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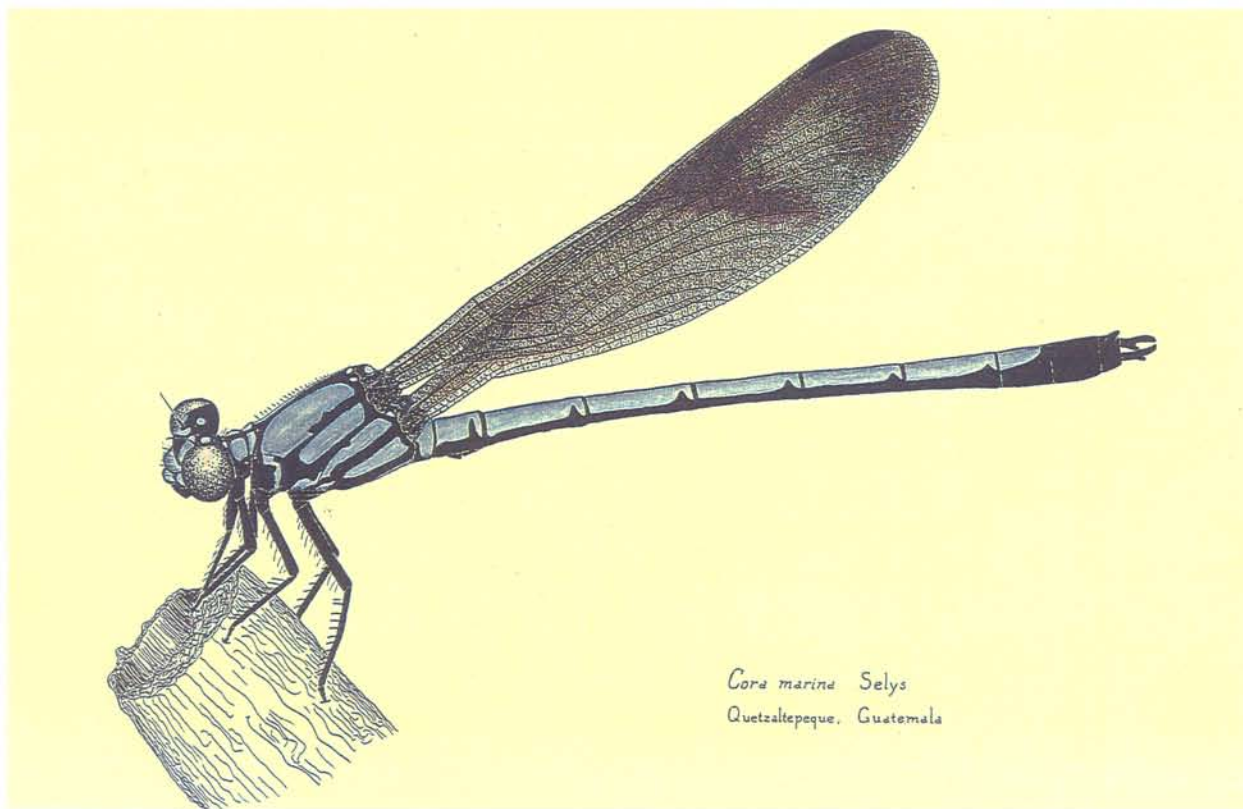
ARGIA

THE NEWS JOURNAL OF THE DRAGONFLY SOCIETY OF THE AMERICAS

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Cora marina Selys
Quetzaltepeque, Guatemala

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THE DRAGONFLY SOCIETY OF THE AMERICAS

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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. Articles for publication in **ARGIA** should preferably be submitted as hard copy and (if over 500 words) also on floppy disk (3.5" or 5.25"). The editor prefers MS DOS based files, preferably written in WORD, WORD for WINDOWS, WordPerfect, or WordStar. Macintosh WORD disks can be handled. All files should be submitted **unformatted and without paragraph indents**. Each submission should be accompanied by a text (=ASCII) file. Other languages should be submitted only as text (=ASCII) files. Line drawings are acceptable as illustrations.

T. Donnelly (address below) is the interim editor of **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. Enquiries and submission of manuscripts should be made to **BAO** editor T. Donnelly, 2091 Partridge Lane, Binghamton NY 13903. Final submissions (after review) should be made on floppy disk, as above, with illustrations in final form and preferably adjusted to final size.

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Membership in the **DSA** is open to any person in any country. Dues for individuals in the US, Canada, or Latin America are \$15 for regular membership and \$20 for contributing membership, payable annually on or before 1 March of membership year. Dues for members in the Old World are \$20. **ARGIA** is mailed Air Mail outside of the US and Mexico, and First Class in those countries.

The **BULLETIN OF AMERICAN ODONATOLOGY** is available by a separate subscription at \$15 for members and \$18.75 for non-members and institutions.

Cover: Water-colored ink drawing of *Cora marina*, Río Lucía Sazo, southeastern Guatemala by Nick Donnelly. Bob Cumming had told me to look for a "*Calopteryx* with a bright blue body."

ARGIA - The News Journal of the D.S.A.

IN THIS ISSUE

Winter seems reluctant to visit us this year. Ken Soltesz found *Sympetrum vicinum* in Westchester Co. NY on 6 Dec. and Ginger Carpenter reported *Sympetrum* sp. And *Anax junius* on 7 Dec. in Rhode Island. I will have to wait, however, for a sunny, cool day in early April when the first *Anax junius* reaches upstate New York from its emergence site far to the south. Speaking of which, *Anax junius* is very much in the news in this issue, with the exciting word that several Green Damers were spotted in extreme southwest England. Richard Orr contributes an unusually early appearance of *junius* in Maryland, and I have added a minor observation a few years ago of a somewhat distinctive morphology of Hawaiian *junius*, which might have been in these islands long enough to have evolved slightly.

But the first order of business at the midwinter solstice is planning our activities next summer. We have a double event facing us in July; the tenth DSA Annual Meeting in the Adirondack Mountains followed immediately by the Dragonfly Symposium at nearby Colgate University. We hope to see you at both of these.

Contributor of our quarterly great adventure is our own "Butch" Tennessen who has just returned from a trip to the little-studied Bolivia. If his *Lestes* is really a first for the family in that country, then the place is in bad need of more exploration.

Richard Orr did not just look at a lot of *Anax* this spring - he followed an impressive series of gomphid emergences in his favorite spot, the Patuxent Wildlife Refuge. Richard and Darlene, by the way, are the proud new parents of their second child, Alexander Byron Orr, born in June. Richard reports he already holds a net, which he swings just like a rattle. Congratulations.

Some of us collect dragonflies; others, not. Hal White, who is one of the respected veterans of our organization muses about the practice of collecting. There are reasons both for and against, as he makes clear in a thoughtful essay.

I follow this with a little essay of my own on the perils of documenting unusual records without collecting. The conflict between collecting and non-collecting deserves careful thought by all odonatists.

One of the most startling discoveries of this year was *Williamsonia lintneri* in Wisconsin. Although it was first taken near Albany NY, it has been restricted in this century to counties close to the Atlantic Ocean. In fact, Allen Barlow's discovery of the species in mountainous Bergen County NJ was considered very exceptional. But Wisconsin?! We have a great deal to learn about these insects.

It doesn't stop there. The southern tier of US states continues to feel the pressure from Latin American species with Bob Behrstock's discovery of *Aeshna psilus* in Arizona. This is the second record from the US. And Roy Beckemeyer's collection of *Tramea calverti* in Missouri has to rank as one of the better finds of the year.

Syd Cannings tells us of collecting in the mountains of southeastern British Columbia. He dwells a bit in what he didn't find, but what he did find would dazzle the most eager odonatists. Perhaps we can all get there in 2000. . .

Jerrell Daigle visited Sabino Canyon and evidently found it as rich in damselflies as I found it in 1954, before it became crowded and before there were trams or other high-faluting conveyances. From his account, the impact of all the development and the hordes of visitors to this popular spot near Tucson has been minimal for the fascinating local odonates, especially all those species of *Argia*.

Frederick SaintOurs contributes a piece on a survey of the North River in Massachusetts. It always delights me to hear of the joy of a new odonatist catching his first *Neurocordulia* - one of the most fascinating and elusive of our North American fauna. Mark O'Brien follows this with a good account of the extensive activities of the Michigan Odonata Survey.

From nearby Ottawa come two notes from Frans Lefort and Paul Catling, and Paul Catling and Vivian Brownell. The first deals with the travails of urban gangs of damselflies and their luckier rural cousins, and the second with fall migrations observed on the shores of the Great Lakes.

Kathy Biggs tells us of her first year as a California odonatist. Her companions Tim Manolis and Andrew Rehn contribute several state records from California. Not far to the north Jim Johnson found the first *Somatochlora walshii* in Oregon. And Bob Honig and his companions have contributed many new and interesting records for the Houston TX area.

Roy Beckemeyer contributes several records of odonates in the midwest. His compilation of Nebraska and South Dakota records by participants in last year's DSA Valentine meeting shows that we had a major impact on the knowledge of Odonata of a large region. Roy also reviews the captures of *Somatochlora ensigera* near Valentine.

Mary Steele contributes an impressive list of Odonata from a little-collected area in Tennessee and Kentucky. Good results for a beginner!

We review two books this quarter - Legler's excellent little guide to dragonflies (Anisoptera) of Wisconsin will help many midwesterners. Jean-Guy Pilon's excellent Quebec book has now appeared, giving us a marvelous summary of the odonates of one of Canada's most speciose provinces.

After some small notes and notices, and a very useful TRAMEA column by Roy Beckemeyer, we finish with the annual lists of members and our current e-mail directory.

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ADIRONDACK D.S.A. ANNUAL MEETING - JULY 1999

Nick Donnelly

As announced in the previous ARGIA, the 1999 DSA Annual Meeting will be in the Adirondacks. The venue for the meeting will be Paul Smiths College, which is located on Lower St. Regis Lake near the village of Saranac Lake. Paul Smiths college is a local college specializing in forestry and hotel management. The small

campus is very attractive and occupies one of the prettiest settings of any college. There is an auditorium available for evening sessions.

We have been fortunate to secure lodging and meals at the college, which hosts many events each summer, such as the annual wooden canoe meeting in August, and numerous hiking events. The facilities at the college will cost considerably less than motel prices in the area, and the college is located right in the heart of great dragonfly country.

The dates of the meeting are

Check in **Thursday**, 8 July, after 5 P.M. Evening meal will be served from 6 - 7 PM. There will be an evening get together.

Friday: Field day, with several options available for field trips. The major collecting places will be the Ausable River and the Bloomingdale Bog. There will be additional sites. Breakfast 7 to 8 AM; lunch to be scavenged individually in the field (there are snack shops, etc., in the area, or you can bring some groceries, according to your tastes.); dinner will be 6 - 7 PM: Evening meeting in the auditorium..

Saturday. Same as Friday schedule.

Sunday. Breakfast 7 - 8 AM. Vacate college by 8 AM. There are several options available. (1) For those continuing to Hamilton for the Dragonfly Symposium, collecting field trips will be available in the morning, and we can proceed to Hamilton after lunch. It is less than a three hour drive to Hamilton. (2) Others not going on to Hamilton can arrange a variety of trips on their own.

Several people have indicated that they might like to come early. We have no guarantee that facilities will be available before 8 July; however, we can play that by ear or make separate arrangements in local motels.

There are camping facilities at nearby new York State parks, as announced in the last ARGIA. Fish Creek Pond (about 15 miles south) is the only one I have camped in, and it is very attractive. To reserve a camp site, call 1-800-456-CAMP, which is the number for all New York State camping facilities.

and rural people probably live the way people did at the turn of the century.

At the invitation of Dr. Julietta Ledezma of El Museo de Historia Natural "Noel Kempff Mercado" at the Universidad Autonoma "Gabriel Rene Moreno" (U.A.G.R.M.) in Santa Cruz, we went to help one of her students, Natalia Araujo, learn Odonata identification and rearing/preserving methods. On Nov. 3 we flew to LaPaz, then east to Santa Cruz for a two-week stay. Natalia promptly informed us that this time of year is the beginning of the rainy season, so we automatically commented on the "Donnelly effect" (the postulate that if it can rain during an odonatological excursion, it will).

