 is a dash of yellow, which, conjoined with yellow of intersegmental

Erythemis simplicicollis				OKLA	
932	VII-18-70	JEP	Sequoyah	Salisaw 7.8 N	right
932	VII-22-70	GHB	Marshall	Little City	"
942	VIII-1-70	GHB	Woodward	Woodward, N.E.	Sight
944	VIII-2-70	"	"	Fort Supply Reservoir	"
945	"	"	"	Fort Supply	"
946	"	"	Ellis	Gage, 2.7 N.	"
947	"	"	"	Gage	"
950	VIII-3-70	"	Beaver	Sight, 2.4	107 LEH coll.
952	"	"	"	Beaver 2.5 N	"
956	VIII-9-70	"	Cimarron	Black Mesa Park	18 LEH collocata?
960	VIII-5-70	"	"	"	27, 28 LEH
1366	VIII-10-73	LEH	"	Boise City, 30.5 mi SW	107

Figure 1. One of George Bick's note cards for *E. simplicicollis*. On lines #956 and #960, he made the notation “*collocata?*”, indicating he suspected these specimens from Black Mesa State Park, Cimarron County, Oklahoma, may have been *E. collocata*, even though he later published them as first county records of *E. simplicicollis* for Cimarron and Beaver counties (Bick 1991).

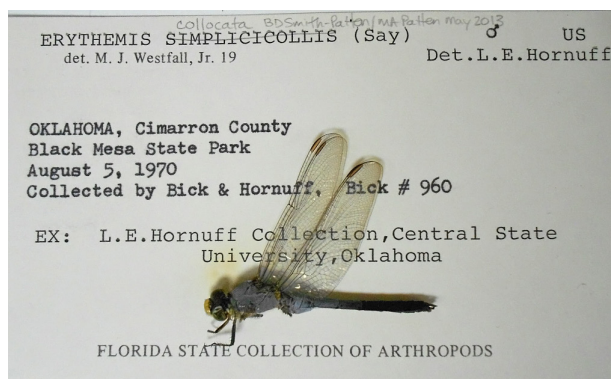


Figure 2. Specimen was re-identified as *E. collocata*. Adult ♀ collected by Lothar E. Hornuff at Black Mesa State Park, Cimarron Co., Oklahoma on 5 August 1970, housed at International Odonata Research Institute (IORI), Gainesville Florida.

membrane, makes a yellow T mark on back.” The 1970 specimen had a yellow T on S10. As a further confirmation, we ran through Needham's key, which also pointed to *E. collocata*. No other panhandle specimen struck us as other than a fairly routine *E. simplicicollis*.

On our return to Oklahoma we initiated a discussion with Bill Mauffray (IORI Director), Dennis R. Paulson, John C. Abbott, and Thomas W. Donnelly regarding the identification of this specimen. As much controversy surrounds the species limits of the *E. simplicicollis*/*E. collocata* complex, we expected a variety of opinions. We were not disappointed. The gist is that Mauffray examined the specimen himself and confirmed our identification and, from our photographs of the specimen, Paulson agreed that the specimen is *E. collocata* (with the caveat that it falls within current taxonomy). In contrast, Donnelly and Abbott tended to feel that *E. collocata* does not warrant species status, so neither offered his judgment as to the specimen's identification.

As if our discovery of the IORI specimen were not fortuitous enough, on 5 July 2013, at Lake Carl Etling in Black Mesa State Park during our second survey of the panhandle for the year, MAP



Figure 3. Ventral view of abdomen of specimen re-identified as *E. collocata*; note the parallel sides of segments 3 and 4. Adult male collected by Lothar E. Hornuff at Black Mesa State Park, Cimarron Co., Oklahoma on 5 August 1970, housed at IORI, Gainesville, Florida.

came up to BSP, net in hand, beaming smile, and said “Well, here’s a first state record for us. Not for the state, just for us.” Eyebrows knit, she reached into the net and to pull out a classic female *E. collocata* (OdonataCentral [OC] 401514, SP 743 [Smith-Patten/Patten collection, housed at the Oklahoma Biological Survey], Fig. 4), an individual, we soon learned, virtually identical to the top female depicted in Paulson (2009). But as if to bear out Donnelly’s and Abbott’s concerns, later that day, at a couple of pools on North Carrizo Creek, 7 km north of Kenton, Cimarron Co., we encountered five male and two female *Erythemis* pondhawks. Both females looked to be typical *E. simplicicollis*: black femora, abdomens patterned distinctly and sharply in black and white (i.e., no brown shading), and without the “stubby” look of *E. collocata*. Three of the males likewise appeared to be typical *E. simplicicollis*, but the remaining two individuals were trickier. We collected both; one (SP 746) had black cerci and a pale middorsal carina on segment 10, but the abdomen was not perfectly parallel sided. The other specimen (SP 745) also had a pale middorsal carina on S10, indicative of *E. collocata*, but it had gray cerci and a similarly ambiguous abdominal shape. Were these features indicative of a *E. simplicicollis* x *collocata* hybrids? Such hybrids are perhaps expected along the western edge of the Great Plains, where there may be a “hybrid swarm” (Paulson, 2009), just as there are between many species of birds (Rising, 1983).



Figure 4. Female *E. collocata* collected at lake Carl Etling, Black Mesa State Park, Cimarron Co., Oklahoma on 5 July 2013, Smith-Patten/Patten collection specimen SP 743, housed at the Oklahoma Biological Survey.

We were puzzled and wanted to collect some more specimens, but by the time we managed to collect these two, we were too overheated from the roughly 100°F afternoon to try further for any of the males whose cerci gleamed white. Given that we were headed north out of Oklahoma, we proceeded up the road (for a rest in the cool car) and stopped in Baca County, Colorado, at a crossing of the same creek in the Comanche National Grassland. The creek at this point was just a pond next to the road, but

not nearly as muddy as the portion in Oklahoma. There we saw three male pondhawks, two of which we managed to collect. One (SP 748) had white cerci and an abdomen shape of *E. simplicicollis* but had a pale middorsal carina on S10, whereas the other (SP 749) had black cerci, a nice yellow T atop S10, and distinctly parallel sides to the abdomen. We happily identified the second individual as *E. collocata*.


This mixture of characters is of interest. In the past year we have collected 74 *Erythemis* specimens in 34 counties across Oklahoma, largely in an effort to supply Donnelly with a good series with which to evaluate species limits. Only our specimens from the western panhandle (Cimarron County east through central Texas County) show any semblance of a yellow T atop S10, although a few individuals across the state have the cerci grayish rather than clean white (staining?). Such confusing characteristics explains why a 30 September 2008 record of a possible male *E. collocata* from near Kenton, Cimarron Co., cannot be confirmed (OC 283762). That individual appears to have the yellow T, but it has dark gray cerci and an ambiguous abdominal shape. Our experiences in the panhandle have emphasized why Donnelly has spent so much time and energy trying to determine if *E. simplicicollis* and *E. collocata* are truly separate species.

