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Kudos to Fred Heath

Rich Bailowitz <raberg2@q.com>

Local Tucson, Arizona naturalist Fred Heath works as a volunteer ranger at Sabino Canyon on Tucson's north side. This canyon is something of an oddity in that it is a nearly perennial desert stream coming from the heights of the Santa Catalina Mountains and, on a good day, emptying into the Rillito River. The Rillito itself empties into the Santa Cruz River which in the good old days used to empty into the Gila River. Sabino Canyon cuts an extremely alluring path through those mountains and is lined with cottonwoods, willows, and sycamores. It also has a visitors' center and a series of trams which run every twenty minutes or so up and down the canyon.


Fred's specialties include butterflies, birds, and lizards but he has a keen eye for nature in general. In the middle of May 2015, he noticed a number of dragonflies with white spots on their abdomens along Sabino Creek. After seeing what he counted as seven individuals playing over the riffles of the creek, he reached the old dam on lower Sabino Creek. Here he saw an individual dragonfly circling one of the pools below the dam. It perched on a rock, at which time Fred was lucky enough to snap a photo. He subsequently called me and relayed this chain of events. He told me he was sending the photo he took and that it would arrive on my computer later that day, but he suspected it was a White-tailed Sylph (*Macromia pseudimitans*).

Not being known for my patience, I immediately headed out to the canyon myself and hiked toward the Sabino Canyon dam. The day was very marginal with a spell of cool, wet weather approaching fast. When I reached the stretch of stream below the dam, I quickly netted one of the dragonflies patrolling the riffles and found that it was a Slender Clubskimmer (*Brechmorhoga praecox*), a species unknown in Arizona and barely known in the United States. The sylph mentioned by Fred and the clubskimmer in my possession are similar in that that they are both mostly black and patterned with white and have noticeable paired white spots on abdominal segment 7. I



Brechmorhoga praecox (Slender Clubskimmer), a new species for Arizona. Photo by Marty Horowitz.

thought to myself that I had both bad and good news for Fred. The bad news was that he did not see White-tailed Sylphs; the good news was that he did see and photograph something even scarcer, the Slender Clubskimmer.

Later that evening, Fred's email arrived with the photo. In it was a beautiful shot of a White-tailed Sylph! After several additional correspondences, it became clear that Fred saw the clubskimmers along the stream but photographed the sylph at the pools below the dam. He estimates that there were seven clubskimmers and two sylphs in total seen by him that day. The current Arizona status for these two species is that this is the first record for the clubskimmer in the state. It is a common species south of the border, from central Sonora southward (north to the Sierra Mazatan), and within approximately 350 km (210 miles) of the current find. For the sylph, it is the 5th Arizona record and the 3rd this year. This species also is a common inhabitant of the southern half of Sonora but appears to be infiltrating northward with some regularity. The clubskimmer brings Arizona's species total to 137. 

Calendar of Events

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

| Event | Date | Location | Contact |
|--------------------|----------------------|------------------------|---|
| SE DSA Meeting | 24–26 July 2015 | Erwin, Tennessee | Steve Krotzer <rskrotze@gmail.com> |
| SW Dragonfly Blitz | 27–30 August 2015 | Sierra Co., New Mexico | Kathy & Dave Biggs <biggnest@sonic.net> |
| Congress ICO | 15–20 November, 2015 | La Plata, Argentina | < http://ico2015-argentina.com.ar/contact/ > |

Pseudoleon superbus (Filigree Skimmer) Established in California

Michael Ouellette, San Diego, California <sdmouellette@yahoo.com>

Despite its drab colors, the Filigree Skimmer (*Pseudoleon superbus*) is one of the most striking North American dragonflies. The complexity of the patterns that give this species its common name lends them a particular beauty and unmistakable appearance. They range from Guatemala to the southwest United States, including Arizona, New Mexico, and Texas. The species was first sighted in California in San Diego in 2004 (OC#5613), but apart from these two occurrences, they were otherwise unknown in California and had been absent for more than 10 years.

I live in in dry southern California, and so in the summer of 2014 I decided to tear out my lawn and change everything to native landscaping. As part of this I added a small pond, something I had been wanting to do for years. Dragonflies had been a casual interest and previously we had occasionally seen them flying by our yard. We assumed this was due to our neighbor's pool and to the fact that we were a half mile from Mission Trails Regional Park (the largest city park in the western U.S.), through which the San Diego river flows, and two miles from Lake Murray Reservoir. So, we hoped to attract dragonflies to our pond.

The pond was designed after local vernal pools and according to online advice for attracting dragonflies to pond habitat. There are dark and light border stones, gravel, stones sticking out of the water, and plants in and around the water. However, it is quite small, being only a 9 ft. x 6 ft. oval and 24 in. at the deepest point, and it is without artificial filtration or circulation. It holds less than 250 gallons of water. (Figure 1). In spite of its size, it has exceeded our expectations. On 23 August 2014 it was filled with water, and on 30 August the plants were put in place. The next day, a Wandering Glider (*Pantala flavescens*) was seen ovipositing, but after a busy dragonfly fall, winter was fairly quiet.

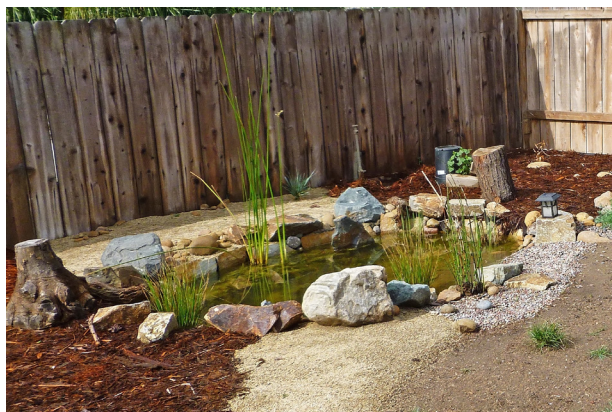


Figure 1. Backyard dragonfly pond.



Figure 2. Teneral Filigree Skimmer (*Pseudoleon superbus*) emerged from backyard pond.

That all changed on 15 February 2015, when I saw a strange black object on the rock in the pond. I was only able to get a low quality picture, but that was enough for a positive identification (OC#429680). Due to the unique wing patterns, it was clear that this was a male *Pseudoleon superbus*. The species had been missing from California for almost 11 years, and this sighting was months earlier in the year than the previous sightings in 2004. Almost a month later, a female was seen three times during a single week, and on 12 March she was observed laying eggs! This spurred a search for *P. superbus* throughout southern California, resulting in a rash of new sightings as far north as Santa Barbara (OC#430369). In April, we had a few visits to our pond of both male and female Filigree Skimmers, and in May I saw a few females in the nearby park.

I had watched the pond for months for signs of a *P. superbus* nymph. Online resources are limited when it comes to nymphs, and I was relying heavily on Kathy Biggs for all of my dragonfly questions. After several false calls I was coming up empty-handed. But on the morning of 15 June, I was stunned to see a teneral female *P. superbus* in the pond. In my excitement to get a camera, I scared her into flying, but fortunately she wasn't really ready yet to fly far and stayed in the yard so I could get some good pictures (Figure 2). After that I found the exuvia she emerged from, further confirming that she came from my pond. The time from observations of egg laying to emergence was almost exactly three months. On 19 June I finally captured and photographed a live *P. superbus* nymph (Figure 3).

The winter of 2015 was an unusual one in California. There were several periods of very hot, dry, windy weather in January through March, and perhaps that contributed to the sudden rash of Filigree Skimmers sightings here. But it

seems unlikely that they are only reproducing in my little backyard pond. Because they have been seen all over southern California and are reproducing here, this could be the beginning of an extension of their range.

Acknowledgements

Thanks to Kathy Biggs for her advice and support.

References


- Paulson, D. 2009. Dragonflies and Damselflies of the West. Princeton University Press, Princeton, New Jersey. Pp. 455–456.
- Needham, J.G., M.J. Westfall Jr., and M.L. May. 2014. Dragonflies of North America, 3rd edition. Scientific Publishers, pp. 545–546. 



Figure 3. Filigree Skimmer (*Pseudoleon superbus*) nymph..

Red Rock Skimmer (*Paltothemis lineatipes*), a New Species of Dragonfly for Inyo County, California

Ron and Barbara Oriti <meteoriti@aol.com>

On 2 May 2015, we were surprised to see no less than nine or ten Red Rock Skimmers (*Paltothemis lineatipes*) at a small rocky stream south of Bishop, California. One female was observed ovipositing. This was the first-ever sighting of Red Rock Skimmers in Inyo County, California.

We observed these Red Rock Skimmers for about a week at the same small stream, and then the weather became unfavorable, with cooler than normal temperatures, overcast skies, and winds. This weather continued for the remainder of the month of May and into the early part of June.