We decided to divide our field efforts into three treks, first going to the semi-deciduous forest area southwest of Santa Cruz, then northwest of Santa Cruz to the more moist area around Buena Vista, and finally northeast of Santa Cruz toward Concepcion. In the following account, please take note that our identifications are preliminary and further study of the collections we made is pending.

On our way southwest to Samaipata, we collected two damselflies of interest, *Argia nigrior* at a small seep, and a few red-eyed *Argia joergenseni* at a small tributary of the Rio Bermejo. Later that afternoon we drove up a rough, steep and winding road to Laguna Volcan (2.5 km N of the main highway), where we found *Aeshna bonariensis* (*Neureclipta*), *Anax concolor*, *Remartinia luteipennis*, *Micrathyria catenata*, *Lestes bipupillatus*, and *Acanthagrion ablutum*, besides a host of common libellulids. Natalia and I collected a few larvae of *Lestes* and *Micrathyria* which emerged a few days later. Our stay in Samaipata was mostly pleasant, as the skies were sunny to partly cloudy and there were several interesting streams to investigate. At a small stream a few km E of Samaipata we found *Allopodagrion setigerum*, *Mnesarete grisea*, *Acanthagrion ablutum*, *Argia joergenseni*, and a large *Argia* with a strange green thoracic dorsum. Also winging up and down the stream was *Castoraeschna januarina*, a very large black and green darner (male 80 mm long), eyes mostly green but yellow posteriorly. Natalia and I found a few exuviae and larvae of this species. In another stream we found mostly the same species plus a second species of *Allopodagrion* and a few of the large *Hetaerina*

charca. The third day we bounced up a mountain N of Mairana, to the La Yunga Preserve, where we collected a couple males of *Aeshna vigintipunctata* (subgenus *Marmaraeschna*)—we also found a few exuviae of this large darner on a boulder in a small rocky stream). It appeared to us that the odonate biodiversity of this region may not be high, although most of the streams we saw were rocky and disturbed by agriculture.

The area north of Santa Cruz and the Buena Vista area is more humid and receives more rainfall than the Samaipata area. This is the area where Robert Cummings spent several months in 1959 and 1960, and the collections he made are the basis for much of the knowledge on Bolivian Odonata. Buena Vista is a small town situated on a low uplift. In favor of the Hotel Amboro, where termites with 1 1/4" long wings were flying, we rented a small house outside of town. We had driving rain for a large part of one day, and steady straight-down rain all day the next day. Cabin fever ran high--we played cards, teaching Natalia the game of hearts. However, the sun finally appeared and our six days here were very productive. One of the more interesting species I collected was *Acanthagrion chararum*, which according to Leonard (1970) has not been collected since the types were described by Calvert; it has long, apically-directed male cerci, unusual for the genus. We also found the small black and orange *Tigriagrion aurantinigrum*, the black and yellow *Neoneura bilinearis* (segment 8 in life is like a small, intense yellow beacon), several *Epipleoneura* species, the dark purplish-blue *Argia reclusa*, the tiny blue *Homeoura ambiguum*, several *Phyllogomphoides* species we are still trying to identify, *Phyllocycla anduzei*, *Progomphus intricatus*, several *Micrathyria* yet to be identified (though we probably got *eximia* and *hesperis*, plus others), and some coenagrionids yet to be examined. Around the fifth day of our stay, the macro lens on my camera separated at the base; it was very disappointing knowing that I had photographed only seven species of damselflies and very little else.

One day we drove over 200 km west of Buena Vista, in the direction of Cochabamba, and collected in the forest around the small town of Sajta. We found several different *Micrathyria* species, a shade-dwelling *Lestes* that appears

close to *pictus*, a gomphid, *Rhodopygia cardinalis* and *pruinosa*, *Perithemis*, *Heteragrion*, *Argia thespis*, and others. However, as we were collecting, trucks were removing huge logs, and I fear that much of the forest will be gone before we can get back to this area.

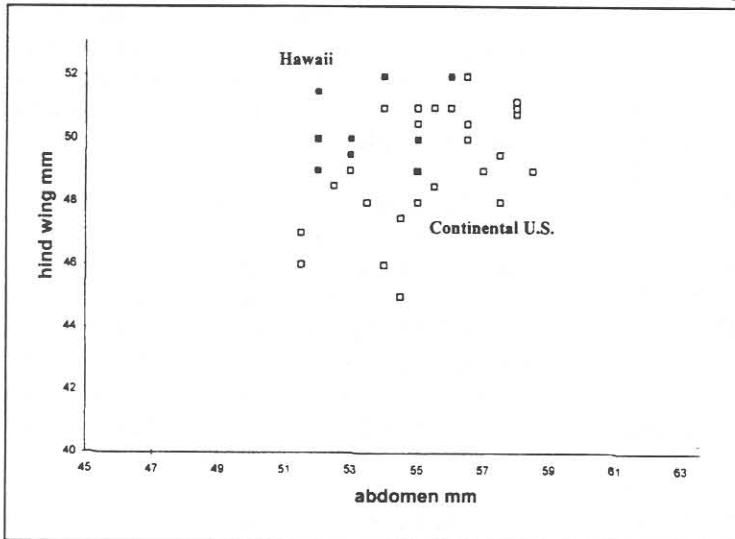
The most beautifully forested site we visited was in the Parque Nacional Amboro, and walking and collecting here was a most pleasant experience. Getting there was not. We left early on Nov. 12th, a sunny morning, and drove west on a good highway to the village of Yapacani. Here we turned south on a gravel road, which except for some large potholes and a testy little split concrete bridge over a small, deep stream, seemed relatively good. However, after a couple kilometers, it got challenging. The road narrowed and became more of a clay/muckhole trail. We had to ford several streams with clay banks, and were relieved that we had rented a Toyota Land Cruiser with 4-wheel drive. We got stuck several times, and it took about an hour to traverse the 14.5 kilometers of this "road". Finally we parked at the Yapacani River and took a canoe across, pushed by an old man wielding (and breaking) bamboo poles. On the other side was the Amboro, and we walked into the Mataracú section of the park. On the trail I netted a male of *Staurophebia reticulata*, an aeshnid almost big enough to pull your net out of your hands. We hiked 5 km into the forest and then back out, collecting along the way at seeps, streams and pools. We found a few *Metaleptobasis* (new for Bolivia), a *Mecistogaster* (*jocaste*?) and *Microstigma anomalum*, several *Argia* species, *Allopodagrion*, *Mnesarete*, *Protoneura*, *Epileoneura*, and an interesting *Lestes*, the blue of which reminded me of *rectangularis*, and many other species. We got back to the Yapacani at 4:00, took the canoe across, and then had to drive back on mudhole road. We were pretty tired by the time we got back to Buena Vista.

We rejuvenated ourselves at dinner by downing a large bottle full of Paceaña, the most popular beer in Bolivia. Everywhere we went there were ads for this beer, their only slogan being "Paceaña es cerveza" (Paceaña is beer). These ads were even on the top of some of the road signs! We wondered if the beer company put up the money to produce the traffic signs. The only other beer we saw advertised was Ducal, but it appears to have only a small percentage of the market.

On Nov. 14 we left Buena Vista to see what the area north of Santa Cruz had to offer. Instead of going all the way back to Santa Cruz, we looked at a map and took the shorter route from Montero to Los Troncos, our destination being San Ramon. Why are short cuts always the more "adventurous" routes? We were doing fine until we got N of Okinawa (yes, a Japanese settlement). The road got so rough something broke under the front end of the Toyota, and every time we hit a hole it clanked. Within a couple km of the Rio Grande, the road became a series of mudholes, and worse yet, it split. The following account is purposefully intended not to exaggerate. We tried several different forks, but these deteriorated badly and did not get us near the supposed ferry. After asking several local people, we found two scalloped, water-filled ruts that finally led to the river bank where the ferries were laboring to take trucks and automobiles across the churning river. The water looked like strong coffee with too much cream in it--my guess is that a Secchi disk would not have been visible below a depth of 1 cm.

When it was our turn to board the wooden ferry (which could hold just two vehicles), Bill drove onto the two narrow warped boards used as ramps, looking out the window on the driver's side; he successfully maneuvered the vehicle onto the boat and put it in park. Just then a large part of the river bank fell into the river and splashed Bill and the dashboard with mud. Natalia and I were glad we chose to board and sit on the rail along the passenger side. We zigzagged across, pushed by a small boat with an outboard motor. On the other side they charged us 50 Bolivianos (exchange rate is approximately \$1 U.S. = 5 Bolivianos). Then we had to drive through the sand and mud of the floodplain and up the muddy opposite bank. Again 4-wheel drive came to our rescue. From here to Los Troncos the road was really rough. We took a break when we found a small shallow pond choked with water lettuce, and collected a couple *Micrathyrina longifasciata* and a number of the tiny *Telebasis inalata*, among other common species. Later, south of San Ramon, we collected in a tributary of Rio San Julian where we saw the fantastic *Neoneura sylvatica* with its bright blue thorax and red abdomen. We also found a few small coenagrionids that we have not yet placed to genus.

were too long). A few days later it rained hard in Honolulu and so I abandoned my surly horde and spent a day at the Bishop Museum measuring all their *Anax junius* specimens. When I returned home, I measured all mine, and later added a few from other collections. The results are shown on the accompanying figure. The Hawaiian specimens indeed tend to have abdomens shorter (or wings longer, if you prefer) than their mainland counterparts. The distinction is too small to be diagnostic - a "t-test" shows that if you handed me a specimen I would have only an 85% chance of placing it correctly in one group or the other.



Hind wing vs. abdomen lengths of Hawaiian *Anax junius* (solid) and continental (open), showing shorter abdomen (or longer wing) tendency of insular forms.

What it does suggest, however, is that *Anax junius* may have been in Hawaii long enough to genetically drift just a little. This realization forced me to accept that it has been there a fairly long time, and probably was not recently introduced. How long, you ask? Ah - that is the sixty-four dollar question. Subsequently someone pointed out to me that the English Sparrow, whose introduction to this country during the 1800's is well documented, has already evolved somewhat into morphologically distinct local populations. Further, on Hawaii we have abundant examples of truly fast evolution - the *Drosophilid* flies living in patches of ohai forest isolated by tongues of lava during the present eruptive series at Kilauea (about forty years old, by now) have already evolved in isolation into new species in a few decades and maybe less.

I guess the question about Hawaiian Green Darner origins remains unsolved. However, someone else more inventive than I might be able to place a date on this event. It is an interesting question. But *Anax* sure does get around!

ANAX JUNIUS 1998 SPRING MIGRATION DATA FROM MARYLAND'S PWRC

Richard Orr

The big surprise for the spring of 1998 was the early arrival of the migrating *Anax junius*. Six healthy mature individuals (five males and 1 female) were seen on March 27. The female (72 mm) and one male (73 mm) were netted while they were in wheel. Both were boldly marked with red finger nail polish on the abdomen, and released. Neither were ever seen again. I have March records of *Anax junius* from 1991 (March 28) and again from 1994 (March 24), however, during most years the leading wave of migrants usually don't arrive until early to mid April.

By April 16, the migration was in full swing at PWRC where I recorded 70+ individuals at my study ponds. A number of these were captured, marked with red on the wings, and released. Again never to be seen at PWRC. I marked these dragonflies in such a way that they can easily be spotted in binoculars or visually at a good distance. If any of you north easterners just happened to see an *Anax junius* with a red marking on the abdomen or wings last spring, please make my day and let me know.