For now we follow current taxonomy and added the Western Pondhawk to the state list, making it, at the time, the 159th species; we added two more within a few weeks of our visit to IORI (Smith-Patten and Patten, 2013; Patten and Smith-Patten ms.). Our judgment is that, “at worst,” the taxa are subspecies, in that they are diagnosably distinct (by the standard 75% rule; Patten and Unitt, 2002) and occupy separate geographic ranges but are not reproductively isolated. “At best,” the taxa will continue to be recognized as species, as have many closely related species of birds and other vertebrates that hybridize on the Great Plains, many of which were described as species, lumped when hybridization was discovered, but later split when additional evidence of assortative mating and phylogeography was amassed. Either way, the entity *E. collocata* has been documented in Oklahoma.

Acknowledgements

Thanks to Bill Mauffray, for facilitating access to the IORI collection and for confirmation of the specimen in question. Thanks also to Dennis R. Paulson, John C. Abbott, and Thomas W. Donnelly for an enlightening discussion and sometimes agreeing to disagree on the taxonomy.

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Odonata in the News

A sampling of newsworthy odonata includes: investigating prey capture mechanisms in dragonflies by attaching tiny backpacks to them to monitor nerve impulses as they hunt <<http://blogs.scientificamerican.com/talking-back/2013/06/17/dragonflies-with-backpacks-may-advance-the-science-of-prey-capture/>>; analyzing the molecular basis of color change during maturation of male *Sympetrum* and *Crocothemis* <<http://www.scientificamerican.com/article.cfm?id=male-dragonflies-color-shift&page=2>>; a new public health effort in Tamil Nadu, India using dragonflies to control mosquitoes <http://articles.timesofindia.indiatimes.com/2013-08-02/chennai/41005478_1_dragonflies-mosquito-larvae-medical-entomology>; and the DSA meeting makes headlines in the Prince Albert Daily Herald <<http://www.paherald.sk.ca/News/Local/2013-07-14/article-3314724/Here-be-dragonflies%3A-Dragonfly-Society-of-the-Americas-holds-annual-meeting-in-P.A./1>>.

Keep Your Eyes Peeled, Dude! About an Old-New Record of *Telebasis carminita* Calvert, 1909 (Odonata:Coenagrionidae) from Suriname

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Odonatological investigations in South America have been undergoing dramatic changes over the last few years, with new research groups founded and new researchers arising from different countries, of which I am pleased to be one. In a recent paper, co-author Alcimar L. Carvalho and I present a complete checklist of specimens held by two important Brazilian institutions of the large American genus *Telebasis* Selys, 1865, the firetails (Pinto and Carvalho, 2012). We cited 121 specimens of *Telebasis carminita* Calvert, 1909, a very small damselfly easily distinguished from all other species in the genus by the unique shape of its caudal appendages. It was originally described from two males collected by Herbert Huntingdon Smith in the municipality of Cuyabá [current spelling Cuiabá], Mato Grosso State, Brazil (Calvert, 1909). The material I examined is deposited in the Museu de Zoologia, Universidade de São Paulo (MZSP; <<http://biocol.org/urn:lsid:biocol.org:col:33949>>), almost all from the municipality of Rondonópolis in Mato Grosso, except for a unique male from Suriname, which was very likely collected by the late Dirk

Cornelis Geijskes in the Para District (Pinto and Carvalho, 2012). This specimen was almost excluded from the manuscript due to the virtually illegible handwritten collecting data on the envelope. Later, I carefully compared this envelope with similarly hand-written envelopes in the MZSP that gradually became clear and I was able to properly decipher the data. Dirk C. Geijskes was the first Dutch researcher from the “Leiden’s school”, founded by still incomparable odonatologist Maurits Anne Lieftinck, who focused his interests on the Neotropical fauna, in particular South American fauna (see sketch biography in Hummelinck, 1972). He was followed by the extremely fruitful researcher and major gomphid specialist, Jean Belle (see van Tol, 2001).

How material from Geijskes’s expeditions arrived in MZSP is still unknown. Well before I realized that this material came from his collections, I was quite intrigued as to who had identified the specimens. Apart from some outdated species concepts or old combinations, such as

Gomphoides fuliginosus Hagen in Selys, 1854 which is currently *Phyllogomphoides major* Belle, 1984 (see Belle, 1984: 84), or *Aeolagrion demerarum* [sic.] Williamson, 1917 (Fig. 2) which is now under *Telebasis* with revised spelling (see Garrison, 2009), the species determinations were largely correct, which implied a deep knowledge, especially considering the date when they were identified. Unfortunately, very few long-standing zoologists are still working in the MZSP. Only Ubirajara Ribeiro Martins de Souza, the well-known longhorn beetle specialist, is still working there, as the eminent herpetologist Paulo Emílio Vanzolini died in April 2013, while the no less eminent dipterist Nelson Papavero retired in 1997. He is working on several projects away from the Museum, however, and when I asked him about the Geijskes material he commented that he did not remember if there was anything on file about it (Papavero 2011, pers. comm.). Hence, this part of the history of these specimens was probably lost.

Telebasis (known as firetails in the USA) is the second largest coenagrionid genus in the New World (Garrison *et al.*, 2010). The species are common in lentic habitats such as ponds, pools, and dams with abundant macrophytes, and can sometimes be very abundant locally. The genus has received considerable attention since its revisions by Bick and Bick (1995; 1996), and especially after the well-illustrated and precise synopsis by Garrison (2009). After this paper, species and larval descriptions, behavior, and general studies about the genus were published (Lencioni, 2010 and 2011; Machado, 2010; Alves-Martins *et al.*, 2012; Lozano *et al.*, 2012; Pinto and Carvalho, 2012).

When preparing our manuscript, including the male of *T. carminita* from Suriname, I largely based the records of occurrence for this species on Garrison (2009) who stated (p. 42): “Widespread in South America with records from Venezuela, French Guiana, and curiously disjunct populations over 2000 km south in Bolivia and Mato Grosso State, Brazil (Fig. 40)”. In Garrison’s figure 40 (page 112), the reader can observe that the symbols for *T. carminita* and *T. filiola* Perty, 1834 are reversed, a mistake already corrected by the author in a message sent to several odonatologists. However, apart from that mistake, no records from Suriname were given for any of the species. I checked all references after Garrison (2009) and few other assorted checklists, but overlooked a major reference for this species by Geijskes (1971). While Belle (2002) and Lencioni (2006) included *T. carminita* for Suriname, I inadvertently