When the weather once again became favorable for dragonfly-watching, the Red Rock Skimmers were no longer to be found at our site. We thought it was just a happenstance that they were here, but we looked for them in several other rocky streams in our arid country, and lo and behold, to our surprise, we found them in many places.

According to Kathy Biggs, Red Rock Skimmers have been seen for the first time in many other new locations in California. Apparently, changing conditions have caused them to expand their habitat. These attractive and colorful



Red Rock Skimmer (*Paltothemis lineatipes*). Photo by Ron Oriti

dragonflies typically are found sitting on rocks in or along the stream beds in arid country, or sometimes on the sandy shores of these streams.

Our guess is that they are here to stay. 

News From the International Odonata Research Institute in Gainesville, Florida

Bill Mauffray <iodonata@gmail.com>

The International Odonata Research Institute (IORI) web site <www.iodonata.net> has been totally updated. Pages that would be worth your while to check out include:

Books and Supplies

You will find both Needham, Westfall and May's "Dragonflies of North America" and Westfall and May's "Damselflies of North America" here at a lower cost than is available on Amazon. This is also where you can get 3.25" x 6" envelopes for specimen storage, if you maintain a collection.


Species List

The species list has been updated with most the comprehensive list of worldwide links (all work when you click on them). The links feature lists and/or photos.

The first link under the North America category, (i.e. "North American Odonata (with links to references for recent changes), George Bick & Bill Mauffray, 1997–2014") has been totally updated, with all the links corrected and tested. Please check out your state or region of interest and provide any corrections or updates that may be needed.

Discussion Groups

This page has been updated with social media sites, and contains a list all of the known Facebook (37) and Yahoo or similar discussion forums (24) around the world, all with clickable links.

If you are aware of any other links that should be included in these categories, please don't hesitate to send the information to me at <iodonata@gmail.com> 

Obsessed With Odonata: Remembering Gary Suttle

Tyler Suttle <pantala@cox.net>

It was in 2006, at Dixon Lake in Escondido, California that Gary Suttle's extraordinary passion for odonates was born. His longtime naturalist friend David Rawlins handed over a pair of close-focusing Papilio binoculars, and Gary peered through them at a single, nonchalantly perched Black-fronted Forktail (*Ischnura denticollis*). "He looked up at me with dazed, glassy eyes", Rawlins recounts.

From that auspicious day at Dixon Lake until the very end of his life, Gary pursued odonates with a mirthful zeal that left a memorable impression on anyone who crossed his path. To the occasional good-natured vexation of his wife Paula, "chasing dragons", as she termed it, seemed to become the axis around which Gary's life turned. For example, he would refer to the weather conditions of the day by the acronyms GOD, BOD, or MOD—a good, bad, or moderate ode day.

At the mere mention of an ode, or the slightest glimpse of one whizzing through the air, Gary would nearly leap off the ground in his sudden alertness, eyes wide with enthused curiosity. He set out to find every possible species in San Diego County, and after that, his pursuit grew to statewide proportions. Having obtained his B.A. and M.A. in Geography, it came easily to Gary to study maps as a way of locating new water bodies and streams to explore. He became adept at locating far-flung, uncommon species occurrences.

However, Gary was not one to buzz from place to place simply to check off the boxes on his life list, and neither was he motivated by any desire to make a name for himself. His love of odonates was a facet of a vast appreciation and reverence for the mysteries, miracles, and life-giving forces of wild nature. He was fascinated by the enduring ancientness of odonates, their startling beauty, their unrivaled adeptness in flight, the marvel of their transformation from aquatic to airborne, and the fact that so much remains to be known about their life histories and distributions.



Gary Suttle poised to net migrating odes, Big Pine Creek area, Inyo County, California, November 2014.

By fastidiously maintaining field notes and records of his species observations, Gary endeavored to contribute to our collective knowledge and understanding. This resulted in at least 17 new California distribution records, according to Kathy Biggs, and various insightful observations regarding odonate behavior. Yet most of Gary's hours in the field were spent locally in San Diego County, in multi-year field studies at specific locations that he would survey frequently, such as Lake Poway, Dos Picos Pond, Escondido Creek, and Penasquitos Lagoon. At the height of the season, he would literally make a daily visit to each pond and stream he was studying.

Unfortunately, Gary was not able to complete or publish many of his field studies by the time of his premature death. Another of his goals, which he partially accomplished, was to provide carefully prepared packets of information and photos to local park rangers and interpretive societies regarding the specific odonate species extant in their jurisdiction, in hopes of increasing awareness and appreciation of these species. Gary was always brimming with eagerness to answer questions about odonates and to explain their virtues to any passing stranger who grew curious.


As a conservation activist who worked throughout his life to protect native habitats in San Diego County, Gary was naturally concerned about the perils faced by odonates, such as water pollution, water diversions, and indiscriminate clearance of vegetation from irrigation canals. He bore a great respect for the insects and, not wishing to cause them undue stress, would only net dragonflies when it was required for identification purposes. He also disagreed with the practice of killing and collecting live individuals for private collections or vouchers, feeling that detailed photos with location data provided an adequate alternative for establishing species presence.

Though not inclined to declare favorites, Gary bore a special fondness for the gargantuan Giant Darner (*Anax walsinghami*) and the locally uncommon Roseate Skimmer (*Orthemis ferruginea*). I recall that for an entire month, he would venture daily to a nearby stretch of creek just to check on a lone, aging male Roseate Skimmer whose wings grew increasingly tattered each day. Gary was also particularly enchanted by the Brimstone Clubtail (*Stylurus intricatus*), which he would frequently drive out to search for along irrigation canals in Imperial County even in blast-furnace triple-digit temperatures.

For most of his life, Gary had been possessed by an ardent interest in wild plants, birds, and butterflies, and perhaps most of all, climbing mountains. "Life is motion!" he would exclaim. In 1994, he authored "California County Summits", a popular guidebook to climbing the highest peak in each of California's 58 counties. On any typical day, he could be

found summiting a local highpoint. But that changed in 2007, when Gary was blindsided with the diagnosis of a rare and lethal cancer of the bile duct.

As the cancer took its toll on his ability to climb mountains, Gary's verve for odonates turned out to be a perfect commensurate passion, which would carry him far and wide into nature's splendor in a similar way that highpointing once had. The search for highpoints was reversed, becoming instead a search for lowpoints—declivities where fresh water, seasonal or perennial, might be found along with the nymph and adult odonates whose lives are inextricably tied to it. Aquatic habitats of all kinds proved highly accessible from roadways, and even in his weakest final months, Gary was able to revel in the joys of "chasing dragons".

On 14 March 2015, Gary passed away at his home in Poway, California; he was 69 years old. He leaves behind his wife, sister, and two adult children, as well as many dear friends and fellow naturalists. His inimitable enthusiasm, striking thoughtfulness, reverence for wild nature, and generosity of spirit lives on in the memories of those who knew him. And thanks to Gary, I can attest that there are many more of us who open our eyes with wonder and curiosity when a dragonfly passes us by. 



Gary Suttle with darner in hand, San Luis Rey River, San Diego County, California.

Drop in the Halloween Pennant (*Celithemis eponina*) Population at a Specific Illinois Site

Joseph L. Roti Roti, Ph.D., Washington University, St. Louis, Missouri <jlrotiroti@gmail.com> and Patricia L Roti Roti

Recently, Sue and John Gregoire reported a nosedive in the emergence of Calico Pennants (*Celithemis elisa*; Gregoire and Gregoire, 2015) at their study site in New York. We report a similar observation for Halloween Pennants (*C. eponina*) at our study site in Illinois. In our study, adult dragonflies and selected damselflies are counted according to a Pollard walk method, as described by Corbet and Brooks (2008) and modified by us. Essentially the flight season, defined as observing at least one Halloween Pennant per day, dropped from 13–14 weeks in 2011–2013 to three weeks in 2014. The peak daily average showed a 6–10 fold drop in 2014 compared with 2011–2013. We do not currently have an explanation for this drop in the Halloween Pennant population.

This report is part of an ongoing study which began in 2010. The original goal was to monitor changes in the dragonfly populations in an exurban setting using a site that was targeted for residential development. However, after four years the site has been re-targeted to the restoration of native prairie with some native woodland. Our plan is to submit a full report on the first five years of the study in 2016, which will mark the transition from studying the impact of residential development to that of native habitat restoration. However, both the unexpected change in the population of Halloween Pennants in 2014 and the similarity of our observation to that reported by Gregoire and Gregoire (2015) have prompted us to submit a brief report on the population changes we observed. A complete site description, methods, rationale, species observed, and variations will be submitted after the completion of the fifth year.