Various smaller waves of migrants were still moving through PWRC when the resident population of *Anax junius* started to emerge on May 19th. I often wonder how late into the year the minor northern movement of *Anax junius* occurs. I do know that some minor movement continues at PWRC until I can no longer separate the migrant individuals from the resident individuals. Do my emerging resident dragonflies trickle north being replaced a PWRC by southern emergents moving north throughout

DSA MEETING IN VALENTINE -
REFLECTIONS ON ODONATE
CONSERVATION

Hal White, (halwhite@udel.edu)

Valentine, Nebraska, is a no-frills ranch-country town of less than 3,000. Situated half a mile above sea level and surrounded by prairie, it is an oasis with 9 motels, 14 restaurants often with bars, several gas stations, and the only super market within 50 miles. Although it has a small airport, commercial airlines don't get close to the place. Coming by plane, one has to choose among Omaha, Iowa City, North Platte, Cheyenne, Pierre, or Rapid City to begin the rental car drive of 130 to more than 300 miles. Did the organizers know what they were doing? Did they really expect anybody to come to a Dragonfly Society of the Americas meeting in the middle of nowhere? In fact come they did to the second largest DSA meeting yet. Nearly 50 people came representing 23 states from coast to coast. They were not disappointed.

The air around Valentine literally swarmed with dragonflies. *Sympetra* of several species were everywhere - perched on the tips of every twig, lined up on barbed wire fences, rising in clouds as one walked through marshy fields. *Hetaerina americana* guarded every foot of river and stream bank. *Libellula pulchella* and *Libellula luctuosa* populated every habitat. *Aeshna multicolor* roosted gregariously in cottonwood shade during the heat of the day. A well-directed swing could net 10 at once! How could the food chain support so many predatory insects, we top predators wondered. The winged biomass was incredible.

Not only were there numbers, there was variety. More than 60 species were found, several of which were additions to the state list. Most participants encountered species they had never seen before.

What makes Valentine so different from where most of us came from? I imagine that habitats around Valentine are undisturbed compared to those elsewhere in the United States. There is no heavy industry, no mining, nor urban sprawl in the area. There are few cultivated crops that would require fertilizer and pesticides or that would alter runoff and siltation patterns. The cattle feed on open range rather than being

concentrated in feed lots. Fortunately the Norden Dam proposed for the Niobrara River was blocked, and there are few dams to alter the temperature and substrates of free flowing streams. This is a dragonfly paradise.

If my take of over one hundred specimens was anywhere near representative, there are now a couple of thousand specimens from Nebraska in various collections that were not there before the DSA meeting. This number is infinitesimal compared to the abundance present. It would be foolhardy to think that our collecting had any impact on the local populations of any species. But are we sure? In my collecting and that of others, the least common species were sought out and kept. The common species often were released, if they were captured at all. What would it be like to be *Somatochlora ensigera* at Boardman Creek or *Stylurus notatus* at Minnechaduza Creek? While even in those cases the impact of the DSA meeting certainly must be minimal, can we be sure the situation won't change in the future with more people interested in Odonata concentrating on increasingly rarer species that are limited to fewer and fewer pristine habitats?

Certainly, we had a great time in the Nebraska Sand Hills, but I am reminded of visitors here more than a century ago who found millions of bison - an unlimited supply for food and trophy hunters they thought. We know differently. The demise of the bison was brought home to those of us who stayed several days near Norden Bridge as guests of the Nature Conservancy at its Niobrara River Preserve east of Valentine. Here bison once again roam the prairie. The Conservancy's stewardship of its nearly 85 square miles along the Niobrara River will go a long way toward conserving many habitats and with them the associated Odonata fauna for years to come. A century from now, I suspect that dragonflies will be as abundant and diverse in this area as they are now and will not suffer from human intervention as they have elsewhere and as the bison have here in the past.

Still, this raises a question. We rarely worry about dragonfly conservation and usually consider collecting as having little impact on dragonfly populations. Does that mean we don't have to worry about conservation issues when collecting?

There are relatively few Odonata collectors in the United States, of which only a small subset are serious taxonomists. Many of those who gathered in Valentine are, like myself, small-time trophy hunters who revel in field observations, lists, range extensions, seasonal distributions, and adding new species to our collections. Our collections contribute significantly to the knowledge of dragonflies. We have, by good fortune of association with a knowledgeable mentor or by perseverance, entered the world of the cognoscenti. What an ego trip to be an amateur and be a recognized expert in the field.

Yet, not everyone sees collecting in the same light. My family provides a constant counterpoint to the sport and our illusions of importance. "Why do you kill dragonflies?" my daughters ask. "Dragonflies are so beautiful and they don't harm you." Others share this view as well. I have reckoned with it on many occasions and come to appreciate it. We in DSA need to acknowledge the possible merits of their viewpoint rather than it dismiss out-of-hand. The education goes both ways.

From a biological point of view, we can justify collecting. Dragonflies are a renewable resource, and it is clear that indiscriminate habitat destruction has a many-orders-of-magnitude-greater impact on Odonate populations than collecting. Nevertheless, do we need to collect as many specimens as we do even if it has no biological impact? Once a species has been documented for a place, does it need to be collected on every visit by every person multiple times? Can we justify collecting large series of rarer species when there are no taxonomic issues to resolve? From an ethical and aesthetic point of view, shouldn't we use nets and acetone less and binoculars and cameras more?

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DOCUMENTING RARE ODONATES - A NICE PROBLEM TO HAVE BUT A PROBLEM NONE THE LESS

Nick Donnelly

A few decades ago, there were only a few dozen people in North America with a serious interest in odonates. Now there are literally hundreds. With this impressive increase in interest there has come an impressive increase in odonate discoveries. The pages of past issues of ARGIA

have brought us news of several species recorded in the US for the first time - *Palaemnema domina*, *Dythemis maya*, and *Tauriphila australis* stick in my mind. In 1954 I took what I believe was the first *Macrothemis* north of the border (there are now three species recorded from several Texas counties), and our southern frontier will probably be crossed successfully by many more undocumented alien odonates in the future. How have these been documented, and how will they be documented in the future? This is a serious question.

A parallel problem was seen recently in the discovery of several specimens of *Anax junius* in southwest England. No specimens were taken, but a spokesperson said, "There is no doubt about its identification. Lots of entomologists have now seen it and are equally satisfied." Well...

Maybe there should be some doubt. There is no question that as further time passes, there will be just a little more doubt each year (unless the observation is repeated annually). Anyone who has participated in organized bird trips will have experienced the group dynamic when a putative unusual bird is spotted. Authorities whose identification is ultimately accepted may simply be persuasive people. Thus I wonder about the statement (in regard to the British *Anax* cited above) that "Lots of entomologists have now seen it are equally satisfied."

The camera has given us a stunning new tool. Many detailed photos are now being taken, including rare species. Do these satisfy the requirement of identification? In many cases these excellent photos seem very clearly to be a certain species. But very often the ID is of the species in the genus which should occur in the area. In one recent case a photo ID was made of an *Enallagma* species. But a second species, identical to the camera and which occurred somewhat further away, was also possible. This is not identification in the true sense but a good (and probably correct) guess.

The recent record of *Aeshna psilus* (this issue) is almost certainly this species. But could it be *cornigera*, which also occurs in Mexico, and is the species closest to *psilus*? These species normally look very different. In some cases, they look identical, and in those cases the distinction is based on the very different hamules, which are

discretely tucked away from the prying eye of the camera. I have taken *psilus* in Venezuela that looked identical to the common, co-occurring *cornigera*. Could the reverse be true? I really don't know, but a nagging doubt has to persist.

Another problem is that the species might be undescribed, which is all the more likely if the location is far distant from the "normal" range of the species it is taken to be. If excellent photos had been taken of most of the 50 or so new species of odonates that have been found in North America since WW II, and identifications made from these photos, then most of these species would have been given the name of an existing species, and their novelty would have gone unrecognized. North American odonate taxonomy world today is about where the bird taxonomy was at the time of the US Civil War, and maybe not even that far along. But dragonfly studies are in their infancy and we really need these specimens to verify these records, and, more important, show that we haven't found yet another new species. Finally, we simply haven't yet achieved a full understanding of the variation within species.

One of my correspondents put it this way: "I won't accept a [sight or photo] record for an unexpected species, even from myself." I guess the problem is that the more years you spend studying these insects the more often you are humbled, and the more you see the inherent uncertainty of sight records.

So keep those photos and records coming. If possible, at least net the bug and examine the appropriate parts with a hand lens. Even a close look followed by releasing the specimen is better than an observation or even an excellent photo.

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WILLIAMSONIA LINTNERI IN WISCONSIN!? AND WITH FLETCHER!

taken from e-mails from Ginger Carpenter and Karl Legler

From Ginger Carpenter: "The really big news is that 2 occurrences of *Williamsonia lintneri* have been documented (photographically) from Wisconsin. . . This represents a startling jump in range from the New England populations, and should be of interest to folks anywhere between Wisconsin and New England. The habitat, as

described in the publication, sounds very much like where we are finding this species in New England."

From Karl Legler: "Wisconsin's 2 records of apparent *Williamsonia lintneri* are from Jackson Co. and Juneau Co. The flight period is roughly from mid-May to perhaps mid-June (based on extrapolating from this spring's unusually early flight). No specimens were collected. I caught the first one and took several photographs, then released it. (*Lintneri* isn't that difficult to identify and unfortunately the possibility of a new species did not occur to me at the time.) I showed my photos and written documentation to Bill Smith of Bureau of Endangered Resources and he also wondered if it could be a different species. However Bill thought the claspers seemed appropriate --although they were not very well shown on the slides. No doubt a serious effort to obtain a specimen will be made by the Bureau next year. I also remembered a photograph I'd seen that was taken by Anita Carpenter of Oshkosh about 4 years ago when she knew nothing about dragonflies. At the time I had no idea what it was and the photo was not good enough to ID. Turns out she had unknowingly photographed *lintneri* too --just 12 miles from the site I found. She then returned to her site this spring and managed to photograph a *fletcheri* male in tandem with a *lintneri* female! Two outstanding county records in a single photo! So your comments about a new species are interesting and if it turns out to not be *lintneri* I won't be too disappointed! On the other hand I can imagine *lintneri* existing here and there between Wisconsin and New England undetected because it's rare, occurs in low numbers, and has a very early flight period--look how long its taken to find this thing in Wisconsin. I'm sure we'll learn much more next year."

Any site with the rare *W. fletcheri* should be checked for the even rarer *lintneri*.

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NOTES ON THE FIRST RECORD OF TURQUOISE-TIPPED DARNER (AESHNA PSILUS) IN ARIZONA

Robert A. Behrstock

Several decades ago, birders coined the term "Patagonia Picnic Table Effect." It describes the

phenomenon wherein a site yields a rare bird; subsequent birders who are chasing it find another rarity, which attracts more birders who continue to scour the area, locating more rarities, *ad infinitum*. Such a site becomes a well known "hot spot" and is included in all birders' itineraries.

While studying aquatic insects at Muleshoe Ranch in the foothills of southeastern Arizona's Galiuro Mountains, Jon Hoekstra discovered the first U.S. record of Desert Shadowdamsel (*Palaemnema domina*) (see Rosser Garrison's 1996 account in *ARGIA* 8(3):4-6). During Hoekstra's work and subsequent visits with Garrison, they located other U.S. rarities including Black-and-white Damsel (*Apanisagrion lais*), Spine-tipped Dancer (*Argia extranea*), Pima Dancer (*A. pima*), and Tarascan Dancer (*A. tarascanana*).

Encouraged by notes generously provided by Hoekstra and Garrison, I made an all-too-brief visit to Muleshoe 11-12 September 1998, along with Gloria Saylor of Port Lavaca, Texas. Although observing and photographing odonates was our prime concern, we found birds, butterflies, lizards and rattlesnakes to be plentiful. Our brief stay coincided with a dry period and oppressive heat afflicted the area; nonetheless, investigating a limited area only, we observed 12 zygopterans and 10 anisopterans.

After arriving on the morning of 11 September, we hiked the Hot Springs Creek wash, photographing a variety of odonates including Serpent Ringtail (*Erpetogomphus lampropeltis natrix*), Great Spreadwing (*Archilestes grandis*), *Apanisagrion lais* (at several locations), Painted Damsel (*Hesperagrion heterodoxum*), and several *Argia* including *extranea* and the very beautiful and locally common Fiery-eyed Dancer (*A. oenea*).