and mistakenly considered them as misidentifications based on old literature, since there was no record for that country in Garrison (2009). During review of a few South American checklists for my own databases, the paper by Geijskes (1971) dealing with French Guyana dragonflies came to my attention. A long series of 33 specimens of *T. carminita* from French Guyana was cited, including 12 females, the first description of that sex by him (Geijskes, 1971: 600–663). Curiously, Geijskes (1971: 663) also mentioned a sole male from the savanna vegetation in the Sipaliwini District of Suriname collected in 1966, which he compared to the French Guyana specimens. Based on Geijskes’ description and illustrations there is no doubt that the specimen was *T. carminita*, as later confirmed by Garrison (2009). In his checklist, Belle (2002) cited four species of *Telebasis* for Suriname: *T. carminita*, *T. demarara*, *T. sanguinalis* Calvert, 1909 and an unidentified species. Northern population of *T. sanguinalis* proved to be *T. simulata* Tennessen, 2002 (see Garrison, 2009). When describing *T. simulata*, Tennessen (2002) makes explicit reference to Geijskes (1932; 1943) which mistakenly cited *T. sanguinalis* for Trinidad and Suriname. However, the paper by Tennessen (2002) very likely was already in press when Belle’s (2002) checklist citing *T. sanguinalis* was published, precluding correct assignment of this species. Tennessen (2002) cited several specimens from Suriname collected by Jean Belle, thus there is no doubt that they should be assigned to *T. simulata*. The updated checklist for Suriname is available on the website maintained by Marcel T. Wasscher and lists *T. carminita*, *T. demarara*, and *T. simulata* (Wasscher 2013). Except for *T. carminita*, Wasscher (2013) includes the same species cited by Garrison (2009). Intriguingly, Garrison (2009) cited Geijskes (1971) in the diagnosis of *T. carminita*, but because the map was printed mistakenly, very likely it reflected the absence of records of *T. carminita* for Suriname.

The Suriname male of *T. carminita* in the MZSP was collected in 1949, during Expedition of the Foundation




Males of *Telebasis* Selys, 1865 (firetails) and their collection data from expeditions of Dirk. C. Geijskes in Suriname, housed in MZSP. 1. *T. carminita* Calvert, 1909. Photo by L.C. Cezar, 2013; 2. *T. demarara* (Williamson, 1917). Photo by A.P. Pinto, 2009.

for Scientific Research for Savannas and Nassau Mountain (cf. Hummelinck, 1972) and probably was sent to the Museum before Geijskes studied this material, since the only determination given (likely by D.C. Geijskes) is as *Telebasis* (Fig. 1). In summary, the new record for Suriname from Para district cited in our paper (Pinto and Carvalho 2012), is indeed as old as the more than forty year record from Sipaliwi District cited by Geijskes (1971).

Acknowledgements

I thank the curators of MZSP collection, especially Dr. Carlos J. E. Lamas for his unconditional help in my studies, Lucas de Araújo Cezar (MZSP) for the scanned collections labels and picture of *T. carminita*, and Rosser W. Garrison (CDFA, Sacramento, California) for his continuing support of my odonatological studies and review of the manuscript. This study was partially supported by the Brazilian governmental agency Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq, post-doctoral fellowship process 151122/2013-0).

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First Record of *Epitheca semiaquea* (Mantled Baskettail) for Missouri

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We (Steve Hummel and I) discovered a new species for Missouri in July 2013. A previously submitted and vetted record in OdonataCentral for Missouri was changed this year, and it created a new record for the state. The record (OC#327784) had been vetted on 24 April 2011 as *Epitheca cynosura* (Common Baskettail). A subsequent re-evaluation, including information from John Abbott's "Identification of male *Epitheca* (*Tetragoneuria*) in Texas", updated 21 March 2013 <http://www.odonatacentral.org/docs/Texas_Epitheca%20rev%202013.pdf>, showed this record to actually be *Epitheca semiaquea* (Mantled Baskettail).

The change in identification was supported by the following: "abdomen segments 4–6 distinctly wider than long", and "black always extends at least to the distal side of the hindwing triangle" (pg. 2). Photos on pages 5 and 6 show a clear window at the base of the hindwing in Mantled, and no such clear window in the hindwing base of Common Baskettail.

This provides a first record of the species *Epitheca semiaquea* for Missouri. As a further note of interest, the specimen was found less than ten miles from the Kansas border. Kansas has no record of this species, but you can be sure we will be out there looking for it next spring! 



Mantled Baskettail (*Epitheca semiaquea*), OC #327784. Photo by Mick McHugh.

Dragonflies of North America, 3rd Edition: Bad News and Good News

There has been a delay in getting the final draft to the printer for the late August delivery scheduled previously, as the book still needs final proofing and scanning to the printer. It is expected that the book will go to the printer in November, with an anticipated December delivery date. That is the bad news.

Now for the good news! The price of the book is likely to increase to \$165-170 once it goes to printing, so if you already paid the pre-publication price of \$130, you got a bargain. The pre-publication price will remain \$130 until the book goes to printing, at which time the price will increase. So if you have not yet ordered and paid, you have a few more months to send in an advance order and save ~\$40.00. In addition, if you pre-ordered already and have had an address change since that time, please contact Bill Mauffray to let him know about the change <iodonata@bellsouth.net>.

Ordering instructions: Pre-publication price still valid for the new edition of *Dragonflies of North America* by James G. Needham, Minter J. Westfall, Jr., and Michael L. May. The book includes numerous additions and corrections for all the currently known species of North American dragonflies (Anisoptera) from Alaska to northern Mexico and the Greater Antilles. The text is completely revised, with keys, figures and drawings for all known species (including larvae), plus an updated checklist to all species, bibliography, glossary, distribution table, and index. It will be 660 pages, using the new format as in the last damselfly edition, but with many more figures. There is no color supplement, as there are now many field guides to serve that purpose.

Advance orders taken now: \$130 US; \$165 Canada & Mexico; \$170.00 elsewhere. Cost includes shipping and handling. Florida residents must add 6.25% sales tax. All funds are USD and must be paid by check or money order made payable to "International Odonata Research Institute" or IORI. All profits go to IORI.

VISA/Master Card: Use Paypal to pay online; a 3% surcharge will apply. You can also e-mail your order <iodonata@bellsouth.net> and be reverse billed though your e-mail (a Paypal account is not necessary using this method), or send a check (USD) to: I.O.R.I., 4525 NW 53rd Lane, Gainesville, Florida 32653 USA, Attn: Bill Mauffray.

Springtime Darner (*Basiaeschna janata*) New to Iowa

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As part of the Iowa Multiple Species Inventory and Monitoring Program (MSIM; see <<http://www.iowadnr.gov/Environment/WildlifeStewardship/NonGameWildlife/DiversityProjects/MSIM.aspx>>), standardized surveys for Odonata were conducted on 76 public properties throughout Iowa in 2012. Surveys consisted of visual encounter surveys (VES), where technicians spent four person-hours at each property searching appropriate habitats for odonates and recording each species observed and the number of individuals observed per species. Each property was visited six times between April and October, with two visits occurring from mid-April to mid-June, two visits occurring from mid-June to mid-August, and two occurring from mid-August to mid-October. Visits to a single property were separated by two weeks within and between seasons. These surveys allow us to document the presence or absence of species at each property throughout the survey season, and multiple visits during each season allow us to effectively account for variability in flight times of different species.