The site is in Madison County, Illinois (38° 40' 38" N, 89° 37' 44" W). The original property comprised 8–10 acres in an under-developed subdivision. The undeveloped lots were being farmed. The study site consists of approximately 800 feet of frontage on a 9 acre lake to the northwest of the lot. There is a wetland on the northeast corner of the lot. Along the east edge is a wood line bordering both sides of a creek, which is dry about 4–8 weeks of the year. The area around the creek is partially flooded after heavy or extended rains. A part of the site is wooded and part is prairie. More than 20 species of dragonflies have been observed on the site, of which 13–14 species have displayed breeding behavior.

Dragonfly populations are monitored along a ¼ mile route, which includes 800 ft. of lake shore. In general, these counts

are made three days per week, but the actual number of counts per week is variable, ranging from 1–5 depending on availability and weather. We pool the weekly counts and obtain a daily average for that week.

The count data for Halloween Pennants in 2011–2014 are shown in Figure 1. Note that the count averages are binned into increasingly broad ranges as the counts increase. This step allows for visualization of changes in populations with both low and high numbers of individuals. It also provides a data smoothing function. The drop in the 2014 Halloween Pennant population can be readily seen by a number of criteria. First, the flight season began in June and ended in September in 2011–2013. In 2014, however, the flight season began in July and ended in August. Second, the flight season was at least six weeks shorter in 2014 than in any of the three previous years. In 2011–2013 there were 13–14 weeks averaging one or more Halloween Pennants per day, and 4–5 weeks averaging more than 20 per day. In 2014 there were two weeks averaging 1–4 Halloween Pennants per day and one week averaging five per day, which was the maximum daily average for 2014. In contrast, the peak daily average for 2011 was 27 per day; for 2012, it was 29 per day; and for 2013, it was 54 per day (Figure 2). Thus, the third criterion is the drop in maximum daily average in 2014 compared with 2011–2013.

In addition, there was a significant drop in breeding activity in 2014. In 2011–2013 Halloween Pennant breeding activity was observed frequently, but no breeding activity was observed in 2014. Thus, 2014 demonstrated overall signifi-

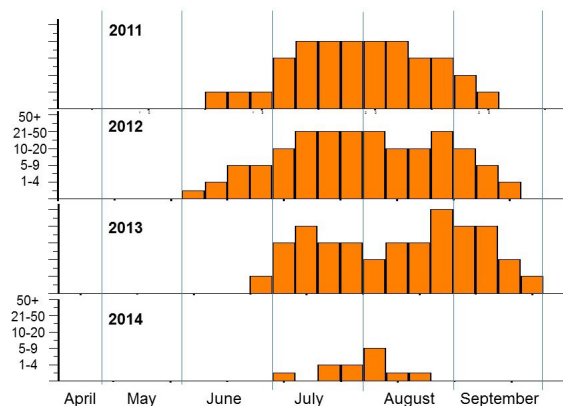


Figure 1. Flight seasons and counts of Halloween Pennants (*Celithemis eponina*) in 2011–2014.

cant decreases in flight period duration, numbers of individuals counted, and observed breeding activity. There was a two-fold drop in flight duration and a 5-10 fold drop in the numbers observed in 2014 relative to 2011-2013.

A reasonable first step in explaining the drop in the Halloween Pennant population is to ask if a similar decrease was observed in any other dragonfly species. The Halloween Pennant population was the only breeding population to show such a dramatic drop. The Calico Pennant population had been declining steadily, and Calico Pennants were rare at the site in both 2013 and 2014 (data not shown). All other breeding populations remained constant or increased in 2014 relative to 2011-2013, even though the flight season was slightly shorter in 2014. To illustrate this, Table 1 shows phenograms for Widow Skimmer (*Libellula luctuosa*), Black Saddlebags (*Tramea lacerata*), and Prince Baskettail (*Epithecus princeps*) in comparison with Halloween Pennant. Widow Skimmers had a shorter flight season in 2014 compared with 2011-2013, but the number of Widow Skimmers counted increased. The maximum daily average in 2014 was 89 per day compared with 66 per day in 2011, 50 per day in 2012, and 63 per day in 2013. In 2014 there were eight weeks in which more than 50 Widow Skimmers per day were counted, which was more than in any previous year (with five weeks in 2013, one week in 2012, and two weeks in 2011 of more than 50 Widow Skimmers per day). By these criteria the Widow Skimmer population increased in 2014 compared with the three previous years. Populations of Black Saddlebags and Prince Baskettail showed relatively little change (Table 1).

Another way to illustrate the drop in the Halloween Pennant population is to look at its size relative to other dragonflies. In 2011-2013 Halloween Pennants were the third-largest dragonfly population on the site, with only Widow Skimmers and Eastern Amberwings (*Perithemis tenera*) seen more frequently. In 2014, the Halloween Pennant population dropped to the eighth-largest at the site. Thus, the dramatic drop in the 2014 Halloween Pennant population was not seen for any other dragonfly species at the site.

In summary, 2014 showed a dramatic drop in the Halloween Pennant population which remains unexplained. Simple environmental changes would be expected to affect other dragonfly species; however, they show no similar population changes, although an environmental change that selectively degrades Pennants cannot be ruled out. Also, the observation reported by Sue and John Gregoire (Gregorie and Gregorie, 2015) for Calico Pennants is similar to our observation of Halloween Pennants in 2014. It remains to be seen if 2015 will show a similar drop in the numbers of any other dragonfly species or if the Halloween Pennant population will rebound.

References




Gregoire, S. and Gregoire, J. *Celithemis elisa* (Calico Pennant) emergence nosedives in 2014. 2015. ARGIA 27(1): 26.
 Corbet, P. and S. Brooks. 2008. Dragonflies. The New Naturalist Library, HarperCollins, London. P. 283. 

Table 1. Phenogram of four representative dragonfly species, 2011-2014. Note that all demonstrated on-site breeding activity, but not necessarily every week.

| Dragonflies | Wk 1/day | Max Ave | April | | | | May | | | | June | | | | July | | | | August | | | | September | | | | October | | | | |
|-------------------------------|----------|---------|-------|---|---|---|-----|----|----|----|------|----|----|----|------|----|----|----|--------|----|----|----|-----------|----|----|----|---------|----|---|---|--|
| | | | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | |
| Halloween Pennant 2011 | 13 | 27/ day | | | | | | | | | | II | II | II | X | XX | XX | XX | XX | XX | XX | X | X | V | II | | | | | | |
| Halloween Pennant 2012 | 14 | 29/ day | | | | | | | | | I | II | V | V | X | XX | XX | XX | XX | X | X | XX | X | V | II | | | | | | |
| Halloween Pennant 2013 | 13 | 54/ day | | | | | | | | | | | | | II | X | XX | X | X | V | X | L | XX | XX | XX | V | II | | | | |
| Halloween Pennant 2014 | 3 | 5/ day | | | | | | | | | | | | | I | II | II | II | V | I | I | | | | | | | | | | |
| Widow Skimmer 2011 | 16 | 66/ day | | | | | | | | | XX | XX | XX | XX | XX | XX | L | XX | L | XX | XX | XX | XX | X | II | I | I | II | | | |
| Widow Skimmer 2012 | 20 | 50/ day | | | | | I | II | II | X | V | X | X | X | XX | XX | XX | XX | L | X | XX | XX | XX | X | X | II | V | | | | |
| Widow Skimmer 2013 | 18 | 63/ day | | | | | | | | | II | X | XX | L | XX | XX | XX | XX | XX | XX | L | L | L | L | XX | XX | V | V | | | |
| Widow Skimmer 2014 | 14 | 89/ day | | | | | I | II | II | XX | XX | L | XX | L | L | L | L | L | L | L | L | L | L | XX | V | X | | | | | |
| Black Saddlebags 2011 | 13 | 6/ day | | | | | I | II | II | V | V | V | I | II | II | II | II | II | I | II | II | II | II | I | I | I | I | | | | |
| Black Saddlebags 2012 | 16 | 7/ day | | | | | I | I | II | II | II | II | V | II | II | II | II | II | V | V | V | V | II | II | II | | | | | | |
| Black Saddlebags 2013 | 12 | 10/ day | | | | | | | | X | V | X | II | II | II | II | II | II | II | II | II | II | II | I | I | I | | | | | |
| Black Saddlebags 2014 | 10 | 6/ day | | | | | I | II | I | I | I | II | II | II | V | II | I | II | II | II | II | II | V | I | II | I | | | | | |
| Prince Baskettail 2011 | 8 | 2/ day | | | | | | | | I | II | II | II | II | II | II | II | II | I | I | I | I | | | | | | | | | |
| Prince Baskettail 2012 | 9 | 4/ day | | | | | I | II | II | II | II | II | II | II | II | II | II | II | II | I | | | | | | | | | | | |
| Prince Baskettail 2013 | 9 | 3/ day | | | | | | | | | II | II | II | II | II | II | II | II | II | II | I | I | I | I | I | I | | | | | |
| Prince Baskettail 2014 | 10 | 5/ day | | | | | | | | | I | II | I | I | II | V | V | V | II | II | II | II | II | | | | | | | | |

I = 1 to 4/ week II = 1 to 4/ day V = 5 to 9/ day X = 10 to 20/ day XX = 21 to 50/ day L = 51- 80/ day LX =>80/ day
 excludes days of inclement weather  presence of breeding dragonflies
 absence during established flight season

Anax junius (Common Green Darner) in Fishless Waters—Really?