Prior to leaving the next morning, we worked the wet, grassy spring and wash just below the cabins for damselflies and butterflies. While I was photographing a teneral *Apanisagrion*, Gloria called out that she'd found a dragonfly we'd not seen during our trip. Sure enough, hanging about six feet above a steeply pitched slope and slightly within the canopy of a Mesquite tree (*Prosopis*), was an *Aeshna* with which I was totally unfamiliar. The bug's height and the pitch of the

slope negated the possibility of photographing with my tripod which I've modified for low-perching subjects. Balanced awkwardly on the slope, and surrounded by a maze of slender branches (including the *Aeshna's* perch), I shot about 15 hand-helds, hoping for the best.

Several days later, I had eight reasonably sharp slides depicting a largely brown *Aeshna* with brown eyes, a brown frons topped with two yellow spots, yellow stripes on the thorax, and a strongly petiolate abdomen marked with black and cream-colored rings and a broken blue ring around abdominal segment number two. I perused the keys in Needham and Westfall, but was unable to make a determination. Sid Dunkle kindly reviewed the slides, indicating that they appeared to represent a teneral male *A. psilus*, which would be a first Arizona record. He suggested I send the images on to Rosser Garrison for a second opinion. Rosser, too, agreed that the slides depicted *A. psilus*. Consulting web sites provided by members of the International Brotherhood of Itinerant Naturalists, including George Bick, Dennis Paulson, and Enrique Gonzalez Soriano, I learned that *psilus* is a widespread species, ranging from Texas southward through most of Mexico and Central America, the West Indies, and northern and northwestern South America as far south as Peru.

The Galiuro Mountains, rising to 7,663 feet are isolated (yet readily accessible by a 30 mile dirt road out of Willcox, Arizona). The 49,000 acre Muleshoe Ranch Cooperative Management Area is administered by the Nature Conservancy, the U.S. Forest Service and the Bureau of Land Management. The Management Area protects seven permanent streams that flow through otherwise arid hills. Riparian habitats include clear, sparkling creeks, deep Cottonwood-shaded pools, grassy seeps, and densely vegetated sandy banks, all magnets for aquatic insects. Because of the Ranch's proximity to Mexico and New Mexico, entomological studies at Muleshoe should continue to be fruitful for investigators seeking new distributional records of a variety of insect groups.

I thank Sid Dunkle for reviewing this manuscript. Duplicate voucher slides have been deposited with Rosser Garrison and Sid Dunkle.

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was needed for our activities thus far, but they are good to have in hand just in case.

The MOS Web site

(<http://insects.ummz.lsa.umich.edu/michodo/mos.html>) is being used constantly, though I have not yet analyzed the logs for the actual numbers. Ethan's larval web key and the Odonata photos are two of the most-used resources. I have upgraded most of the maps to reflect the current known distributions, and the newsletter, WILLIAMSONIA, is now also being put online in PDF files. Plans for the coming year include a new format for listing the Michigan species, as well as improved resources for identifying adults.

Five MOS field trips were scheduled, resulting in new records for Lapeer Co., Washtenaw Co., and Cass Co. Although participation by MOS members in the field trips was minimal, those that attended had a great time, and we'll continue scheduling them for next year. The July 5 Dragonfly Walk at Hudson Mills Metropark drew about two dozen participants, and even garnered a front page photo story in the Ann Arbor News. MOS meetings in April and October generated more interest, and we had some very interesting talks presented by Nick Donnelly, Sam Riffell, and Eric Pilgrim.

Various collecting trips were made to areas in the Lower Peninsula: Onsted State Game Area and Ives Road Fen, Lenawee Co.; Indian Springs Metropark and Huron River areas in Livingston, Oakland, and Washtenaw Counties; Embury Road areas in NW Washtenaw Co.; several areas in Cass and Berrien Counties; various areas in Emmet, Cheboygan, Presque Isle, Benzie, and Manistee Counties. In the Upper Peninsula, MOS participants visited Delta, Houghton, Marquette, and Mackinac Counties. A great many specimens were provided over the season from Mecosta Co. by Stephen E. Ross.

Our state species count currently stands at 155. Ranges were expanded and/or confirmed for a number of species in Michigan. The data is not all yet analyzed, but noteworthy records are listed below:

Hetaerina titia- Livingston Co.

Argia tibialis - Cass, Lenawee, and Livingston Counties were added to the list.

Enallagma aspersum- several NLP counties were added to the list.

Enallagma basidens- Washtenaw Co. added to the list

Enallagma anna - a new state record (to be published in the Great Lakes Entomologist)

Ischnura kellicotti- Mecosta Co.

Arigomphus cornutus (Washtenaw Co.) and *A. villosipes* (Cass Co. and Mecosta Co.)

Ophiogomphus anomalus and *O. carolus* records from the western Upper Peninsula

Ophiogomphus aspersus is recommended for removal from state list. (see WILLIAMSONIA 2[4])

Progomphus obscurus - Mason, Newaygo, Jackson, St. Joseph Co. are new additions.

Stylogomphus albistylus - Gogebic, Dickinson, Oakland and Presque Isle Co.

Stylurus plagiatus (Wayne Co.), *S. scudderi* (Marquette Co.) and *S. spiniceps* (Alpena and Livingston Co.).

Gomphaeshna furcillata - three counties in the NLP

Macromia taeniolata- Washtenaw Co.

Cordulagaster diastatops / bilineata - several sites were visited and specimens collected in the northern half of the lower peninsula.

Approximately 1300 records were added to the MOS database this year, which included larval and adult specimens from Michigan State University's collection, as well as numerous records from our collecting trips. The study of the Odonata of the Huron Mountains in Marquette County was pretty much wrapped up this year, and the report on our work there will be submitted to the Bulletin of American Odonatology in the coming year.

The following people deserve thanks for providing the MOS with specimens, and data:

1. Brian Sholtens donated specimens from Emmet and Cheboygan Counties, collected in 1997 -including the first LP records (in this century) for *Gomphaeschna furcillata*.

2. Carl Freeman provided numerous photos and took specimens in Benzie and Manistee Counties. Carl's hospitality at his place in Arcadia is also greatly appreciated. Carl provided photos of the second UP locality for *G. furcillata* in Benzie Co.

3. Stephen Ross collected and photographed Odonata in Mecosta Co. - he added over 30 county records for his efforts, and included are significant records for *Ischnura kellicotti*, *G.*

furcillata, *Arigomphus cornutus* and *Stylurus notatus*.

4. David Cuthrell of the Michigan Natural Features Inventory provided us with hundreds of Gomphid larvae and exuviae that are keeping Ethan Bright very busy!

5. John F. Douglass provided 60 specimens from Grand Traverse Co., collected in 1992-94, and added 7 county records for Zygoptera.

6. Dick Taylor provided a number of specimens from Oakland and Macomb Counties.

7. Michele Jokinen collected in Houghton Co.

8. Joel Weichsel led us to his old research site in Livingston Co. where we caught *Hetaerina titia* as well as *Stylurus spiniceps*.

9. Laura Krueger and Chris Clampitt of the Nature Conservancy provided us with specimens from their preserves.

10. Nick Donnelly, Sid Dunkle, and Ken Tennessen provided Michigan data from their collections.

I also heartily thank Ellie Shappirio for her continued work in the larval collection. She has really made a difference in her hours as a volunteer in the UMMZ. Michele Jokinen worked very hard at entering data into the MOS database, and she'll be hard to replace now that she has taken a full-time job elsewhere in the University.

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A SURVEY OF DAMSELFLY ADULTS AT URBAN AND NON-URBAN STREAMS AT OTTAWA, ONTARIO

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SUMMARY- Sixteen species of adult damselflies were recorded at 23 stream sites, but only 9 were found at 3 or more sites. The most frequent species were *Enallagma exsulans* and *Ischnura verticalis*. Numbers of species and numbers of individuals were significantly less at streams inside the city than at streams outside, which are probably less polluted, suggesting that the numbers of species and individuals may prove useful in assessing water quality. Species with over 75% of their sites, and over 95% of their numbers on non-urban streams, including *Argia moesta*, *Calopteryx aquabilis*,

Enallagma antennatum, and *E. exsulans*, may serve as useful specific indicators of good water quality. The relatively rare species, *Chromagrion conditum*, may also prove to be a useful indicator of good water quality.

Adult damselflies are often closely associated with the water bodies from which they emerged and they are relatively easily identified making them potentially very useful indicators of water quality, but actual use is limited by lack of knowledge of patterns of occurrence. Anticipated greater pollution in city streams may be expected to result in fewer species and lower numbers of individuals. The objective of the project described below was to determine whether city streams do in fact have fewer species and lower numbers, and to contribute to a selection of individual species that may prove useful as indicators of stream water quality in the area.

METHODS- At each of 23 sites including 12 inside the city and 11 outside the city, field surveys were conducted from 8 June to 23 June 1998. At each site adult damselflies were recorded for approximately 60 minutes and numbers of each species were recorded. To ensure an adequate sample, a section of stream 100 m in length was surveyed at each site. No more than 4 sites were sampled on any one stream.

Since stream size and flow rate may also influence occurrence of damselflies, data were recorded on these two aspects. Streams were assigned a size class based on width and depth: <3' wide and <3' deep (small creek); 3-6' wide and <3' deep (medium creek); 6-15' wide and 3-6' deep (large creek); 15- 60' wide and 6' deep (small river); >60' wide and >6' deep (large river), and a flow rate class (slow, moderately slow, moderate, some parts slow and some fast, moderately fast, and fast with many riffles and rapids). Although subjective, these classes contributed to an evaluation of whether streams differed in these respects inside and outside the city. "Stream" is subsequently used here in the general and broad sense to include flowing water of any size and any speed.

Number of species of adult damselflies and total numbers of adult damselflies were related to location of site inside or outside the city using analysis of variance following a determination that departures from normality were not

substantial (standardized skewness and standardized kurtosis within the range of -2.0 to +2.0). Statistical analysis was done with Statgraphics Plus version 7 (1993, Manugistics Inc., Rockville, Maryland).

RESULTS AND DISCUSSION- Species and Numbers- Sixteen species were recorded at the 23 sites, but only 9 were found at 3 or more sites (Tables 1). The most frequent species were *Ischnura verticalis* and *Enallagma exsulans*. The latter is largely confined in the Ottawa region to streams, whereas the former is widespread in many different habitats. Although not found in many of the streams sampled, *Argia moesta* and *Chromagrion conditum* are also evidently largely confined to stream habitats in the Ottawa region.

Patterns of distribution- Numbers of species and numbers of damselflies were significantly less in city streams ($p = 0.0156$, $p = 0.0004$ respectively). Differences inside and outside the city might be a result of different kinds of streams inside and outside the city, but the sample sites within in the city were not significantly smaller ($p = 0.0588$), did not differ significantly in flow rate ($p = 0.9916$) and did not traverse a substantially different physiographic region or soil landscape. Furthermore the sites inside the city were less than 30 km from sites outside.

We speculate that the differences are a result of increased pollution in the urban environment. Streams inside the city may be more polluted due to relatively greater runoff which contains de-icing salt from a denser network of roads, as well as pet excrement and lawn fertilizers and pesticides. City streams also receive industrial pollutants and pollutants from miscellaneous dumpage (run-off from car-wash etc.). Unfortunately water quality data from the streams visited was not adequate to test this hypothesis.

Five or more species and more than 20 adults recorded within an hour of sampling on a small stream represents a relatively high diversity and large population, whereas 7 species and over a hundred individuals would be indicative of relatively high diversity and large population on larger streams (creek or river). Further to the north a lower diversity would be expected as the range limits of some species (eg. *E. exsulans* and

E. antennatum) are encountered. On the other hand, a higher diversity may be characteristic of streams further south in Ontario where more species characteristic of streams occur (eg. species of *Argia* and *Hetaerina*).