An individual *Basiaeschna janata* (Springtime Darner) was first observed by Ryan Rasmussen on 5 May 2012 at Lacey-Keosauqua State Park in Van Buren County. No other individuals were observed in 2012. Rasmussen returned to the area on 13 May 2013 and observed a small group of six individuals near Lake Lacey, which is located within the park (OdonataCentral record #400091). The lake is an impounded stream approximately 12 hectares in size and is adjacent to the Des Moines River. The lake is completely surrounded by deciduous woodland with a small patch of herbaceous vegetation on the north end near the dam. Rasmussen captured three males and photographed one female at this location. A single male specimen was vouchered to confirm the identification. Rasmussen also observed a pair breeding at this location, confirming that this is a breeding population of this species in Iowa.

According to OdonataCentral (Abbott, 2007), the nearest record of this species is in Monroe County, Missouri, approximately 84 miles south of Lacey-Keosauqua State Park. The range of the Springtime Darner skirts the northeastern corner of Iowa along the Mississippi River before extending east, circumventing Illinois; it also extends



Springtime Darner (*Basiaeschna janata*), Lacey-Keosauqua State Park, Van Buren County, Iowa. Photo by Ryan Rasmussen.

into northeastern Missouri along the Mississippi River (Paulson, 2011). This record represents a range expansion of this species and the 117th known odonate species for Iowa.

Work continues as part of MSIM and surveys for Odonata are currently being conducted on ~70 properties throughout Iowa. Our hope is to continue contributing to the knowledge of Odonata in Iowa by providing information on species' distributions and habitat associations. Other documented state records found by the MSIM program include *Libellula semifasciata* (Painted Skimmer; Rasmussen *et al.*, 2010), *Ophiogomphus westfalli* (Westfall's Snaketail; Harms *et al.*, 2012; Brees *et al.*, 2012), *Ladona deplanata* (Blue Corporal; Harms *et al.*, 2012), *Celithemis fasciata* (Banded Pennant; Harms *et al.*, 2012), and *Didymops transversa* (Stream Cruiser; Harms *et al.*, 2012).


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First Record of the Marsh Bluet (*Enallagma ebrium*) for Colorado

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Never let it be said that it does not pay to examine bluets carefully. We have abided by this pithy adage, which we just made up, for many years, most recently on a trip to meet a old friend in south-central Colorado. Our destination was Great Sand Dunes National Park, but we opted to “ode our way there,” with a trip through Oklahoma’s panhandle and southwestern Colorado, the latter to collect comparative specimens of a few species that we feel are good candidates to eventually appear in Oklahoma, including the Alkali Bluet (*Enallagma clausum*) and Pale Snaketail (*Ophiogomphus severus*). We also hoped to find the Arroyo Bluet (*E. praevarum*) and Sooty Dancer (*Argia lugens*), two species collected in Oklahoma from the 1930s to the mid-1970s but unrecorded since.

On 6 July 2013, we arrived in the Great Sand Dunes region with plenty of time before we were to meet our friend, so we toured the San Luis Valley, Alamosa County, to see what we could find. Our first stop was at Alamosa National Wildlife Refuge. In addition to many Emerald Spreadwings (*Lestes dryas*) and Spotted Spreadwings (*L. congener*) and a few Plains Forktails (*Ischnura damula*) and Western Red Damsels (*Amphiagrion abbreviatum*), we had a blast sorting through the bluets. . . until we quickly realized that one did not make sense for our expectations of which species ought to be in the San Luis Valley. We did

not struggle to reconcile the Tule Bluets (*E. carunculatum*), but this species was outnumbered by a mystery species, a mystery we solved in short order with a trundle back to our vehicle to consult Paulson (2009). We had found a male Marsh Bluet (*E. ebrium*), a species recorded no closer to Colorado than south-central Utah or northern Wyoming (Paulson, 2009; OdonataCentral <<http://www.odonatacentral.org/>>). Much to our surprise, on the basis of in-hand examination, this species proved to be the commonest bluet at the refuge. We collected two males (SP 758 [Fig. 1] and 759, in the Smith-Patten/Patten collection, housed at the Oklahoma Biological Survey) and a female (SP 760) to document this occurrence.

But the surprise did not end once we departed the refuge by mid-morning. At our next stop, Blanca Rita Park in the city of Alamosa, we found two more male Marsh Bluets, one of which we collected (SP 764). Less than an hour later we chanced upon a small, spring-like pond at the southern edge of the Blanca Wetlands complex, a reserve of the Bureau of Land Management. Most of the pond was inaccessible, being guarded by a fierce, fresh barbed-wire fence, but plenty of bluets and a few forktails occupied the vegetation along the dirt road. Here we collected an Alkali Bluet (*E. clausum*), Northern Bluet (*E. annexum*), Boreal Bluet (*E. boreale*), and another male Marsh Bluet (*E. ebrium*, SP 765), one of three present. It was obvious to us that the San Luis Valley supported a heretofore unknown population of the species. Our conclusion was bolstered the following day, 7 July 2013, when, friend in tow, we revisited Alamosa National Wildlife Refuge where we searched a greater extent of suitable vegetation than we had the previous day. We examined in-hand at least five of an estimated 50 male Marsh Bluets and two of at least 15 females; we noted at least 10 tandem pairs.

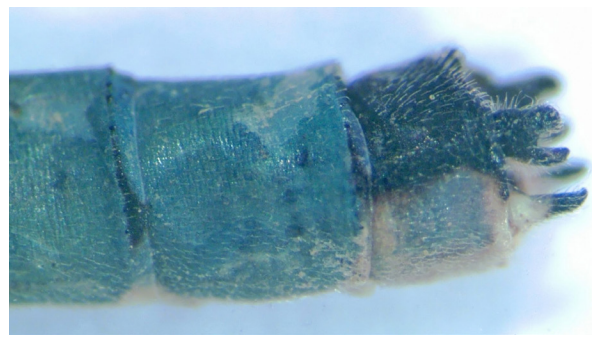


Figure 1. Appendages of male Marsh Bluet (*Enallagma ebrium*), collected on 6 July 2013, Alamosa National Wildlife Refuge, Alamosa County, Colorado (specimen SP 758), as the first record in the state.


The identification of *Enallagma* bluets presents a challenge, particularly for those disinclined to capture damselflies for in-hand examination. Had we not examined these individuals in hand, we may have called them Familiar Bluets (*E. civile*), as many individuals had approximately

the same pattern of blue-and-black on the abdomen; or perhaps Tule or Alkali Bluets (*E. carunculatum* or *E. clausum*), as some were nearly as black as those species tend to be. Even so, to come across a vagrant is one thing, but we remain stunned to have discovered a population of the Marsh Bluet in south-central Colorado, as stunned as we remained after we discovered a population of the Atlantic Bluet (*E. doubledayi*) in southeastern Oklahoma (Patten and Smith-Patten, 2012). It certainly is wise to pay close attention to bluets.