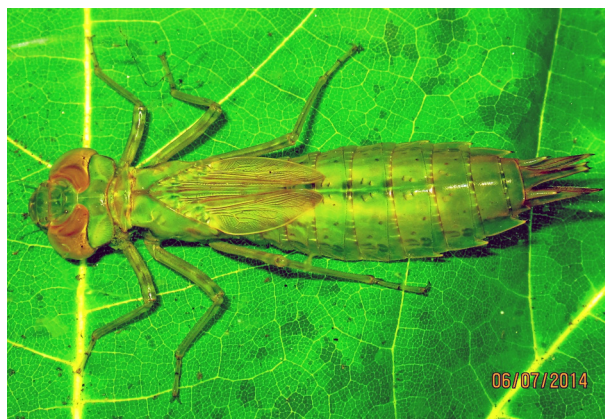
Raymond Hutchinson <raymond.hutchinson@sympatico.ca> and Benoît Ménard <menardben@videotron.ca>

As amateur odonatists, we have both been collecting and observing larval and exuvial forms of Odonata for over 25 years in the province of Quebec, Canada. We have thus built a collection of thousands of larval and exuvial specimens, accumulated in our respective homes. A basic collection of about 6000 of our specimens, representing about 80 species, is deposited in the Canadian National Collection of Canada (CNC), located in Ottawa, in AgricultureCanada's Neatby building on Carling street. In this collection there are also a number of specimens determined to genera where identification to species is forthcoming.

During the summer of 2012, we collected larval and exuvial specimens of *Anax junius* (Common Green Darner) at different locations in the Ottawa region, on the Quebec side of the Ottawa River. The main interest of these collectings arises from the fact that every specimen was collected in waters where fish are found in abundant numbers in many instances. These records can form a base of discussion in view of the fact that *Anax junius* larvae are recorded from mainly fishless waters, according to some elements of the odonatological literature (Corbet, 1999; Dunkle, 2000). We also mention sites where only adults of *A. junius* were seen, but the presence of fish is suspected.

During the summer of 2012, we collected a small number of larvae and exuviae of *A. junius* in waters where fish are present. Four locations or sites are mentioned below, where larval, exuvial, and adult specimens of the above-mentioned aeshnid have been netted or observed.

Beauchamp Lake Park (Parc municipal du lac Beauchamp), in the city of Gatineau is an extensive area with a small lake and a couple of swamps and marshes. The lake is fed by underground sources which somehow have a link to the



Larva of Common Green Darner (*Anax junius*).



Benoît Ménard picking *Anax junius* larvae from his net.

majestic Ottawa River nearby. The site is an abandoned mine, whose activities stopped at the end of the 1960s. For a short period, the site became a municipal dump, then finally was restored and transformed into a municipal park and a refuge for wildlife, with trails for walking and cycling. The lake was present at each of these stages of use. On 12 May 2012, two patrolling males of *Anax junius* were captured during the early afternoon. No larvae or exuviae were observed at this date. On 18 August, three mature *A. junius* larvae were collected by BM and brought into his home; a few days later, they emerged as adults—two males and one female. A couple of young immature *A. junius* larvae were collected in the submerged aquatic vegetation of the lakeshore. Many species of fish are found in Lake Beauchamp, namely perch and crappies, as attested by anglers catching fish during our visits at the lake. Furthermore, while trying to net Odonata larvae, small unidentified fish appear in our nets and are released. According to the park authorities, 4000 young brown trout were released in the lake recently.

In the city of Gatineau at Leamy Municipal Park, we have visited a marshy extension of the Ottawa River, with very abundant plant and insect life, and fish present in these waters. The site is a very busy area with heavy traffic on the bridge overpass. On 21 May 2012, many male *A. junius* were seen patrolling, of which four were captured. One observation of an egg-laying attempt on a plant (successful or not?) was seen. Many other males in flight were not captured and continued flying for the duration of our field trip along this extension, which was about 1 km in length. No larvae or exuviae were collected at this site.

Plaisance National Park, on the shore of the Ottawa River, is approximately 40 miles east of the city of Gatineau. A section of this park has an important stretch of heavily vegetated shoreline, with a boardwalk extending towards the middle of the river. On 16 August 2012, we collected a total

of 15 exuviae by searching on each side of the boardwalk. They were retrieved by carefully detaching each specimen, which were mainly from the stems of aquatic plants at different heights, though one or two rested on leaves. Many species of fish are known to be in the Ottawa River, from small species to the mighty musky. Crappy and perch in particular populate this part of the mighty river.

At Plaisance National Park, we briefly visited a *Lestes* (spreadwing) pond, where a couple of young larvae of *A. junius* were also captured. This is another site where small fish are sometimes found in our nets.


This is an ongoing research on our part. Upon request, we can repeat these observations and collectings and perhaps

even dissect the stomach of fish from these habitats to further ascertain that *Anax* larvae can be found in waters replete with fish. We are willing to send photographs of sites and specimens upon request.

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Wing Drooping in Red Saddlebags (*Tamea onusta*)

James S. Walker, Anacortes, Washington <jswphys@aol.com>

In a recent article (Walker, 2015), I discussed the behavior I refer to as wing whacking. This type of wing-related behavior was in addition to previously described wing behaviors such as wing grabbing (Walker, 2013a), sky diving (Walker, 2013b), and spin-drying (Walker, 2011; 2014).

When I wrote the wing whacking article, I didn't expect to be reporting on a different modality of wing behavior any-time soon—but I was wrong. In the last couple months I've encountered another type of wing use in which a dragonfly depresses, or "droops", its hindwings. The details of "wing drooping" and its associated behaviors, are the subject of this article.

The Wing Droop

This dragonfly season has been notable in a number of significant ways. For one, our backyard pond in Mesa, Arizona has played host to two new species this year. Starting in March, we began to see Red Saddlebags (*Tamea onusta*) and Red-tailed Pennants (*Brachymesia furcata*) at our pond. These new species were in addition to our usual early-season residents, which include Mexican Amberwings (*Perithemis intensa*), Familiar Bluets (*Enallagma civile*), and Rambur's Forktails (*Ischnura ramburii*).

The Red Saddlebags were of particular interest because they were actively laying eggs, giving many opportunities to observe the detach-and-reattach procedure that is typical of saddlebags. I was able to obtain several slow-motion videos of their egg-laying behavior, some of which can be viewed on YouTube at the links given at the end of this article. One video shows a nice example of the typical egg-laying

process, while another shows a pair separating so the female can lay eggs, only for her to be intercepted by a second male trying to make off with her as his own mate.

I also obtained videos showing pairs of Red Saddlebags gliding serenely in tandem between egg-laying events. It was in one of these videos that I first observed wing drooping—the second significant development of this dragonfly season. Once I noticed the drooping, I found that it was happening in virtually all of my videos. In fact, wing drooping had also occurred, though unnoticed at the time, in videos I took of Black Saddlebags (*Tamea lacerata*) years ago.

It's funny how a new behavior, once properly identified, turns out to have been present and visible all along. As Sherlock Holmes said in *The Hound of the Baskervilles*, "The world is full of obvious things, which nobody by any chance ever observes." In fact, it turned out that wing drooping was also occurring in still photos I've taken of perched Red Saddlebags. I'll begin by describing wing drooping in a perched individual, because it's easier to see the "droop" in that case.

In Figure 1, we see a male Red Saddlebags perched in its normal fashion, near the tip of a twig. Notice that the plane of the hindwings is more or less parallel to the long axis of the abdomen. In Figure 2, we see the same individual doing a quick wing droop. In this case, the hindwings are depressed downward below the abdomen, which shows off the saddle patches to good effect. A moment later the hindwings were returned to their normal position. The droop and return to normal position is usually completed in a fraction of a second, and can be hard to see in real time—unless you're looking for it.

Drooping the hindwings like this seems to serve at least a couple of different purposes for the dragonfly. These uses are explored below.