Potential Indicator Species- The most useful indicator species would be those that are present on many streams and those that are relatively rare and restricted to unpolluted streams but are relatively abundant where they occur (Table 1). In general *E. exsulans* appears to be an indicator of better water quality than *I. verticalis* which was present at a higher number of urban sites with a higher number of individuals. Species with over 75% of their sites, and over 95% of their numbers on non-urban streams, including *Argia moesta*, *Calopteryx aequabilis*, *Enallagma antennatum*, and *E. exsulans*, may serve as useful specific indicators of good water quality. Possibly the relatively rare species, *Chromagrion conditum*, associated with one stream of very good water quality will also prove useful as an indicator of good water quality.

The kind of stream must also be considered in using a specific indicator. Although our sample size was not adequate to show a significant association, *Argia moesta*, *Calopteryx aequabilis* and *C. maculata* were strongly associated with relatively fast-flowing rocky streams, whereas *Enallagma antennatum* was only at slower streams and *E. exsulans* occurred at both fast and slow streams.

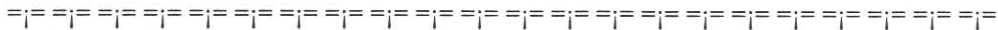
The streams outside the city passed through a landscape that is about 50% natural vegetation and 50% agricultural (corn fields and pasture). There was undoubtedly some eutrophication from time to time, but it is quite possible that some eutrophication has the effect of increasing diversity and numbers, so that the relationship with water quality is not necessarily a simple one.

Clearly more extensive studies and relationship to adequate water quality data are required to fully exploit the indicator value of adult damselflies in the area, but it appears that overall diversity and total numbers may provide a useful indication of water quality. This indication may be further refined by taking the presence of certain species into account. We would be interested to hear from anyone who has

conducted similar studies.

species	common name	Number of sites	% sites non urban	Number of individuals	% individuals non urban
<i>Ischnura verticalis</i>	Eastern Forktail	14	64	123	85
<i>Enallagma exsulans</i>	Stream Bluet	8	75	79	95
<i>Calopteryx maculata</i>	Ebony Jewelwing	6	67	43	95
<i>Enallagma hageni</i>	Hagen's Bluet	5	80	14	93
<i>Enallagma ebrium</i>	Marsh Bluet	5	40	12	58
<i>Calopteryx aequabilis</i>	River Jewelwing	4	75	26	96
<i>Argia moesta</i>	Powdered Dancer	3	100	52	100
<i>Enallagma antennatum</i>	Rainbow Bluet	3	100	18	100
<i>Nehalannia irene</i>	Sedge Sprite	3	67	7	29
<i>Enallagma carunculatum</i>	Tule Bluet	1	0	2	0
<i>Lestes rectangularis</i>	Slender Spreadwing	1	100	1	100
<i>Lestes vigilax</i>	Swamp Spreadwing	1	100	1	100

Number of sites and individuals, and % sites and individuals non-urban, for 16 species of adult damselflies found at Ottawa district streams. The species are ranked first by number of sites and second by number of individuals



MIGRATORY CONCENTRATIONS OF DRAGONFLIES ON THE NORTH SHORE OF LAKE ONTARIO, AND NORTHWARD EXTENSION OF MIGRATORY SPECIES

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ABSTRACT: Aggregations of several thousand dragonflies within an area of 5 acres have been noted at several sites along the north shore of Lake Ontario in late August and early September. The larger species of dragonflies in these aggregations are usually in the late teneral or early adult stage and the aggregations are believed to be a result of an arrested movement in a southerly direction, and are thus migratory. In 1998 at Sandbanks Provincial Park, eastern Lake Ontario, *Anax junius* was the most abundant species but other species including *Tramea lacerata*, *Pantala flavescens*, and *P. hymenaea* were also recorded. Tandem pairs of *Sympetrum vicinum* were also observed moving in a southerly direction. *Tramea lacerata* has been reported north of the Carolinian zone only once, and observations by the authors of 12 individuals at the northeastern end of Lake Ontario indicate the possibility of a recent expansion of range northward. Both a gradual warming trend and the unusually warm spring and summer of 1998 may have been contributing factors.

Northward expansion of migratory species may make migratory stopover areas along Lake Ontario increasingly important for dragonflies.

INTRODUCTION- Much of what is known about migratory concentrations of dragonflies in southern Ontario is based on the observations of Corbet and Eda (1969). They reported large aggregations of dragonflies on the north shore of Lake Erie in late summer at Point Pelee, Rondeau and Long Point. These aggregations were presumably the result of a halted southward (or southwestward) migratory (*sensu* Corbet 1962) movement and have been interpreted as such (Corbet & Eda 1969). The aggregations involved primarily *Anax junius*, *Pantala flavescens*, *Pantala hymenaea*, and *Tramea lacerata*. *Sympetrum vicinum* was locally frequent. Several hundred adults of *Anax junius* were reported over a 150 yard strip at Point Pelee. *Tramea lacerata* was noted as “exceptionally abundant” at Rondeau and “hundreds” of individuals of *Sympetrum vicinum* were present at Long Point (for locations see Fig. 1). Other species present but far less common and presumably not migrating were *Aeshna constricta*, *Celithemis elisa*, *Erythemis simplicollis*, *Libellula pulchella*, *Pachydiplax longipennis*, *Sympetrum corruptum* and *S. obtusum* (Corbet & Eda 1969).

Similar late summer and early autumn concentrations occur on the shoreline of Lake Ontario, and have been observed at Presqu'ile Provincial Park, Toronto

Island, Leslie Spit, and Sandbanks. At Toronto Island, Presqu'île and Leslie Spit, the most abundant species in the recently observed aggregations was *Anax junius*, but individuals with black at the base of the wings, presumably *Tramea lacerata*, were also present. More detailed information on the Lake Ontario migrations is not readily available. Here we present an enumeration of the dragonflies seen at Sandbanks, (43°54'30" N, 77°16'45" W), southwest corner of West Lake on eastern Lake Ontario (Fig. 1), Prince Edward County, on 3 occasions in the late summer and early autumn of 1998.

WEATHER CONDITIONS- On 13 September, it was variably cloudy with afternoon temperatures of 70-75° F and light winds 5-15 mph. The previous day had been mild, 75°F, mostly sunny with winds 15-30 mph from the west. At 4:30 PM the temperature was approx. 21°F and the winds were calm. On 19 September, the weather was similar with a temperature of 70-75 °F and winds 15-30 mph from the southwest. On Oct. 4 the high temperature was 60°F and it was sunny with light winds.

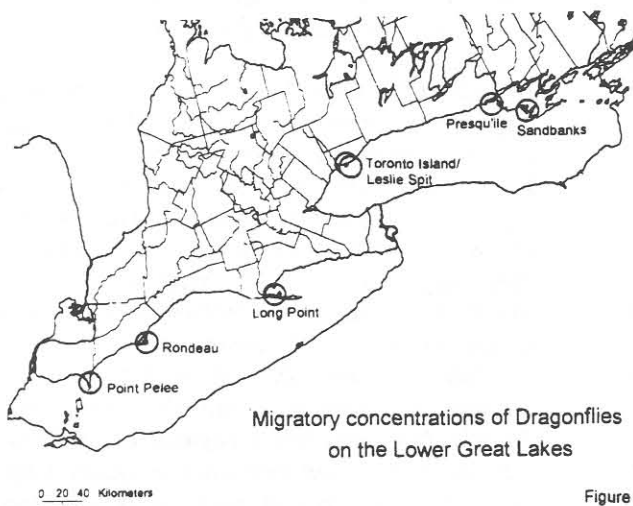


Figure 1

BEHAVIOUR AND NUMBERS OF INDIVIDUALS- The four prominent species that were associated together in localized roosting groups and in behaviour were *Anax junius*, *Pantala flavescens*, *P. hymenaea*, and *Tramea lacerata*. These are the same four that were reported as most prominent in concentrations on the shore of Lake Erie as reported by Corbet and Eda (1969). On 13 September at approximately 5:00 PM, hundreds of individuals of *Anax junius* and some individuals of *Tramea* and *Pantala* had settled in small red and white cedar trees at the eastern end of the 4.5 mile

long sand bar where wet meadows are adjacent to a long WNW-facing dune that directly received the late afternoon sun (Table 1). Up to 30 individuals would depart from the trees as they were approached and up to 200 individuals could often be seen flying over about an acre. Based on the departures and the numbers in the air we estimated that the concentration involved at least 3000 large dragonflies and 500 smaller dragonflies (*Sympetrum* spp.) within an area of 5000 square yards that was surveyed (Table 1). The concentration appeared to extend over an area at least twice that size and may therefore have involved at least 5000 individuals, and possibly as many as 10,000 individuals in the general region of West Point. On subsequent dates the numbers in the census area (Table 1) were much reduced, but involved at least a few hundred *A. junius* on each date within a mile of West Point.

On all three dates there were few or no dragonflies up to one mile away from the observed aggregation area in all directions, the only exception being scattered groups of 2-5 individuals of *Sympetrum* near to marshes. Unlike the other dragonflies, all of the *Anax junius* and *Tramea* and some of the *Pantala* were not associated with the ponds, but flew over extensive areas of meadow at heights ranging from a few to 100 feet. One exceptional individual of *A. junius* that patrolled a small pond on 19 Sept. was unlike all others (of thousands) seen in having a bright blue abdomen instead of dorsally brownish with pinkish-purple edges. On 19 Sept. several hundred *Anax junius*, as well as a few individuals of *Tramea* and *Pantala* were observed flying southeast along the northwest-southeast oriented sandbar which is about 4 miles long. On 4 Oct. *A. junius* was active despite the relatively low temperature, but was more common in old fields surrounded by woodland near West Point than on the sandbar.

On all three dates the individuals of *Aeshna*, *Libellula* and some *Pantala* were flying mostly back and forth over water within 6 feet of the surface. The species of *Sympetrum* were more widely distributed than the larger dragonflies and were generally flying short distances near the ground. The only exception was a few tandem pairs of *S. vicinum* flying southwest in or near to the census area, and 63 tandem pairs all flying southwest across a 30 yard stretch of road into an extensive marsh at a nearby location southwest of Bloomfield on 19 Sept. at noon during 30 minutes of observation. This movement

could have been either a localized return to a breeding area or a longer distance movement (Catling & Brownell 1997). Some tandem pairs were ovipositing in marsh and in the pools at Sandbanks on both 13 Sept and 19 Sept. However other pairs were seen moving southeast over the tops of the dunes to the open expanse of Lake Ontario, suggesting a longer movement. Thus the *Sympetrum* species, and particularly *S. vicinum*, may have been moving both long and short distances, but were evidently sexually mature unlike the individuals of *Anax*, *Tramea* and *Pantala*.

NORTHWARD EXPANSION- Walker and Corbet (1975) speculated that, like *Anax junius* and *Pantala flavescens* (Trottier 1966, 1967, 1971), *Tramea lacerata* may not overwinter in Canada, but produces a second generation in Canada from individuals that move north in the spring - early summer (late May to mid-July). The adults of this generation then move southward in late summer and early autumn. *Tramea lacerata* was reported only once north of the Carolinian zone (south of a line from Toronto to London to Grand Bend) by Walker (1941) during a 50 year period of active collecting. This was based on a female taken at Lefroy on Lake Simcoe on 3 June 1933. Consequently the many observations of this conspicuous species in Prince Edward County in 1998 may indicate a recent northward extension of range that corresponds to a trend noted in other Odonata (e.g. Catling 1996, 1998). Walker (1941) noted that *Tramea lacerata* was "common in the counties on Lake Erie". Further supporting a recent northward extension of range is the fact that this conspicuous species, was not previously reported in any of the 12 counties in New York state north of the south shore of Lake Ontario, yet it was recorded in 15 counties further south in the state and noted as "common" (Donnelly 1992). The other migratory species noted during this study may have been present in larger numbers than normal because of an expansion of their range north of Lake Ontario. In addition to the gradual warming trend to account for the northward extension of range, the unusually warm spring and summer of 1998 may also have been a contributing factor. Northward expansion of migratory species may make migratory stopover areas along Lake Ontario increasingly important for dragonflies.