Acknowledgements

Thanks to the staff at the Alamosa National Wildlife Refuge for permission to collect on the refuge.

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An Observation of *Octogomphus specularis* (Grappletail) Oviposition

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A number of years ago I visited Golden and Silver Falls State Natural Area in Coos County, Oregon (north-east of Coos Bay), and observed *Octogomphus specularis* (Grappletail) near the base of the Golden Falls.

On 27 June 2013, I revisited the site to see if I could get some photographs of this species. The early afternoon (around 2 p.m.) was mainly sunny, mild (76° F in the shade) and humid. The combination of heat and humidity reminded me more of conditions in Florida than here along the south coast. A short walk from the parking lot, where a male was sunning itself on a leaf, brought me to the viewpoint near the base of the falls (Figure 1). Here, several males were flying about and/or resting on the light colored rocks, usually on the other side of the stream from me. From time to time, a resting male would adopt the obelisk posture (Figure 2).

After a while, I noticed an individual resting, somewhat vertically, close to the water, and close to the area where



Figure 1. Rocky stream bed at the viewpoint, 8 July 2013.



Figure 2. Obelisking male *Octogomphus specularis* (Grappletail).

I was standing. I could not see the tip of its abdomen so I moved to get a better view. At that point, I realized that this individual was a female that appeared to be ovipositing. The tip of her abdomen looked like it was touching the adjacent rock, downstream from her perch. (From my images it appears that her abdomen was not actually in the water, although the entire rock on which it rested looks wet.) She was releasing a stream of eggs onto this rock (Figures 4, 5 and 6). Some of the eggs remained close to the oviposition site while others slipped into the water and were carried away by the current. According to the time stamps on my photographs, I observed her for 70 seconds before she left.

Donnelly (2008) and Johnson (2009) reported on the behavior of some *Octogomphus specularis* females observed at Gold Lake in Lane County. Donnelly found one female who immersed her abdomen about a centimeter into the water and began releasing eggs. Johnson photographed a number of females with their abdomens in the water, but



Figure 3(left). Ovipositing female Grappletail. The oviposition site is visible in the lower right corner of Figure 1, in the shaded area near the tip of the fern frond. Figure 4 (center). Close-up of the female's abdomen. Some eggs are in or close to the water. Figure 5 (right). Egg mass left after the female departed. Over 120 eggs can be seen.

was unable to ascertain what they were doing from his photos. I do not know whether the female I observed tried to dip her abdomen into the water. There appears to be a gap between the rock she was perched on and the rock she oviposited on, but perhaps it was not big enough. On the other hand, the fact that the rock she was ovipositing onto was wet may have been sufficient.

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Odonates are Taking Over Facebook!

Those of you who enjoy staying connecting via social media will be happy to know that the number of odonate-specific Facebook Groups pages is burgeoning. In addition to the DSA Facebook page, you can connect with fellow ode enthusiasts via FB groups with broad regional coverage, such as Western Odonata, Northeast Odonata, and Southeastern Odes, as well as more focused groups such as Minnesota Dragonfly Society and Odonata Ohio.

To find these groups, just type the name into the search bar at the top of your Facebook page. If I have missed any Facebook sites you would like to see included in further announcements, please let me know at <celeste@xerces.org>.

New Feature for ARGIA: How I Fell Into the Clutches of the Odonata

Dennis Paulson made the excellent suggestion that an interesting addition to ARGIA would be brief essays from DSA members describing how, when, where, and why they became interested in Odonata. This would also be a way for members to find out a bit more about one another. If you would like to contribute, write a short essay describing your first forays into the world of Odonata and how it has affected your life since, including your most interesting ode-hunting tale, and send it to the Editor at <celeste@xerces.org>. Queries about format can be directed here as well. Whether you just discovered odonates this summer or have been pursuing them for decades, I know there are some interesting, entertaining, and inspiring stories to tell.

Chalky Spreadwing (*Lestes sigma*), New to Arizona

Rich Bailowitz <raberg2@q.com> and Doug Danforth <dougoofbis@yahoo.com>


Many parts of southern Arizona, especially to Tucson's south and east, have had rainfall totals considerably above average, in fact, even heroic. These totals were highlighted by Douglas, a community on the Arizona/Mexico border, in which nearly 15 inches of precipitation was recorded this July and August, more than double the historical normal. The normal flow of moisture has been enhanced lately by a series of low pressure systems moving up the Baja California Coast.



Chalky Spreadwing (*Lestes sigma*), San Bernardino National Wildlife Refuge, Cochise County, Arizona.

This spurred the authors' interest, suggesting a visit to the San Bernardino National Wildlife Refuge (SBNWR) along the border, about 15 miles east of Douglas. Always an odonate hot spot, this area has yielded more than 60 species during the past dozen years. The Refuge is located along Black Draw, a tributary of Sonora, Mexico's Rio Yaqui. Here, a number of artesian springs come to the surface, forming ponds of various sizes and configuration.

We visited SBNWR on 5 September 2013. During our nearly four hour stay, we logged 33 species of odonates, most notably Arizona's first documented record of Chalky

Spreadwing (*Lestes sigma*). This typically Mexican species is regular in south/central Texas and south into Mexico. On the west side of Mexico's Sierra Madre Mountains, it occurs from central Sonora south. These Sonoran populations come as close as 165 miles from the SBNWR location. It was found with a few Plateau Spreadwings (*Lestes alacer*) in a small pond of flooded cocklebur and grasses. This is another example of the steady stream of a number of southern species making their appearances in Arizona in recent years. 

The Strange Case of the Constipated Darner

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In this article, I present the intriguing adventure of the constipated darner. This story is interesting for a number of reasons, not least of which is how it illustrates the deep connection I've developed over the years with the Paddle-tailed Darner (*Aeshna palmata*). In some cultures, a young person goes into the wild to commune with nature until a significant event occurs with a particular animal. That animal then plays a special role in the person's life—it is the person's "totem animal." As strange as it may seem, my totem animal is the Paddle-tailed Darner, and this story is just one more confirmation of that connection.

I first interacted with this dragonfly as a child, when I brought a cooled-down, but very much alive, individual into the house one fall day. Within minutes it had warmed up and began to fly around the living room. I was delighted, but my parents, probably with thoughts of "devil's darning needles" in their heads, were a bit frantic. We finally succeeded in getting it to fly outdoors, but the incident made a lasting memory.

More recently, at Cranberry Lake near my home in Anacortes, I discovered the delightful happy-face of the Paddle-tailed Darner, and its method of cleaning itself by splash-dunking into the water and then spin-drying at 1,000 rpm in mid flight (Walker, 2011a). I've rescued a number of them that have gotten stuck when they splash-dunked, and I've become good at lifting them from a perch with my finger for a little visit. They've brought out the "dragonfly whisperer" within me.