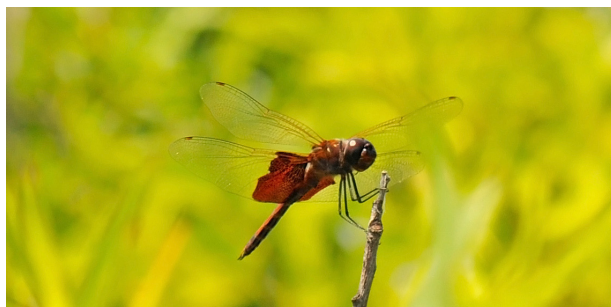
Wing Drooping to Brake

As mentioned earlier, I first noticed wing drooping in a slow-motion video of a pair of Red Saddlebags gliding in tandem. They were progressing smoothly, slowly gaining altitude in a slight headwind. Then, suddenly, the male drooped his hindwings, effectively deploying his “air brakes”. The pair immediately slowed almost to a stop, and descended 10–15 centimeters. The male then returned his hindwings to their “upright and locked position”, and the pair continued flying at a lower altitude.

I decided to digitize the frames of the video over the time span of the wing drooping. In all, I digitized 120 frames, shot at 240 frames per second, for a total real-time span of 0.5 s. For each frame I recorded the horizontal and vertical positions of the dragonflies relative to a nearby fixed object. Figure 3 shows the results, where for clarity I have plotted data points for every fifth frame. Thus, the elapsed time between successive points in Figure 3 is about 0.02 seconds.

The onset of wing drooping and loss of altitude is clear in Figure 3. The descent lasts for only about 0.2 s, and hence the whole process is over in the blink of an eye. Once you know what to look for, however, it can be seen. The flash of the “saddles” at the start of the descent is particularly easy to spot. It would be much harder to study this behavior if the saddle patches were not present; perhaps other families of dragonflies are drooping their wings to air brake while in tandem also, but just haven’t been noticed yet because their wings are clear.

It’s not surprising that wing drooping can be used for braking. This is quite evident from Figure 2, where the Red Saddlebags looks just like an airplane with its flaps lowered. It turns out, however, that there is at least one other use for wing drooping, which we consider next.



Wing Drooping to Signal

After noticing the wing droop in the gliding videos, I looked more carefully at the videos showing the “detach and-re-attach” egg-laying process. It turned out the male was wing drooping there as well.

In a typical egg-laying video, a pair hovers over a spot for several seconds, perhaps half a minute or more, before finally deciding to lay eggs at that location. Careful inspection of the slow-motion videos shows that the male quickly droops his hindwings just before releasing the female. She then detaches, and the male returns his hindwings to their normal position. The female descends, dips her abdomen into the water, and rises as the male reattaches.

So far, in all the cases I’ve seen in my videos, the release of the female is immediately preceded by a brief wing droop. Is the droop a visual signal to the female? After all, with such large wing patches the droop is a distinctly visible action. Does it indicate that the male intends to detach? Alternatively, could the wing droop simply be a side effect of the action necessary for the male to release his grip on the female? Further study should clarify the matter, but at first glance it appears the male is sending a signal to the female.

Using wing patches as a signaling device is nothing new, of course. Such behavior is well known in species like the River Jewelwing (*Calopteryx aequabilis*), for example, where various types of fluttering wing movements are used by the male to show off its wing patches for the benefit of the female (Paulson, 2009). In the case of the Red Saddlebags the display is very brief, and much harder to see and recognize—at least it’s harder to see with the human eye.

Conclusions

Analysis of slow-motion video shows that wing drooping is a stereotypical motion in which a dragonfly depresses its hindwings. The drooping can have the effect of an air brake, slowing the dragonfly and decreasing its altitude. It appears

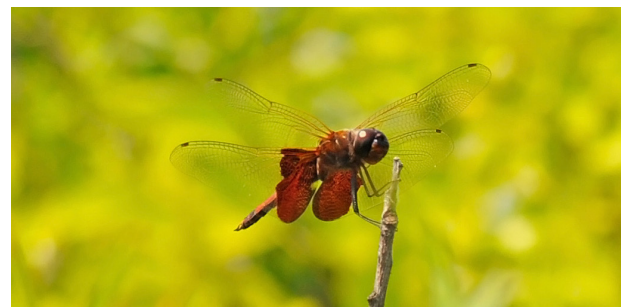


Figure 1 (left). A male Red Saddlebags (*Tamea onusta*) perched normally. Figure 2 (right). The same individual “drooping” its hindwings.

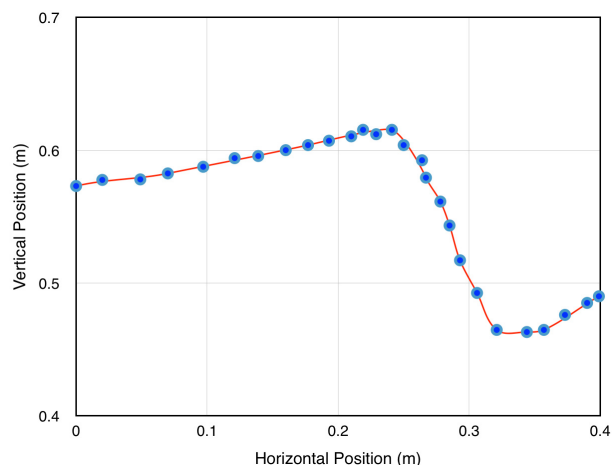


Figure 3. Position of a pair of Red Saddlebags (*Tramea onusta*) during the process of wing drooping.

that the drooping can also serve as a signal between the male and female, especially in species with prominent wing patches, as in the case of saddlebags. Perched individuals also exhibit wing drooping, and in such cases the possibility of a signal to nearby rivals must be entertained.

Acknowledgements

I would like to thank Betsy Walker and Dennis Paulson for helpful discussions and comments.

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Online Material

The original, unedited version of this article can be found at <<http://thedragonflywhisperer.blogspot.com/2015/06/wing-drooping-in-red-saddlebags.html>>

Red Saddlebags gliding in tandem, and then putting on the air brakes: <<https://www.youtube.com/watch?v=O8wygieVYrc>>

Another air brake video: <<https://www.youtube.com/watch?v=tNQpLQNKVrA>>

Normal egg laying in Red Saddlebags: <<https://www.youtube.com/watch?v=CSvPZzgNCbU>>

A second male Red Saddlebags attempts to intercept a female: <<https://www.youtube.com/watch?v=AS6sWAbzRC0>>



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Collecting the Tiny Larvae of *Nannothemis bella* (Uhler) (Odonata: Libellulidae), Elfin Skimmer, in the Province of Quebec, Canada

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On 15 May 2015 in the early afternoon, we drove from our respective homes in Gatineau to Ste-Cécile-de-Masham. We then proceeded in a northerly direction towards Jean-Venne Lake, situated a few kilometers north of this village. We arrived at a fen, very close to the lake, and searched immediately for minuscule bodies of water from two to three inches deep bordering a good-sized pond. The vegetation of these microhabitats comprised strands of sphagnum, *Carex* sedge, and some grasses. We used a net specially made for our dragonfly collecting by BM (see photo). This enabled us to scour the water surface and collect small amounts of muck and loose vegetal matter in different states of decomposition. In one hour, we (mostly BM) were able to fetch a dozen larvae clinging to the floating material. The larvae were motionless, but a greenish tinge of the abdomen enabled us to spot and collect them.

We had collected a number of *Nannothemis* larvae in only one of these micro-habitats 27 years ago, on 14 May 1988. Our technique was completely different. We had to extract and uproot masses of vegetal material, including strands of sphagnum, and search carefully for these motionless and diminutive larvae well-concealed in the vegetation in our hands (Hutchinson, 1990; Ménard, 1996). BM collected larvae and exuviae in the same spot from 17–19 June 1988. Finally, in June 1995, we both renewed our search with



Nannothemis bella (Elfin Skimmer) larva, collected in 2015.



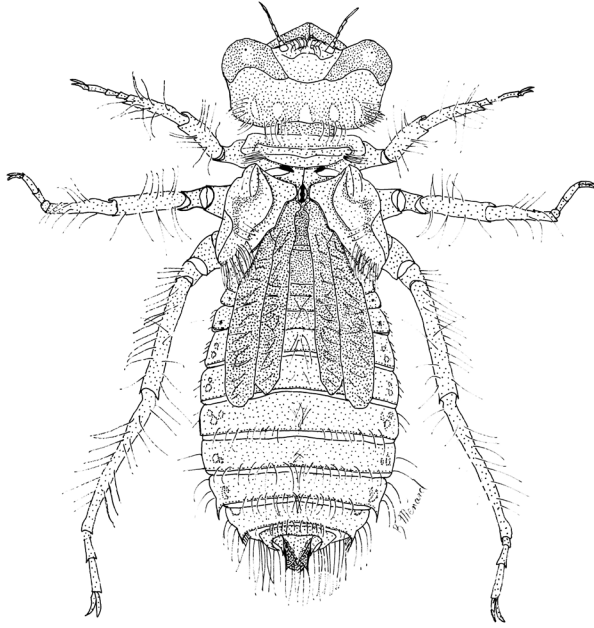
Nannothemis bella (Elfin Skimmer) habitat.