Both of the species of *Pantala* observed are rare and *Pantala hymenaea* has been observed at only a few sites in Ontario. Like the *Anax junius*, individuals of

Tramea and *Pantala* were in a late teneral or early adult stage suggesting recent and local emergence.

Timing of aggregation- Due to earlier low temperatures, migratory concentrations on Lake Ontario might be expected earlier than those on Lake Erie further to the south. On Lake Erie concentrations have been reported in late August. Major migrations have occurred on Long Island and Cape May on 20 and 22 Sept. (Walker & Corbet 1975), but these locations are much further south. Consequently the concentration at Sandbanks was somewhat later than would be expected. It appeared that even as late as 4 Oct., *Anax junius* was still migrating through and concentrating in the area. On this same date only two Monarch butterflies (*Danaus plexippus*) were seen in the area suggesting that the autumn migration of that species was largely over. *Anax junius* thus appears to continue migrating along the shore later than the Monarch butterfly.

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Species	Number		
	12 Sept.	19 Sept.	4 Oct.
<i>Aeshna constricta</i>	3	9	-
<i>Aeshna tuberculifera</i>	-	3	-
<i>Aeshna verticalis</i>	-	3	-
<i>Aeshna</i> sp.	22	27	-
<i>Anax junius</i>	3000	300	200
<i>Celithemis elisa</i>	2	-	-
<i>Libellula pulchella</i>	5	1	-
<i>Pantala flavescens</i>	5	3	-
<i>Pantala hymenaea</i>	4	2	-
<i>Pantala</i> sp.	5	2	-
<i>Sympetrum costiferum</i>	26	18	-
<i>Sympetrum obtrusum</i>	39	39	-
<i>Sympetrum vicinum</i>	3	18	5
<i>Sympetrum</i> sp.	372	210	7
<i>Tramea lacerata</i>	4	7	1
<i>Tramea</i> sp.	8	-	-
Unidentified gen. & sp.	134	10	4

Table 1. Numbers of various species of dragonflies observed at Sandbanks Provincial Park, southwest corner of West Lake on eastern Lake Ontario in 1998. In many cases the insects were not captured and a reliable identification was not possible (indicated as "sp."). The census area included a 5000 yd² strip. Voucher specimens were donated to the Canadian National Collection of Agriculture Canada in Ottawa.

VISIT TO SABINO CANYON

Jerrell J. Daigle

Over the Labor Day weekend, I went to Sabino Canyon in Tucson, Arizona to look for rare *Argias* such as *Argia sabino*, *A. munda*, and *A. pima*. BINGO! They were thick as the blazes. I caught several ovipositing pairs of all 3 species and I must have seen about 100 individuals of *A. sabino* over 2 days. Most of them were at Bus Stop #9 at the end of the paved trolley road up the canyon.

Sabino Creek was flowing quite vigorously with big deep pools patrolled by numerous giant *Anax walsinghamsi*. All the canyon's cacti and

saguaros were swollen with water and blossoming with beautiful flowers. El Nino was good to Sabino Canyon.

Other very common species seen here were *Argia hinei*, *A. extranea*, *A. oenea*, *A. pallens*, *Libellula saturata*, and *Paltothemis lineatipes*. At Molino Canyon, I got one *Argia sabino*, several *A. munda*, and several *Archilestes grandis*. At Rose Canyon Lake, I found one *Aeshna dugesi* and several *A. multicolor*. Further up the canyon at Summerhaven (9,000'), I got many young *Oplonaeschna armata* on the very cold water Marshall Creek but no damselflies were seen. I also saw black bear, mountain lions, and the Coues deer nearby.

species were new and excited you? Do they still? I look forward to reading about your highlights in strange and wonderful places!

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FIRST RECORDS OF *LEUCORRHINIA PROXIMA*, *AESHNA CANADENSIS*, AND *SYMPETRUM VICINUM* FOR CALIFORNIA

Tim Manolis and Andrew Rehn

At about 1600 h on 15 August 1998, while searching for dragonflies along the margins of Willow Lake, 9 mi. NW of Chester, Plumas County, one of us (TM) netted a male *Leucorrhinia*. It was one of about 4-5 black-and-red *Leucorrhinia* sp. seen sitting atop fern fronds in sunlit patches on the edge of the forest, about .5 m off the ground. At first it was assumed to be *L. glacialis* because the middle abdominal segments were solid black. However, taking it through a printed copy of Dennis Paulson's (DP) Field Key to Adult Washington Dragonflies (available at his web site: <http://www.ups.edu/biology/museum/WAODkey.html>), it keyed to *Leucorrhinia proxima*, a species not known for California. TM's first reaction was that the key might be wrong (sorry, Dennis).

After returning home with the specimen, TM e-mailed DP, who graciously and promptly supplied additional information allowing confirmation of the identification. Subsequently we were able to compare the specimen with examples of *L. proxima*, *L. glacialis*, *L. hudsonica* and *L. intacta* in the Bohart Museum at the University of California, Davis (where specimens of all species collected at Willow Lake mentioned in this note now reside).

On 25 and 26 August, AR visited Willow Lake. Unfortunately, *Leucorrhinia* had become scarce and none could be collected. However, *Aeshna canadensis*, also unrecorded from California, were fairly common and a good series was collected. Two *A. canadensis* were also collected at nearby Wilson Lake, Tehama County. A small series of *Nehalennia irene*, rare and known previously from only a single locality in California, was also collected at Willow Lake in the tall grasses bordering pools in the marsh at the north end of the lake.

On 2 September, we (and Kathy Biggs) returned to Willow Lake. Again, *Leucorrhinia* were scarce, and only a few *L. intacta* were collected. *Aeshna canadensis* was still common. The most exciting discovery was of a small number of teneral *Sympetrum vicinum*. Although no published California records exist for this species, AR has determined that there is a small series of *S. vicinum* in the UCD collection. These were collected at Alta, Placer County, on 10 September 1980 by R.P. Meyer. Willow Lake is thus only the second known site in California where this species has been collected. Kathy Biggs found additional, recently-emerged *S. vicinum* at Willow Lake on 7 September (K. Biggs pers. comm.).

Both *Aeshna canadensis* and *Sympetrum vicinum* were previously known from Oregon counties bordering California, so their occurrence in the state, while exciting, is not too surprising. However, *Leucorrhinia proxima*, a boreal and montane form found at boggy lakes, was previously reported in the Pacific States no farther south than Langendorfer Lake, east of Duvall, King County, Washington, and the nearest known localities in the Rocky Mountains are in Lehmi County, Idaho, and Summit County, Utah (fide DP). Its occurrence in California is thus unexpected, but a number of other northern species (*Nehalennia irene*, *Aeshna canadensis*, *Somatochlora albicincta*, *Libellula julia*) are known from mountain lakes in the Lassen Peak region and very few other places in the state (Paulson and Garrison 1977). In addition, Willow Lake contains floating sphagnum bog islands, a very rare habitat in the state, with a number of species of bog plants found at few other spots in California. It has been classified as a Botanical Special Interest Area by the Lassen National Forest. Indeed, the unique bog environment is what drew TM to the site in search of dragonflies in the first place. The Lassen Peak region is near the southernmost end of the Cascade Range. The discovery of *L. proxima* in this area suggests that it should be looked for in similar environments in the Cascades between northern California and Washington.

Odonata collected or observed at Willow Lake, Plumas County, California in August and September 1998:

Lestes congener, *L. disjunctus*, *L. dryas*, *Amphiagrion abbreviatum* (seen only), *Argia vivida*, *Enallagma boreale*, *E. cyathigerum*, *Ischnura cervula*, *I. perparva*, *Nehalennia irene*, *Cordulegaster dorsalis*, *Aeshna canadensis*, *A. interrupta*, *A. palmata*, *A. umbrosa*, *Anax junius*, *Erythemis collocata* (seen only), *Leucorrhinia intacta*, *L. proxima*, *Libellula luctuosa* (seen only), *L. lydia* (seen only), *L. pulchella* (seen only), *L. quadrimaculata*, *Sympetrum corruptum*, *S. costiferum*, *S. danae*, *S. obtrusum*, *S. occidentale*, *S. pallipes*, *S. vicinum*

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SOMATOCHLORA WALSHII RECORDED IN OREGON

Jim Johnson

On August 22, 1998, I collected Oregon's first *Somatochlora walshii* at Little Crater Lake (Sec. 11, T.5S. R.8-1/2E. of the Willamette Meridian) about 16 map miles south of the Mt. Hood summit in northeastern Clackamas County. Only a lone male was captured, but the day was rather cool and breezy so there wasn't a lot of odonate activity. During a return trip a week later on a sunny August 29, I ran into Joe Engler and we were able to capture four male *walshii* between the two of us. I have forwarded specimens to Steve Valley and Dennis Paulson.

All of the *walshii* were captured as they patrolled over a wet meadow which lies between Little Crater Lake and a nearby campground, at an elevation of about 3300 feet. This meadow is dominated by sedge (*Carex* sp.) and is fed by permanent springs. A number of *S. semicircularis* were also found, but *Aeshna canadensis* and *A. palmata* were the most numerous odonates at the meadow.

As far as I can determine, Little Crater Lake currently represents the southernmost location for this boreal species in the western states, however it seems likely that it is more widespread, especially in the Rocky Mountains.

The previous southernmost known location was South Prairie (elev. 3500 ft.) in Skamania County, Washington, about 50 miles north of Little Crater Lake.

SIGHT AND PHOTO RECORDS FOR ODONATES FROM HOUSTON, TEXAS

Largely unedited e-mail reports from Bob Honig

Flame Skimmer (*Libellula saturata*) Recorded in Harris County in Houston where it has been found in city parks and back yard ponds since 1988 (records from Richard Orr, Bob Honig, Ellen Red, et al.) -- records are from the Houston Arboretum & Nature Center, River Oaks (including the pond of the urban nature center at the River Oaks Elementary School), and the Rice University area -- these are the easternmost records of this species -- this apparently small disjunct population in Houston may be the result of an accidental introduction of larvae with aquatic plants since this species is not usually found east of the Edwards Plateau

Neon Skimmer (*Libellula croceipennis*):

At Honig's pond, Houston, Harris Co.: 1 female ovipositing in mid-May; 2 males still present late June; 1 female 1 July.; 1-2 at Gretchen Mueller's pond, Bellaire, Harris Co.: starting late May or early June -- 2 still present through late June.; Mike Correll's pond in River Oaks, Houston, Harris Co.: still present through late June.; Mike Correll's place on Lake Livingston (Polk County, first seen 20 June 1998): likely transported with aquatic plants she brought from her house in Houston -- she installed the Polk Co. pond in 1997 and stocked it at least in part with aquatic plants from her Houston pond where this species has been present likely for several years (I verified on site that in 1997 she had *L. croceipennis*); 1 male at the pond and adjacent ENRON/Environmental Institute of Houston wetland habitat creation project in Sam Houston Park at the edge of downtown Houston, Harris Co., TX. Photos of male and female by Joe Kolb of ENRON, 12 June 1998 (I have copies on PC). On 27 June 1998, I observed male guarding female ovipositing in shallow (prob. <1in. deep) puddle over mucky soil in wetland project. Male present also 28 June (Behrstock and Honig).; I haven't had time to check out the River Oaks Elementary School pond -- but that is a likely

spot also, based on Mike Correll's possibly having seen one there in the past.)

Red-tailed Pennant (*Brachymesia furcata*)
28 June 1998 -- 3 males at the pond next to the ENRON/Environmental Institute of Houston wetland habitat creation project in Sam Houston Park at the edge of downtown Houston, Harris Co., TX. Observed for at least 20-30 minutes by Bob Honig and Bob Behrstock. (It must have been an overdose of red when one briefly tussled with a Neon Skimmer (*Libellula croceipennis*), seen by Bob Behrstock.) One of the males was continually battling an Eastern Pondhawk (*Erythemis simplicicollis*) for a preferred perch. I got what should be identifiable photos. This date is a bit later in the season than those I photographed in the past south of Houston at Armand Bayou Nature Center (southeast Harris Co.) -- those photos were in early June, and I thought they may not have been around much longer than that. This is the second Harris Co. record, and only the second documented location for this species in the nine-county Houston vicinity we use for the web site (Harris, Galveston, Chambers, Brazoria, Fort Bend, Waller, Montgomery, San Jacinto, and Liberty Counties).