The episode with the constipated darner began at Cranberry Lake. My wife Betsy and I were observing male darners as they flew about the lake searching for females and interacting with one another. Suddenly, we noticed one begin a series of splash-dunks. We counted them out as they progressed: "1, 2, 3, 4, 5, 6, 7, 8". Wow, eight in a row—that was a record! Below is a graph of the number of splash-dunks per event versus the number of events for the last two years, including this new observation. We've seen a total of 265 splash-dunk events, with an average

number of 2.31 splash-dunks/event (Figure 1; see Walker, 2011b for further details).

After completing its eight splash-dunks and performing a nicely visible spin-dry, the darner flew to a cedar tree near the shore to perch. We could see it clearly through our binoculars, although it was fairly high up. It was indeed a male Paddle-tailed Darner (*Aeshna palmata*). As we observed it, we noticed something attached to its abdomen, trailing off the back end (Fig. 2). Was something stuck to the darner? Apparently so. It was about the length and color of a pine needle. Did this account for the darner's record number of splash-dunks, as it attempted to dislodge this attached object? In fact, as we watched, the darner flexed its abdomen and tried to remove the material by rubbing it against a leaf, but was unsuccessful (Fig. 3).

I reached up and grabbed the lowest branch of the cedar tree, and was able to pull it down enough to bring the darner closer for better observation. We saw that it was distressed over this attachment to its abdomen, and that flies were attracted to it. We began to realize it might be a string of excrement still attached to the unfortunate creature.

At this point I noticed that I could now reach up and grab the next higher cedar branch, and bring the darner even closer. I did so, and got it close enough that I was able to lift it onto my finger (Fig. 4), allowing us to examine it in detail. Indeed, it had a long string of excrement attached to its abdomen that it was trying to remove. I took hold of the far end of the string, which was dry and light tan in color, and pulled. The string separated cleanly from the darner, which seemed to be relieved.

I took a few pictures of it on my finger, and then placed it back on a cedar branch where it rested for several more minutes before flying off.

Combined splash-dunk results for 2011 and 2012

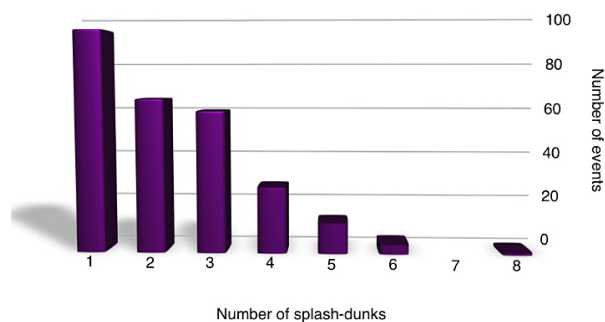


Figure 1. Total number of splash-dunk events = 265. Average number of splash-dunks per event = 2.31. The outlier at 8 splash-dunks corresponds to the constipated darner.



Figure 2 (left) Our first close view of the Paddle-tailed Darner perched with something attached to its abdomen. A fly (lower left) was also interested and was causing the dragonfly additional distress. Figure 3 (right). The constipated darner made several unsuccessful attempts to remove the material.


I wonder how the problem developed in the first place. Or perhaps the better question is: Why doesn't this sort of thing happen more often, given that dragonflies have no fiber in their diet? Whatever the case, I never imagined that the connection with my totem animal, the Paddle-tailed Darner, would extend to a situation like this. I was happy to help, though, and I hope it was able to continue its dragonfly pursuits in a more regular fashion.



Figure 4. A closer look confirmed excrement was attached to the abdomen.

Literature Cited


Walker, J.S. 2011a. Spin-dry dragonflies. ARGIA 23(3): 29-31.
 Walker, J.S. 2011. Splash-dunk analysis, 2011. ARGIA 23(4): 29-30.

More photos of the constipated darner can be found on my blog at <<http://thedragonflywhisperer.blogspot.com/search/label/constipated>>. 

New Book Announcement

Paradise: Solo Across New Guinea, by Chuck McAllister. E-Book, ASIN #B00DV08C60, 654 KB, 314 pp., \$2.00 from Amazon

Ever wanted to leave it all behind and head off to a world rich with new discoveries? Dragonfly researcher Chuck McAllister has done that, and *Paradise: Solo Across New Guinea* is his story. Following a period of personal loss, the author decides to clear his head by wandering solo across Papua New Guinea, a rainforest island where tribal loyalty still reigns supreme, and where travel is achieved on foot, by canoe, or hitching a lift with a missionary pilot. Here,

many of the people still live as subsistence hunter-farmers, building houses of bamboo and thatch, and getting by without running water, electricity, medicine, or roads. Clan wars are common and celebrations are enacted with drums, dancing, and feathered headdresses. Living in their grass houses and sleeping alongside their pigs, McAllister survives narrow escapes from jungle disease and freezing mountaintops, and makes acquaintances of every description, from Western missionaries to the grandchildren of headhunters. Somewhere in there, he collects some dragonflies, too. It's a fun read and provides plenty of food for thought. 

Book Reviews

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A Manual for the Identification of the Dragonflies and Damselflies of New Guinea, Maluku, & the Solomon Islands, by John Michalski. 561 pages, 8 pages of color photos, 1275 line illustrations. Kanduatum Books. Hardback: July 2012. ISBN: 978-0-615-63726-6

Price: USA, \$75.00 postpaid (shipping weight 5 lbs / 2.3 kg); outside the USA: USD 55.00 plus postage (estimated postage to Europe = USD 55.00)

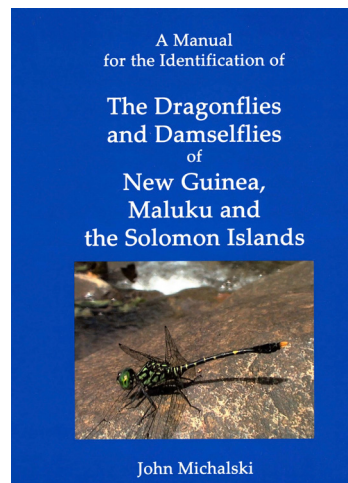
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"This is the first comprehensive guide to ALL 620 species of dragonflies of New Guinea and the neighbouring islands, which is home to ten percent of the world's dragonfly fauna. Nearly half of the species are found nowhere else on Earth. Includes 1275 illustrations and eight pages of color plates showing representative species and habitats." (ARGIA 24(4): 29).