Nannothemis exuviae at Gingras Lake, which is almost adjacent to our favorite fen for collecting *Nannothemis* nymphs and larval exuviae.

It is noteworthy to point out that we have visited our *Nannothemis* habitat on other occasions without seeing or collecting these tiny larvae. However, our observations of adults flitting about in very low vegetation testify that a healthy population of this libellulid species has been present in this fen and nearby for probably a very long time. We have been enthusiastic students of dragonfly larvae for a long time and are particularly happy to observe and collect what is the smallest odonata nymph in the province of Quebec and in North America. Finally, it is interesting to link our findings to the discovery of these larvae by Needham et al. (2000) and Weith and Needham (1901).




BM's handmade aquatic nets for collecting odonate larvae.



Drawing of *Nannothemis* by Benoît Ménard, from a larva collected in 1988 and published in Hutchinson (1990).

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Odonata in the News

Odonata in the News is compiled by the Editor. Please feel free to send me alerts about any noteworthy odonate-related items including news stories, popular articles, and scientific publications at <celeste@xerces.org>. A sampling of the most recent newsworthy Odonata includes:

Haber W.A., D.L. Wagner, and C. de la Rosa. 2015. A new species of *Erythrodiplax* breeding in bromeliads in Costa Rica (Odonata: Libellulidae). *Zootaxa* 3947: 386–396. The authors describe a new species, *Erythrodiplax laselva*, first collected in 1996 at La Selva Biological Station in Costa Rica. In 2012, a female of the species was collected at the same site, with the adult emerging from a final-instar nymph clinging to the leaf of a bromeliad. *E. laselva* nymphs have been found in two bromeliads, *Aechmea mariaae-reginae* and *Weraubia gladioliflora*, and in the water-storing epiphyte *Cochlostema odoratissimum*. *E. laselva* thus joins *E. bromeliicola* of Cuba and Jamaica as the only dragonfly species known to breed in bromeliads. Detailed descriptions of male, female, and nymph are given, along with a key to adults of the *Erythrodiplax castanea* group (comprising *E. laselva*, *E. amazonica melanica*, *E. castanea*, and *E. amazonica amazonica*).

Torres-Cambas Y., A.D. Trapero-Quintana, M.O. Lorenzo-Carballa, D. Newell, C. Suriel, and A. Cordero-Rivera. 2015. An update on the distribution of threatened odonate species from the Greater Antilles.

International Journal of Odonatology 18(2): 89–104. The Antilles, which extend from south of Florida and east of the Yucatan Peninsula to the north and west of Venezuela, are a priority for neotropical odonate conservation, with a high number of endemic species in a small area experiencing strong anthropogenic pressures. The Greater Antilles (Cuba, Puerto Rico, Jamaica, and Hispaniola) have the highest diversity of freshwater habitats and the greatest odonate species richness, with 98 of the 111 species known from the Antilles on one or more of these islands, including 75% of the endemic species known from the area. Almost all the odonate species classified by the IUCN (International Union for the Conservation of Nature) as endangered (EN), vulnerable (VU), or data deficient (DD) are restricted to Cuba, Hispaniola, and Jamaica. DD species are presumed to be at risk, but there is insufficient data on their distribution and status to make a determination. This paper updates the status of DD species using results of field surveys and a collection of all related published and unpublished data, and makes recommendations for IUCN status of each.

Furness A.N and D.A. Soluk. 2015. The potential of diversion structures to reduce roadway mortality of the endangered Hine's Emerald (*Somatochlora hineana*). *Journal of Insect Conservation* 19(3): 449–455. For endangered species with small isolated populations and low reproductive rates, roadway-induced mortality near

wetland habitat can have a substantial impact on populations. Roads cause mortality through vehicle strikes and can act as barriers to dispersal. Lower speed limits have been used to protect Hine's Emerald in Door County, Wisconsin, where an estimated 3300 *S. hineana* adults were killed on roads in a single year. Because this species tends to fly low when crossing roads, structures that divert them or increase their flight height to take them out of the path of vehicles may be effective mitigation. Simulated roadways were created in a Door County meadow that has large numbers of adult *S. hineana*, and nets were erected at different heights along both sides of the simulated roadways. Nets were a deterrent to road crossing in *S. hineana* and also caused them to significantly increase their flight height over the simulated roads. These results suggest that simple diversion structures may be an effective way to reduce roadkill impacts on Hine's Emerald.

Chovanec A., M. Schindler, J. Waringer and R. Wimmer. 2015. The Dragonfly Association Index (Insecta: Odonata)—a Tool for the Type-Specific Assessment of Lowland Rivers. *River Research and Applications* 31(5): 627–638. Dragonflies are being used more often as tools for assessing aquatic habitats. This study worked to develop a dragonfly-based method to assess the status of lowland rivers in Austria. Species traits of 57 odonate species were examined for their associations with different river habitat parameters. The analysis revealed seven species clusters associated with different habitat needs: open waters, sparsely vegetated banks, riparian trees, reeds and submerged macrophytes, temporary waters, rhithron (steep torrential upper course of a river), and potamon (flat slow-flowing lower course). The index was tested in the field and found to be a sensitive tool for assessing the ecological status of lowland rivers.

Cuevas-Yáñez K., M. Rivas, J. Muñoz and A. Córdoba-Aguilar. 2015. Conservation status assessment of *Paraphlebia* damselflies in Mexico. *Insect Conservation and Diversity* DOI: 10.1111/icad.12132. The conservation status of the three Mexican *Paraphlebia* damselflies (*P. hyalina*, *P. quinta*, and *P. zoe*) was assessed based on International Union for Conservation of Nature (IUCN) Red List criteria. Currently, the Red List indicates that *P. hyalina* has not been evaluated, *P. quinta* is of least concern, and *P. zoe* is vulnerable. Geographical records were collected via the literature, inquiries to specialists, and field visits, and future potential species range area was projected based on predicted climatic changes. Extent of Occurrence (EOO) areas for *P. quinta* and *P. zoe* (there were insufficient records for *P. hyalina*) were predicted as 18,860 and 16,440 km², respectively; about 50% of their distribution is in agricultural, pasture, or urban sites. Based on their modeling results, the authors suggest IUCN conser-

vation status of these species should be changed, with *P. quinta* and *P. zoe* as endangered and *P. hyalina* as data-deficient, based on reduced EOO and loss of historic habitat. Preserving areas that provide shade, high humidity, and perching sites is key for *Paraphlebia* survival.


Śniegula S., M.J. Gołab, and F. Johansson. 2015. Time constraint effects on phenology and life history synchrony in a damselfly along a latitudinal gradient. *Oikos*. DOI: 10.1111/oik.02265. Synchronizing life history events is important in organisms living in seasonal environments, especially at northern latitudes. The authors examined hatching and emergence timing and synchrony in the univoltine damselfly *Lestes sponsa* along a latitudinal gradient covering its north-south range in Europe. Populations from different latitudes were reared in separate climate chambers simulating the temperature and photoperiod of their sites of origin. Northern populations had early and high synchronous hatching and emergence, central populations intermediate, and southern populations late and low synchronous hatching and emergence. Results indicate strong selection for timing and synchronization of life history events at northern latitudes, caused by time constraints on development. The authors stress the importance of natural conditions in life history experiments.

Worthen, W.B. and H.J. Horacek. 2015. The distribution of dragonfly larvae in a South Carolina stream: relationships with sediment type, body size, and the presence of other larvae. *Journal of Insect Science*. DOI: <http://dx.doi.org/10.1093/jisesa/iev013>. Dragonfly nymphs were sampled in Little Creek in Greenville, South Carolina, and the distributions of five common species were described relative to sediment type, body size, and the presence of other nymphs. Species were distributed across sediment types: Common Sanddragon (*Progomphus obscurus*) was common in sand; Twin-spotted Spiketail (*Cordulegaster maculata*) preferred sand-cobble; Maine Snaketail (*Ophiogomphus mainensis*) preferred cobble and coarse sediments; Fawn Darner (*Boyeria vinosa*) preferred coarse sediments; and Eastern Least Clubtails (*Stylogomphus albistylus*) preferred coarse and rock sediments. *P. obscurus* and *C. maculata* co-occurred more often than expected by chance, as did *O. mainensis*, *B. vinosa*, and *S. albistylus*. Species preferences contributed to differences in mean size across sediment types. There were significant negative associations among larval size classes: small larvae (<12 mm) occurred less frequently with large larvae (>15 mm) than expected by chance, and large larvae were found alone in sampling quadrats more frequently than other size classes. Species may select habitats at a large scale based on sediment type and their functional morphology, but small-scale distributions are consistent with competitive displacement or intraguild predation.