As quoted above, this volume represents a wonderful addition to the Odonata literature of the Indo-Australian region. Although my particular interests lie primarily with the Neotropical fauna, I have been interested in the Paleotropical fauna for a number of years. The literature pertaining to this region is extensive and involves securing copies of many scattered papers published in journals not easy to access nowadays or, hopefully, having PDFs made available by someone who has taken the time to digitize these papers. Most of the work on the Odonata of the Papuan region was accomplished during the 20th century and the greatest amount was produced by the indefatigable entomologist M. A. Lieftinck. His seven-part account "The dragonflies (Odonata) of New Guinea and Neigh-

bouring Islands", published between 1932 and 1948, is the primary source for those wishing to introduce themselves to the Odonata of this region. Lieftinck's published works on the Oriental and Papuan Odonata fauna were extensive and over 40 cm of my bookshelf space is allocated just to his reprints. But Lieftinck (and others) published many other pertinent papers which I have no access to. How then to identify a particular genus or species from this literature base? Part of the problem was solved in 1992 with the appearance of "An Annotated Index to Names of Odonata Used in Publications" by M. A. Lieftinck by Jan van Tol (available at <<http://www.repository.naturalis.nl/record/317789>>). This major work allowed one to look under a genus- or species-group name treated by Lieftinck and then look for the target references (assuming, of course, that you had these references in your library!) to find out more about a particular taxon.

Michalski's volume has now done all of this work and more. As he states in the introduction (page 5): "This manual incorporates all of [Lieftinck's] work on the region, including 870 line drawings produced by himself and his team of illustrators, from a staggering fifty-eight publica-



tions.” The book is simply a must-have volume for anyone wishing to identify Odonata from this region. Michalski provides keys to all genera and/or tables for difficult or problematic genera (e.g. *Nososticta*). Added to this wonderful volume are eight color plates and three appendices discussing problematic families and genera (Platycnemididae and Argiinae, *Oreagrion* and *Ischnura* [*Oreagrion* is now generally considered to be a junior synonym of *Ischnura*] and *Lathanusa* and *Huonia*), a glossary and comprehensive bibliography.

The book is a real testament to the author, who must have spent years accumulating all the material and putting it together. The author discusses in the Forward his decision to self-publish this book. In my correspondence with John, he informed me that he produced a first run of 200 copies but that this book will be available as a print-on-demand book, meaning the volume should never really go out of print. For those who would like a preview, the author has made parts available online at Odonata Central <<http://www.odonatacentral.org/index.php/PageAction.get/name/HomePage>>. Michalski is to be congratulated for such a splendid volume and at US\$75.00 it represents a fantastic value.

Field Guide to the Damselflies of New Guinea, by V. J. Kalkman & A. G. Orr. Brachytron 16 Supplement: 3-120, 2013. ISSN: 1386-3460. Contact information and price: <<http://www.brachytron.nl/Brachytron/Brachytron16supinhoud.html>>

As stated on the website noted above: “This field guide contains nearly 300 colour drawings and over 250 line drawings by Albert Orr and sixteen colour photographs taken in the field by Stephen Richards. New Guinea is one of



the least studied regions of the world. Most species and numerous genera are found nowhere else, particularly among the Zygoptera or damselflies. Over 500 copies of the field guide will be donated to universities throughout New Guinea. We hope that

these books become dog-eared with use, as students and local researchers take them to the field and through them learn to appreciate the beauty of damselflies, to study their biology and use them in biodiversity studies supporting the conservation of freshwater habitats on their island.”

Just when we have purchased a copy of “A Manual for the Identification of the Dragonflies and Damselflies of New Guinea, Maluku, & the Solomon Islands” (reviewed above), we now have a complementary paper-back volume providing color illustrations of examples (and, in some cases, all species) of the damselflies (Zygoptera) of New Guinea. Much of the background information prefacing my review of the Michalski volume above applies here also, although here we are now treated to an additional 41, mostly colored, plates done by A. Orr.

Orr's previous forays into the Palearctic Odonata need no introduction. But this new volume, coupled with Michalski's book, has now made the identification of Odonata of New Guinea much easier, especially the Zygoptera, not only for the examination of collected specimens in a lab but also out in the field. The text is bilingual, with English preceding the plates and Bahasa Indonesian following. Introductory texts include sections on how to determine if a specimen is a damselfly, a male or female, and instructions in helping to place a target species to genus. Also included are sections on general anatomy and collecting and preserving (but not included is what, if any, permitting procedure is necessary for collecting—a strong caveat for any who may wish to collect in New Guinea).

The cover letter accompanying this volume sent to me states: “We hope that all of you will find some peaceful moments to enjoy the show of colourful diversity brought together in this guide and that some of you will be lucky enough to find yourselves one fine morning along one of New Guinea's brooks.” I have no doubt that the authors have succeeded in their endeavor; I wholeheartedly recommend getting this book for any student interested in Odonata.


Demoiselle Damselflies. Winged Jewels of Silvery Streams, by Sami Karjalainen & Matti Hämäläinen. 223 pages, numerous color photos. Caloptera Publishing. Hardback: July 2013. ISBN: 978-952-93-1045-6. Contact information: <info@caloptera.com>

From the dust jacket: “The demoiselle damselflies are among the most beautiful of all insects. They typically inhabit clear pristine streams, where they cavort jewel-like in the sun over the waters. The superb photographs in this book and an informative text introduce us to their fascinating world. Besides the familiar European species,

the book also includes representatives of all Demoiselle genera from around the world, as well as their nearest relatives. This book is the product of a fruitful collaboration between an exceptionally gifted nature photographer and a well known scientific authority on these insects. The book is bilingual (Finnish and English).“

This magnificent volume is a superb introduction to the worldwide damselfly family Calopterygidae. Examples of all genera are included and each is accompanied by the most exquisite photos, most by the senior author. The text is divided into two parts: the first part on biology and behavior by Karjalainen, then the generic accounts and species listing by Hämäläinen. The book can be considered the third of a series treating calopterygoid damselflies accompanied with colored plates. The first, “A Guide to the Dragonflies of Borneo: Their Identification and Biology” by A. G. Orr <<http://www.nhpborneo.com/book/a094>>, was published in 2003 and treats a good proportion of the calopterygid damselflies on that island. The second, “The Metalwing Demoiselles of the Eastern Tropics” by A. G. Orr and Matti Hämäläinen <<http://www.nhpborneo.com/book/m099>>, was published in 2007 and is a monographic treatment of one genus (*Neurobasis*) accompanied by numerous photos and colored illustrations. The present volume can aptly be considered a continuation of this series and any (or all) three should encourage naturalists in perusing further studies in this group. Many of the taxa treated here were previously known from descriptions of preserved material sometimes accompanied by hand-drawn illustrations of the cerci. Only recently have photographers been able to capture digital images of many of these Paleotropical genera. After perusing the wonderful photos of *Archineura* (which I like to refer to as the Chinese *Hetaerina* on steroids), *Atrocalopteryx*, *Mnais*, *Umma* and *Vestalis*, one can actually imagine being in these exotic

regions and meeting face to face with some of the most beautiful damselflies on earth.