Tiple A.D. and P. Koparde. 2015. Odonata of Maharashtra, India with notes on species distribution. *Journal of Insect Science* 15 (1–10) DOI: <http://dx.doi.org/10.1093/jisesa/iev028>. Tropical areas have high odonate diversity, but baseline data on spatial distribution of species is lacking. Maharashtra is the third-largest state of India, covers six biogeographic zones, and has a variety of land uses. Surveys in Maharashtra from 2006–2014 plus additional extant records resulted in a checklist of 134 Odonata species (an increase of 35 species from a previous checklist), representing 70 genera in 11 families. The highest numbers of species were recorded in the Libellulidae (48) and Gomphidae (22). The difficulty of systematic sampling and the complexity of understanding species status when surveys have been incomplete or sporadic is discussed.

Swegers J., J. Mergeay, A. St-Martin, G. De Knijf, M.H.D. Larmuseau, and R. Stoks. 2015. Genetic signature of the colonisation dynamics along a coastal expansion front in the damselfly *Coenagrion scitulum*. *Ecological Entomology* DOI: [10.1111/een.12189](https://doi.org/10.1111/een.12189). Many insects are expanding their ranges northwards as a result of climate change. This has been associated with founder effects, leading to a reduction in genetic diversity and an increase in genetic differentiation. The persistence of such founder effects is poorly understood. The authors used microsatellite DNA markers to perform a detailed spatio-temporal genetic analysis of the range-expanding damselfly *Coenagrion scitulum* during the first years after colonization. A decrease in allele richness was seen when going northwards along the coastline, which is consistent with a scenario of cumulative founder events. The spatial genetic data indicated a major contribution from the broad expansion front during the colonization of the coastline rather than a stepping-stone colonisation process. The fine-scale

temporal dynamics of the range expansion indicated that these founder effects were not persistent. This may be due to genetic immigration and mixture from the broad expansion front of this active disperser.

Guillermo-Ferreira, R., S.N. Gorb, E. Appel, A. Kovalev, and P.C. Bispo. 2015. Variable assessment of wing colouration in aerial contests of the red-winged damselfly, *Mnesarete pudica* (Zygoptera, Calopterygidae). *Naturwissenschaften* 102 (3–4): 13. Wing pigmentation predicts the outcome of male contests in some damselflies; thus, males may be able to assess wing pigmentation of rivals and adjust their investment in a fight accordingly. Males of the damselfly *Mnesarete pudica* have red-pigmented wings and engage in complex courtship behavior and male fights. This study investigated male assessment behavior during aerial contests. It is thought that males can use self-assessment, opponent-only assessment, or mutual assessment, and that weak and strong males vary in the assessment strategies they use. Male resource holding potential (RHP) was estimated through body size and wing coloration, and the relationship between male RHP and contest duration was examined in videos of naturally-occurring individual contests in the field. The results showed that males with more opaque wings and larger red spots were more likely to win contests, and the relationships between RHP and contest duration partly supported the self-assessment and mutual assessment models. The pigmented area of the wings was then augmented experimentally, to evaluate whether strong and weak males assess rival RHP through wing pigmentation. Results demonstrated that strong males assess rivals' wing pigmentation, suggesting a possible variation in the male assessment strategy. 

Announcing a New Facebook Group Focusing on Neotropical Odonata

I have created a new Facebook group for those interested in Neotropical Odonata. The region includes tropical Mexico, Central America, South America, and the Antilles. This page came about because when I was updating the IORI website <www.iodonata.net>, I found only one Facebook group that addressed this area (Odonata of Brazil, established last year). So, I decided we needed one to cover all Neotropical Odonata. Enrique Gonzalez Soriano is helping to moderate the group, as it is anticipated this site will attract many Spanish-speaking members. If you are interested in Neotropical Odonata, search in Facebook for “Dragonflies and Damselflies of Neotropical America” and click on “join”.

Bill Muffray <iodonata@gmail.com>

How I Fell Into the Clutches of the Odonata

This feature presents essays from DSA members describing how, when, where, and why they first became interested in Odonata. It also doubles as a fun way for members to find out a little more about each other.

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>. Accompanying pictures to illustrate the tale are also welcome.

Whether you just discovered odonates this spring or have pursued them for decades, I know there are plenty of interesting, entertaining, and inspiring stories out there to be told!

In this installment, Bob DuBois tells how a road-killed Common Whitetail can act like a bolt from the blue.

Trout, With a Side of Odes

Bob DuBois <Robert.Dubois@wisconsin.gov>

During most of the 1980s and 1990s, I worked as a trout researcher for the Wisconsin Department of Natural Resources (WDNR), stationed at a field office on a bank of the storied Bois Brule River, a blue-ribbon trout stream in northwestern Wisconsin. But I'd always been fascinated by aquatic insects as well as fish, from my earliest memories as a child peering into a small stream to watch the stick-clad cases of caddisflies as they moved about to my undergrad years at Cornell, where I took every insect class I could work into my schedule. While studying trout professionally I maintained a "side" interest in aquatic

insects, publishing a couple of small papers on the drifting behavior of *Lethocerus americanus* (Hemiptera: Belostomatidae) and writing a report on the aquatic insects of the Bois Brule River system in 1993 (WDNR Technical Bulletin 185).

In the summer of 1994 I was riding my bicycle home from work on a shady forest road that paralleled the river when I stopped to inspect a road-killed male Common White-tail (*Plathemis lydia*) that was in my path. It was so strikingly marked I was dumbstruck! I knew it was an odonate and probably a skimmer, but beyond that I was clueless. I vividly remember two emotions from that moment. First, I was amazed at what I'd obviously been missing out on, and I was also embarrassed—how could I have just written about the aquatic insects of this river system yet not know what this strikingly beautiful and charismatic member of that community was? I put it in my lunchbox and showed it to my wife and children as soon as I got home. I remember saying "I think I'm going to have to learn more about these critters."


In those days field guides to odonates in North America were in their infancy, so I obtained keys to the adults and nymphs and learned the terminology. I bought books and photocopied a small forest's worth of scientific papers to learn as much as I could about their ecology, behavior, and habitats. I set up a microscope at the house and brought home every odonate I could catch to examine close-up. They would sometimes get out of their cages and fly up and down the hallway. Oh, those were good days! My daughters were young then so when I'd come home from work we'd play a game to help me learn the names of the species that lived in Wisconsin. I wrote the common name of each species on one side of a 3x5 card and the scientific name on the other. My daughters would "shuffle the deck" and quiz me. If they called out the scientific name (which was really cute!), I'd have to give the common name and vice versa. And I had patient, gracious mentors like Ken Tennessen and Bill Smith, who never tired of my questions and to whom I'll always be grateful. Like most, I'm a product of the process that developed me as an odonatist. Since I learned ID from keys using structural body parts before the proliferation of field guides, I tend to teach ID using structure over colors and patterns. Because I learned common and scientific names at the same time I insist that my students learn both as well (nice guy, eh?).



Bob DuBois sharing his knowledge and enthusiasm with an interested crowd.

As a budding odonate enthusiast I quickly became addicted. It seemed the more I learned, the more I wanted to know. Virtually everything about odonates fascinated me, and I could hardly wait to share my enthusiasm with others. So I began leading Odonata field trips, giving talks and teaching ID workshops. I became less interested in trout research, trout fishing, and most of the other things that had consumed my time. I guess you could almost say I was obsessed. In the late 1990s I was unbelievably fortunate to have WDNR superiors who supported my transition from trout research (though I still consult on that) to Odonata research and citizen science outreaches focusing on them (I'm also the WDNR taxa lead for all orders of aquatic insects).


It has been an incredibly captivating ride! Working with odonates challenges me and satisfies my curiosity as a scientist, educator, and nature enthusiast. There are enough problems to solve and new things to discover to keep me invigorated. Plus, I've had the good fortune to meet and

work with some of the coolest people imaginable. I have innumerable wonderful memories chasing these amazing creatures in beautiful places. It's hard to pick special times to highlight because there were so many. Attending my first Odonata meeting: the first GLOM (great Lakes Odonata Meeting) in 2001 at Elliott Lake, Ontario, Canada) was a revelation; I learned I wasn't alone, there were others just as nuts about chasing odonates as I was! Studying odonates at high elevations in the Colorado Rockies was unforgettable, as were my many trips to study coastal plain species on Cape Cod, Massachusetts. Usually it was the great friends I was with that made trips special whether here in Wisconsin, across the border in Minnesota, or during DSA meetings all over the country. I'm as excited now to learn more about odonates, and share what I know with others, as I was 15 years ago. This year I'm looking forward to exploring new habitats, discovering new insights, making new friends, and sharing the magic of dragonflies with everyone I can. 