The exclusively New World genera *Bryoplatbanon*, *Hetaerina*, *Mnesarete* and *Ormenoplebia* are considered a separate family (Hetaeriniidae), a conclusion I disagree with, but the authors acknowledge that this division is not universally accepted. Still, there is coverage of the remaining calopterygoid (or “Caloptera”) families including Polythoridae, Chlorocyphidae and Euphaeidae under a separate chapter entitled “Close Relatives.” Authors Karjalainen and Hämäläinen deserve our congratulations for producing a wonderful volume that serves not only as an authoritative compendium on this family, but also as a wonderfully illustrated coffee-table book to be enjoyed by all. 



Request for Early Emergence Records of Anisoptera

As part of my project on effects of climate change of dragonfly emergence dates (ARGIA 24(4): 27), I am gathering information on early season emergence records of anisopterans from 2012–2015. If you have early emergence records for dragonflies within that range, please send them to me along with the genus, species, and GPS coordinates for the location. If you have voucher specimens, please report them as well.

Thank you!

Richard Groover <rgroover@reynolds.edu>

Advice Column

Whether you are novice ode-hunter or a long-time dragonflyer, if you have any short notes of advice relating to lessons you’ve learned in your experiences with chasing odonates, including observing, photographing, collecting, and/or identification, and would like to pass them on to fellow enthusiasts, please send them to the Editor at <celeste@xerces.org> and we will share your wisdom with the world.

Parting Shots

Parting Shots is a new feature in ARGIA that pays tribute to both the endless diversity and interest of odonate behaviors and to the quick-moving and skilled photographers among us, with an additional nod to the many unexpected (and sometimes downright silly) ways in which odonates can creep into daily life.

If you have any photos that you think showcase some odd, bizarre, unusual, unexpected, or amusing aspect of odonate life (or of life with odonates), please send them to the Editor at <celeste@xerces.org>, along with a short note that describes the photo and event. Feel free to contact me if you have any questions about a submission, but the photos and stories below should help illustrate the gist of this new feature.

An Interesting Case of Damsel-on-Dragon Predation

Buck Snelson <fsnelson@bellsouth.net>

Buck Snelson caught this unusual shot of an *Ischnura ramburii* (Rambur's Forktail) dining on an *Erythrodiplax minuscula* (Little Blue Dragonlet) on 22 September 2012 at Gold Head Branch State Park in Clay County, Florida. It's not quite David versus Goliath, but it's a decent accomplishment for a damselfly nonetheless!



©Buck Snelson 2012

Praying Mantis vs. Darner

Larry Rea <LRea@twrps.com>

If you are looking for prime habitat for dragonflies, you can do no better than the Conboy Lake National Wildlife Refuge near Glenwood, Klickitat County, Washington. Over 7,000 acres of ancient lake bed now form shallow marshy wetlands. Streams feed into a water control ditch that flows along the west side of the refuge. Access to a loop trail may be gained at the headquarters for the refuge. The loop trail follows the ditch to the north for over a mile and then loops back through Ponderosa Pine forest after reaching an observation platform. I prefer returning along the ditch for another look at the dragonflies.

On 11 September 2012 I was stalking darners along the ditch, hoping to catch photographs of conjugal pairs. Males were busy patrolling the banks, while females could be found laying eggs. A half dozen males were patrolling the reeds along the bank when one came to a sudden stop and a commotion took place. Several of the other darners converged on the ruckus; when I spotted the cause, it was a male praying mantis holding fast to a struggling darner. It looked to be a pretty equal match. At first I thought the other darners would join the fray but it seemed they were just curious about the commotion. I could see that the mantis went for the darner's neck and finally removed the head. When the struggling stopped the other darners departed the scene—except for one that joined the mantis in feasting on the luckless victim! The time from the catch to the finish consumed about 20 minutes.




Mantis and darners, Conboy Lake NWR. Larry S. Rea.

The World's Largest Dragonfly

Ron Lyons <pondhawk@uci.net>

Move over, *Anax*—Ron Lyons has photographed the world's largest dragonfly (and in two different views, to facilitate identification). This sculpture, made from recycled materials by structural welder Frank Phaneuf, was erected in 2009 to welcome people entering the lakeside village of Wabamun, Alberta. Coming in at almost 10 m (32 ft.) in length, this dramatic dragonfly sports an abdomen and eyes made from propane tanks, wings made (appropriately) from scrapped airplane wings, and hovers proudly atop a light pole 6 m (20 ft.) high.

Townsppeople hope the sculpture will put Wabamun on the tourist map. The dragonfly was chosen as a mascot in tribute to the huge numbers that emerge from the lake every year. It has also apparently taken the “world's largest dragonfly” title away from the previous holder of Ottertail, Minnesota (while the world's largest mosquito avoids them both by hiding out in Effie, Minnesota), though Ottertail residents point out that as their oversized dragonfly sculpture is on wheels, it does remain the world's largest portable dragonfly.

For more details, see <<http://www2.canada.com/edmontonjournal/story.html?id=1030fef8-c58d-4856-aec6-3b1135e442f5>>. 



ARGIA and BAO Submission Guidelines

Digital submissions of all materials (via e-mail or CD) are vastly preferred to hardcopy. If digital submissions are not possible, contact the Editor before sending anything. Material for ARGIA should be sent to Celeste Mazzacano, The Xerces Society for Invertebrate Conservation, 628 NE Broadway, Suite 200, Portland, Oregon, USA 97232, <celeste@xerces.org>. Material for BAO must be sent to Steve Hummel, Lake View, Iowa, USA 54982, <shummel@iowatelecom.net>.

Articles

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

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

Figures

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

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

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

Tables

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

The Dragonfly Society Of The Americas

Business address: Celeste Mazzacano, The Xerces Society for Invertebrate Conservation, 628 NE Broadway, Suite 200, Portland, Oregon, USA 97232

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Journals Published By The Society

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

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

Membership in the Dragonfly Society of the Americas

Membership in the DSA is open to any person in any country and includes a digital subscription to ARGIA. Dues for individuals in the US, Canada, or Latin America are \$15 us for regular memberships (including non-North Americans), institutions, or contributing memberships, payable annually on or before 1 March of membership year. The Bulletin Of American Odonatology is available by a separate subscription at \$20 us for North Americans and \$25 us for non-North Americans and institutions. Membership dues and BAO subscription fees should be mailed to Jerrell Daigle, 2067 Little River Lane, Tallahassee, Florida, USA 32311. More information on joining DSA and subscribing to BAO may be found at <www.dragonflysocietyamericas.org/join>.

Back cover: (upper) *Argia alberta* (Paiute Dancer), Silver Falls, Crosbyton, Crosby County, 22 May 2013. Photo by J. Hatfield. **(lower)** *Libellula needhami* (Needham's Skimmer), Lake Walter E. Long, Austin Texas, 1 July 2013. Photo by J. Hatfield.