New Book Announcement: Dragonflies of the Greater Southwest—Arizona, California, Colorado, Nevada, New Mexico, Utah, by Kathy Biggs

Dragonflies of the Greater Southwest—Arizona, California, Colorado, Nevada, New Mexico, Utah. Kathy Biggs. Azalea Creek Publishing, 232 pp. Paperback. 5.5 in. x 8.5 in. \$24.95. ISBN 978-0-967934-9-8. LCCN 2015909891. Order at <http://southwestdragonflies.net/Greater_Southwest_Guide.html>.

Newly available on 1 July 2015, this guide describes 125 dragonfly (Anisoptera) species, with photographs of 97 species and a two-page spread for each species. It remains the only guide that focuses exclusively on this amazing region, and includes all species found in California.

The guide has large photographs of males and most females, with photos by Pierre Deviche, Greg Lasley, Jim Johnson, Ron Oriti and others, including the late Gary Suttle (memorialized in this issue). Descriptions of males and females, behaviors, ovipositing techniques, and similar species is provided, all in an easy-to-read format. There are distribution maps for each species, and the size of each is referenced in both the text and as a colored line (in a dominant color of the species). A companion web site will help keep you up-to-date in the future. 



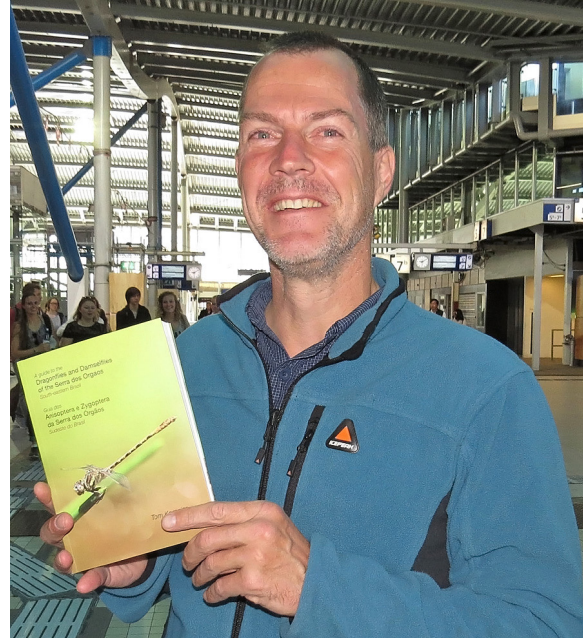
Book Review: A Guide to the Dragonflies and Damselflies of the Serra dos Orgaos, Southeastern Brazil, by Tom Kompier

Marcel Wasscher <marcel.hilair@12move.nl>


A Guide to the Dragonflies and Damselflies of the Serra dos Orgaos, Southeastern Brazil, by Tom Kompier, privately printed, 379 pp. Paperback, 400 pp. ISBN 9780956829115 . €35.00 plus postage. To order, e-mail Tom Kompier at <kompierintokyo@yahoo.com>.

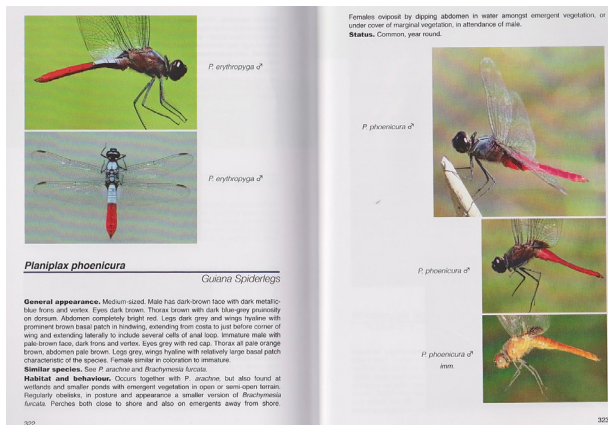
The Dutch author of this book only started watching Odonata during 2008 in Japan, where he then lived. What started in 2011 as a holiday trip ultimately led in 2015 to the publication of a rather sensational new field guide. Following the “Guide to the Odonata of the Argentine Yungas” by Natalia von Ellenrieder and Rosser Garrison, published in 2007, this is the second dragonfly guide for South America. In the present guide Tom describes and illustrates the species known from the REGUA (Reserva Ecológica de Guapi Assu) nature reserve, and hence of the surroundings of Rio de Janeiro, Brazil. The story of the impressive reforestation project being undertaken in this nature reserve in the Atlantic forest only 70 km from Rio is told in the introduction. The reserve occupies an area of some 200 km², and has a variety of water bodies ranging from mountain creeks to standing waters. In the southern hemisphere in summer, roughly 80–90 species of Odonata can be found in a single day, rising to 160 species in a week.

The guide presents an up-to-date understanding of the local dragonfly fauna of the REGUA reserve, with each species being well described and illustrated. The book has a total of 560 photographs (many in the field, some in the hand) and numerous additional illustrations. Each of the 204 species in the guide has been given an English name, developed in collaboration with Dennis Paulson.

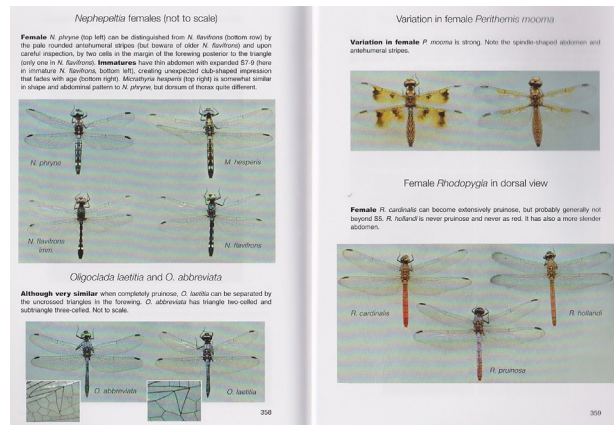


Tom Kompier on 7 June 2015 in Utrecht, The Netherlands, with one of the newly printed guides.

Nearly all species have a full scientific name, but 5–6 species (from genera such as *Forcepsioneura*, *Castoraeschna*, and *Micrathyria*) still await formal description in the near future. At the end of the book several visual comparisons are given as aids for identification. The book has been produced with the support of Alcimar do Lago Carvalho and Ângelo Pincto from Rio de Janeiro, and has a beautiful lay-out thanks to the efforts of Kameliya Petrova. The guide is a great asset to Neotropical Odonatology. 



Pages showing the Painted Spiderlegs (*Planiplax erythrogyga*) and the Guiana Spiderlegs (*P. phoenicurus*).



Pages showing identification clues for several Libellulidae species.

Parting Shots

Parting Shots pays tribute to the endless diversity and interest of odonate behaviors and the 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 photos that 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 describing the photo and event.

A Notable Darner

Milton Rutter <milrutter@hotmail.com>


This beautiful number had special meaning for me, as it was only the second occurrence of Harlequin Darner (*Gomphaeschna furcillata*) on my property in Ironwood (North Kingsville, Ashtabula County, Ohio; N 41.935°, W 80.657°). The first was a male observed last year on 26May 2014, which was species number 68 at Ironwood.



Female Harlequin Darner (*Gomphaeschna furcillata*), 15 May 2015, North Kingsville, Ashtabula County, Ohio.

Observation of Emergence

Bea Leiderman <bealeiderman@gmail.com>

My children and I live in Midlothian, Virginia. We walk to the pond in our neighborhood almost every evening when the weather is nice and look for bugs. This particular day, there were lots of dragonflies along the pond edge. While we were watching and photographing a dragonfly with a shriveled wing, we found this adult just beginning to emerge. We watched for about 15 minutes, but had to leave to make dinner and missed the rest of the event. I hope to find another one soon and have enough time to make a time-lapse video of the entire process. 



Dragonfly emergence begins.

Call for Papers for BAO

Bulletin of American Odonatology needs your manuscript submissions to help us keep BAO the vehicle for timely reporting of research on Odonata of the New World.

If you have questions about BAO guidelines, please see the last page of this issue of ARGIA or contact Steve Hummel, BAO Editor, at <mshummel@iowatelecom.net>.

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 51450, <mshummel@iowatelecom.net>.

Articles

All articles and notes should be 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 along (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 Word or Text 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 give both the scientific name of a species as well as 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>.

Mission of the Dragonfly Society of the Americas

The Dragonfly Society of the Americas advances the discovery, conservation and knowledge of Odonata through observation, collection, research, publication, and education.

Back cover: (upper) Male Ouachita Spiketail (*Cordulegaster taralia*) Montgomery County, Arkansas, 11 May 2015. Photo by Jim Burns. **(lower)** Spot-winged Meadowhawk (*Sympetrum signiferum*), Bear Canyon, Huachuca Mountains, Arizona, 24 October 2013. Photo by Doug Danforth.