Comet Darner (*Anax longipes*), Hermann Lake in Hermann Park, Houston, Harris Co.(obs. Jerry Caraviotis) 13 Sept 98

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SOME KANSAS STATE AND COUNTY ODONATA RECORDS FOR 1998.

Roy Beckemeyer

Occasional collecting and museum specimen reviewing has led to some state and county records for Kansas which had not been previously reported. Thanks to Gene Young of Southwestern College in Winfield, Kansas for collecting with me in and around Slate Creek Wetlands in Sumner and Cowley Counties, and to Nancy Adams and Oliver Flint of the USNM for loaning me several boxes of Great Plains odonate material, some identified and some not.

State Records: The additions to the state list are based on museum specimens. They are: *Argia immunda* (Cherokee County (Riverton) Kansas, male, collected 27 April, 1963 by Gary F. Hevel, identified 1975 by M. Davis, USNM collection -

envelope). *Erythrodiplax umbrata* (Labette County (Oswego), Kansas, teneral male, collected 11 July, 1964 by Gary F. Hevel, identified 1986 by Rosser Garrison, USNM collection - envelope). These specimens bring the total Odonata known for Kansas to 124 species (83 anisoptera, 41 Zygoptera).

County Records: *Argia plana* (Cowley County (Rainbow Bend Spring, 7 mi south, 1 mi east Oxford, Kansas, pairs in tandem, collected by Roy Beckemeyer & Gene Young, 2 June, 1998). *Argia tibialis* (Sumner County (Slate Creek, Slate Creek Wetlands, Kansas, male, collected by Roy Beckemeyer & Gene Young, 2 June, 1998). *Ischnura denticollis* (Sumner County (pond, Slate Creek Wetlands), Kansas, male & female, collected by Roy Beckemeyer & Gene Young, 2 June, 1998). *Arigomphus submedianus* (Labette County (Oswego), Kansas, male, collected 31 May, 1963 by Gary F. Hevel, identified 1998 by Roy Beckemeyer, USNM collection - envelope). *Stylurus plagiatus* (Sedgwick County (Cowskin Creek, Pawnee Prairie Park), Kansas, male, collected by Roy Beckemeyer, 7 Sept., 1998). *Sympetrum ambiguum* (Sumner County (weedy area near Slate Creek, Slate Creek Wetlands), Kansas, teneral male & female, collected by Roy Beckemeyer & Gene Young, 2 June, 1998). *Tramea lacerata* (Sumner County (pond, Slate Creek Wetlands), Kansas, male, collected by Roy Beckemeyer & Gene Young, 2 June, 1998).

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SOME MISCELLANEOUS ODONATA COLLECTED IN THE MIDWEST IN 1998

Roy Beckemeyer

A number of trips this year afforded the opportunity to do some roadside collecting as a travel break. The following lists have been extracted from my collecting records for 1998:

ILLINOIS: Clinton County (Beaver Creek upstream of Flat Branch, 38 deg 41.6'N, 89 deg 24.23'W), 1 August, 1998:

Anax junius, *Epitheca princeps*, *Somatochlora linearis*, *Libellula incesta*, *Libellula luctuosa*, *Libellula lydia*, *Libellula pulchella*, *Pachydiplax longipennis*, *Pantala flavescens*, *Perithemis tenera*.

MISSOURI: Saline County (McAllister Springs Access to Blackwater River), 31 July, 1998: *Libellula luctuosa*, *Libellula pulchella*, *Pantala hymenaea*, *Tramea calverti*.

OKLAHOMA: Love County (Lake McMurray State Park), 22 May, 1998: *Enallagma basidens*, *Gomphus externus* (teneral), *Libellula luctuosa*. Payne County (Lake Carl Blackwell) 21 May, 1998: *Argia apicalis*, *Argia moesta*, *Epitheca costalis*, *Libellula lydia*. Latimer County (Robber's Cave State Park & Wildlife Management Area) 26 May, 1998: *Argia apicalis*, *Dromogomphus spinosus* (teneral), *Libellula cyanea*. Pushmataha County (Clayton Lake State Park) 26 May, 1998: *Argia fumipennis violacea*, *Enallagma traviatum westfalli*, *Nehalennia integricollis*

TEXAS: Marion County (Lake O' The Pines) 25 May, 1998: *Argia apicalis*, *Stylurus plagiatus* (teneral), *Epitheca princeps*, *Erythemis simplicicollis*, *Libellula luctuosa*.

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NEBRASKA AND SOUTH DAKOTA
ODONATA - A COMPILATION OF
COLLECTING REPORTS RELATED TO
THE JULY, 1998 VALENTINE, NEBRASKA
ANNUAL MEETING OF THE
DRAGONFLY SOCIETY OF THE
AMERICAS.

Compiled by Roy Beckemeyer

Reports were submitted for this compilation by: John Abbott, Jeff Ballard, Roy Beckemeyer, Paul Bedell, Duncan Cuyler, Jerrell Daigle, Nick Donnelly, Sid Dunkle, Oliver Flint, Bob Glotzhober, George Harp, Steve Hummell, Steve Krotzer, Bill Mauffray, Mike May, Blair Nikula, Dennis Paulson, Joe Smentowski, Ken Tennessen, and Hal White. Counties of record are listed for each species. Sight records are noted for those species for which a level of confidence can be placed on visual identification. A detailed Excel spreadsheet with specific data will be made available later for those interested in specific site and collector information. All specimens collected and sightings reported were in July, 1998 either immediately prior to, during, or immediately after the DSA meeting.

Calopteryx aquabilis: NE: Brown, Cherry, Dawes, Sioux; SD: Custer, Pennington. C.

maculata: NE: Box Butte, Brown, Cherry, Dawes, Dundy, Keya Paha, Otoe, Sioux. *Hetaerina americana*: NE: Brown, Buffalo, Cherry, Dawes, Dundy, Holt, Otoe, Sheridan, Sioux, Thomas; SD: Custer, Jones. *Lestes congener*: NE: Box Butte, Buffalo, Cherry, Dawes, Sheridan. *L. disjunctus australis*: NE: Brown, Cherry; SD: Custer, Fall River. *L. forcipatus*: NE: Brown, Cherry, Dawes. *L. rectangularis*: NE: Brown, Cherry, Holt, Otoe. *L. unguiculatus*: NE: Brown, Cherry, Custer, Dawes, Grant, Holt, Hooker, Lancaster, Rock, Sheridan, Sioux; SD: Jones, Fall River. *Amphiagrion* sp.: NE: Brown, Cherry, Dawes, Sioux; SD: Custer. *Argia alberta*: NE: Brown, Cherry, Sioux; SD: Custer, Jones. *A. apicalis*: NE: Brown, Buffalo, Cherry, Dodge, Holt, Lancaster, Madison, Otoe. *A. emma*: NE: Box Butte, Brown, Cherry, Dawes, Sioux; SD: Custer. *A. immunda*: SD: Custer. *A. fumipennis violacea*: NE: Brown, Cherry, Dawes, Holt, Otoe, Sioux, Thomas; SD: Custer. *A. moesta*: NE: Cherry, Otoe. *A. plana*: NE: Cherry, Keya Paha, Otoe; SD: Custer. *A. sedula*: NE: Dundy, Holt, Otoe. *A. vivida*: NE: Brown, Cherry, Dawes, Keya Paha, Sioux. *Enallagma anna*: NEBRASKA: Cherry, Dawes, Sioux; SD: Custer, Pennington. *E. antennatum*: NE: Brown, Cherry, Holt, Sioux, Thomas; SD: Custer. *E. aspersum*: NE: Otoe. *E. basidens*: NE: Custer, Hall. *E. boreale*: SD: Lawrence. *E. carunculatum*: NE: Box Butte, Brown, Cherry, Custer, Dawes, Dundy, Grant, Holt, Hooker, Keya Paha, Sheridan, Sioux, Thomas; SD: Custer, Fall River. *E. civile*: NE: Brown, Cherry, Custer, Dawes, Dodge, Dundy, Hall, Holt, Keya Paha, Lancaster, Sioux, Thomas, Washington. *E. clausum*: NE: Cherry, Dawes, Grant, Sheridan. *E. cyathigerum*: NE: Cherry; SD: Lawrence, Pennington. *E. exsulans*: NE: Brown, Cherry, Holt. *E. geminatum*: NE: Hall. *E. hageni*: NE: Brown, Cherry, Grant, Holt, Hooker; SD: Custer, Fall River. *E. praevarum*: NE: Dawes, Dundy; SD: Custer. *E. signatum*: NE: Dundy. *Ischnura damula*: NE: Dundy, Sioux; SD: Custer. *I. hastata*: NE: Lancaster. *I. perparva*: NE: Brown, Cherry, Dawes, Sioux; SD: Lawrence. *I. verticalis*: NE: Antelope (sight), Box Butte, Brown, Cherry, Custer, Dawes, Dundy, Grant, Holt, Keya Paha, Lancaster, Otoe, Rock, Sheridan, Sioux; SD: Custer, Fall River, Jones, Lawrence. *Nehalennia irene*: NE: Brown, Cherry.

Aeshna canadensis: NE: Brown, Cherry, Keya Paha, Sheridan, Thomas. *A. constricta*: NE: Brown, Cherry, Keya Paha, Sioux; SD: Custer. *A. interrupta lineata*: NE: Brown, Cherry. *A. multicolor*: NE: Box Butte, Buffalo, Cherry, Keya Paha, Sheridan, Sioux, Thomas; SD: Fall River. *A. palmata*: NE: Cherry, Dawes; SD: Pennington. *A. umbrosa*: NE: Cherry. *Anax junius*: NE: Brown, Cherry, Dodge, Grant, Madison, Otoe, Sheridan; SD: Jones. *Boyeria vinosa*: NE: Brown, Cherry, Keya Paha. *Arigomphus cornutus*: NE: Cherry; SD: Custer, Pennington. *A. submedianus*: NE: Buffalo, Washington. *Erpetogomphus designatus*: SD: Fall River. *Gomphus externus*: NE: Brown, Cherry, Gage, Thomas. *G. graslinellus*: NE: Dawes, Keya Paha; SD: Custer. *G. militaris*: NE: Red Willow. *Ophiogomphus severus*: NE: Brown, Cherry, Dawes, Sioux, Thomas; SD: Custer, Pennington. *Progomphus obscurus*: NE: Cherry, Dundy. *Stylurus amnicola*: NE: Brown, Cherry, Gage, Madison. *S. intricatus*: NE: Brown, Cherry, Thomas. *S. notatus*: NE: Cherry. *Epiptera costalis*: NE: Holt, Lincoln. *E. cynosura*: NE: Sioux; SD: Pennington. *E. princeps*: NE: Antelope, Cherry, Dodge, Lancaster. *Somatochlora ensigera*: NE: Cherry. *Brechmorhoga mendax*: SD: Fall River. *Celithemis elisa*: NE: Cherry. *C. eponina*: NE: Brown, Cherry, Custer, Hall, Lancaster (sight). *Erythemis simplicicollis*: NE: Antelope (sight), Brown, Buffalo, Cherry, Custer, Dawes, Dodge (sight), Dundy, Holt (sight), Hooker, Lancaster, Lincoln, Madison (sight), Otoe, Red Willow, Thomas; SD: Jones. *Leucorrhinia hudsonica*: NE: Cherry. *L. intacta*: NE: Brown, Cherry, Dundy, Grant, Holt, Lincoln, Sheridan; SD: Custer, Pennington. *Libellula forensis*: SD: Custer. *L. luctuosa*: NE: Antelope (sight), Brown, Buffalo, Cherry, Custer (sight), Dodge (sight), Grant, Hall (sight), Holt (sight), Lancaster (sight), Lincoln, Madison (sight), Otoe, Red Willow, Sheridan, Sioux, Thomas; SD: Custer, Jones, Pennington. *L. lydia*: NE: Antelope (sight), Box Butte, Brown, Cherry, Custer, Dawes, Dodge (sight), Holt (sight), Hooker, Madison (sight) Otoe, Red Willow, Sheridan, Sioux; SD: Pennington. *L. pulchella*: NE: Box Butte, Brown, Cherry, Custer, Dawes, Dodge (sight), Dundy, Grant, Holt, Hooker, Keya Paha, Lancaster (sight), Madison (sight), Otoe, Lincoln, Sheridan, Sioux, Thomas; SD: Custer, Jones, Pennington. *L. quadrimaculata*:

NE: Brown, Cherry, Dawes; SD: Custer. *L. saturata*: SD: Fall River. *Pachydiplax longipennis*: NE: Brown, Buffalo, Cherry, Custer, Dawes, Dodge (sight), Dundy, Holt (sight), Lancaster (sight), Lincoln, Madison (sight), Otoe, Red Willow, Rock, Sheridan, Thomas. *Pantala flavescens*: NE: Buffalo, Cherry, Dawes, Thomas. *P. hymenaea*: NE: Brown, Cherry, Dodge (sight), Otoe. *Perithemis tenera*: NE: Antelope (sight), Buffalo, Cherry, Custer, Dodge (sight), Otoe, Red Willow. *Sympetrum corruptum*: NE: Brown, Cherry, Dawes, Dundy, Grant, Hooker, Keya Paha, Sheridan, Sioux, Thomas; SD: Jones, Pennington. *S. costiferum*: NE: Brown, Cherry, Dawes, Grant, Sioux, Thomas. *S. internum*: NE: Box Butte, Cherry, Dawes, Hooer, Sheridan; SD: Jones, Pennington. *S. obtrusum*: NE: Box Butte, Brown, Buffalo, Cherry, Custer, Dawes, Dundy, Grant, Holt, Lancaster, Lincoln, Madison, Rock, Sheridan, Sioux, Thomas; SD: Fall River, Jones, Pennington. *S. occidentale fasciatum*: NE: Brown, Cherry, Custer, Dawes, Dundy, Grant, Holt (sight), Hooker, Keya Paha, Otoe, Rock, Sioux, Thomas; SD: Jones, Pennington. *S. rubicundulum*: NE: Blaine, Brown, Buffalo, Cherry, Dawes, Holt, Keya paha, Sheridan, Sioux, Thomas; SD: Jones, Pennington. *S. vicinum*: NE: Cherry. *Tramea lacerata*: NE: Brown, Cherry, Custer, Dodge (sight), Dundy, Lancaster (sight), Lincoln, Sheridan; SD: Custer, Jones, Pennington. *T. onusta*: NE: Dodge (sight).

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TWO NOTES ON *SOMATOCHLORA ENSIGERA*, THE PLAINS EMERALD

Roy Beckemeyer and Steve Hummel

1. Addendum to "A Brief History of the Plains Emerald, *Somatochlora ensigera*":

The summary of the history of this species (Beckemeyer, 1998) that appeared in *ARGIA* several issues ago omitted some recent data on collections in Iowa. Steve Hummel has a record from the insect collection at Iowa State University of *S. ensigera* from Story County in central Iowa, collected by L.S. Wells on 7/16/1916. He has also collected the species quite recently himself in Sac County, Iowa. In both of his recent collections (8/15/96 and 8/24/97), the specimens were taken from a small

unnamed stream running through cornfields and pastures in the southeast part of the county.

Cruden and Gode (1998) listed the species as rare and uncommon in Iowa, and indicated that they had recorded it from 14 counties (27 locations) during their 3 year survey of Iowa odonates. Their 14 counties (Gode, 1998) included Sac County but did not include Delaware County which Walker had listed, or Story County, so there are now a total of 16 counties of record in Iowa for *Somatochlora ensigera*.

A county dot map furnished by O.D Gode, Jr. depicting distribution of *Somatochlora ensigera* in the US that includes these Iowa records may be found at: <http://www2.southwind.net/~royb/somens.jpg>

2. A note on the impact of intense collecting pressure for a brief period of time on a *Somatochlora ensigera* site:

One of our concerns prior to the 1998 Annual Meeting in Valentine, Nebraska, was the possible impact of collecting on the tiny stream, Boardman Creek, which was the location of what was at the time the only known Nebraska population of *Somatochlora ensigera*. The stream is a fairly small creek feeding into Merritt Reservoir.

The site was visited nearly every day of the meeting, from Tuesday, July 14 through Tuesday, July 21. As far as we have been able to ascertain, quantities of adults collected during the meeting (to our knowledge no larvae or exuviae were collected) included 7 (6 males and 1 female) on 15 July, 4 males on 16 July, 1 male on 28 July, and 7 others between 16 and 21 July (exact dates unknown), for a total of 19 specimens from Boardman Creek. Of 19 reports of collecting I received from attendees at the meeting, 10 had not taken specimens of *S. ensigera*, and 9 collectors accounted for these 19 species. The only significant number taken by a single collector were the 7 specimens collected by Tim and Daniel Cashatt, which were taken in support of their overall *Somatochlora* study related to their program on *S. hineana*. Thus, even with a concentration of odonatologists present in the area, the number of specimens taken was pretty small.

Several visits were made to Boardman Creek during which no *ensigera* were seen: Roy Beckemeyer (14 July, 1430-1600), Hal White (18 July, 1430-1500) and Dennis Paulson (19 July, 1400-1599) reported this experience. This could very well have been due to the weather conditions as *ensigera* activity seemed to be more prevalent in the mornings.

Tim and Daniel Cashatt took 6 males and a female on the 15th. Tim reports (Cashatt, 1998) that he "...walked upstream about 1000 m. There were occasional males flying along the stream along that stretch, but most of the activity was between the bridge and about 25 m. upstream. Most of the activity that we observed was near where a cattail marsh encroaches the stream bank. 1-2 females were seen to oviposit about one foot from the edge of the water on a muddy slope around 9:30 am. Males seemed to be interested in checking out this spot also. Although we took 6 males and one female between 9:00 am and 11:00 am, we must have seen at least twice as many males and females while we were there."

On the day Roy Beckemeyer, Jeff Ballard and Sid Dunkle visited the stream, 16 July (0930-1200), we observed fair numbers of individuals. Beginning at about 1015, Roy Beckemeyer noted his first male patrolling at the edge of the bank and flying amongst the overhanging grasses. There seemed to be a male coming by every 15 to 20 minutes. A total of 4 males were taken by our group. On two separate occasions a female was observed ovipositing as described by Tim, the first at nearly 1100, the second within 20 minutes of the first. Our groups' capture rate was closer to 20 or 25% rather than 50%.

On 23 July, Roy Beckemeyer visited Boardman Creek for half an hour from 0900-0930. A cold front had come through, and although the sky was partly cloudy, it was cool and there were only a few *Calopteryx* and *Hetaerina* and some cold-looking *Sympetrum*s about; no *ensigera* were seen, but not many odonates were seen at all because of the cool weather. Except for a narrow and short trail through the grass along the road to an access point on the creek, the vegetation appeared untrampled. The same was true of the cattail area where the females had been ovipositing. Our visits were thus apparently conducted with care and diligence on the part of

"I am looking forward to catching the early spring species flying around the pond. Jerrell's dad and I may even attend the 1999 DSA SE regional meeting in West Tennessee. See you there!"

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**GREAT SMOKY MOUNTAINS
BIODIVERSITY PROJECT**

From John Morse at Clemson University comes the information that a ten-year project to inventory the complete biota of the Great Smoky Mountains will begin shortly.

The coordinator of the Odonata part of the project will be our own Ken Tennesen, who has devoted much of his professional life to the streams of this region.

For further information, you can contact Dr. Kenneth J. ("Ken") Tennesen, 1949 Hickory Avenue, Florence, AL 35630
phone: 205-386-3651
email: ktennesen@aol.com

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**COLOR GUIDE TO COMMON
DRAGONFLIES OF WISCONSIN** by Karl
and Dorothy Legler

reviewed by Mark O'Brien

I just received the new field guide, "A Color Guide to Common Dragonflies of Wisconsin" by Karl and Dorothy Legler and Dave Westover (1998)-- a 7" x 8 1/2" field guide with glossy color photos of 76 of Wisconsin's 110 species of dragonflies. The book contains information of identification, breeding habitat, behavior, range maps and flight period.

To obtain a copy for \$19.95 (includes postage), contact the authors at karlndot@bankpds.com or phone at (608) 643-4926. You can send a check or money order to: Karl Legler, 429 Franklin Street, Sauk City, WI 53583-1228.

This book is one that would be useful to anyone interested in Odonata in Michigan, and the Great Lakes since Wisconsin is just on the other side of the lake. The photos are well done, and I think everyone would find it useful!

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LES ODONATES DU QUEBEC

by Jean-Guy Pilon and Denise Lagacé
Entomofaune du Québec Inc., 637, Boulevard
Talbot, Suite 108, Chicoutimi, Québec G7H
6A4 CANADA (post-publication price not
known)

reviewed by Nick Donnelly

This long awaited book fills a substantial gap in our knowledge of the odonate fauna of northeastern North America. It makes available the extensive collecting results and careful studies (including extensive larval studies) of Jean-Guy Pilon, who has been studying Odonates for several decades from his base in Montreal and his many students.

This book is in French and attempts, in the words of the authors, to make the subject available to a large francophone audience of "beginning naturalists and amateurs". The book fills a large need, because the excellent book by Fr. Adrien Robert (*Les Libellules du Québec*, 1963) has been sadly unavailable for many years.

The book begins a recapitulation of the history of Odonata study in Québec (which began with Abbé Léon Provancher in the late 1800's). A discussion of species which should be sought in Québec is especially useful; all too often regional guides omit this essential information. There is a discussion of Odonata biology, morphology, and conservation.

The main part of the first half of the book is an extensively illustrated key to adult odonates, which follows the useful earlier format of Robert's book rather closely. Neither book, unfortunately, keys or even illustrates the larval forms. Because a large number of the "beginning naturalists" may be associated with fresh-water studies related to problems of conservation of streams and other wetlands, this seems an unfortunate omission.

The second half of the book begins with a discussion of Odonata habitats in Québec, arranging them into biologic zones. The main part of this half is a recapitulation of the distribution for each species. Happily there are dot maps for each species, because the long text references (a locality and a bibliographic reference is included for each and every occurrence!) are very exhausting to follow. The

dot map scheme is wisely not based on political subdivisions of the Province, which are irregular in shape and quite variable in size, but by arranging them in blocks of about 27 km in the north-south direction, and 37 km in the east-west direction. This is a very sensible scheme which makes the distribution very clear at a glance.

The dot maps merit careful inspection. I was very interested to find that there are more than twice as many blocks in which *Somatochlora franklini* occurs, for example, than for *Libellula luctuosa*! And nearly as many for *Somatochlora brevicincta* and *Aeshna septentrionalis*. All readers will be impressed also by the very sparse dots for the entire northern three quarters of the province. This is a very difficult province to survey, and Pilon and his students deserve high praise for their results.

One departure from Robert's book is the absence of any discussion of habitat for individual species. There is also no discussion of taxonomic problems, although these are hinted at in the key by assigning some taxa to "formes" pending further revisionary study.

The book will be an important work for all northeastern Odonata workers to include in their libraries. Even a glance at the extensive locality information that this book makes available will impress even the most devoted worker with the major effort that Pilon and his many students have devoted to finding and understanding Odonata in this province.

I expect that this book will reach its intended audience, and that there will be a resurgence of interest among younger people in eastern Canada. It certainly stands as a monument to Pilon's vast labors.

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MORE ON STATIC ELECTRICITY

Joe Smentowski contributes a "tongue-in-cheek suggestion on beating the "static electricity" problem with odonate envelopes. He notes that 6th grade students who had washed their hair the night before utterly defeated his static electricity experiments. He suggests using "Bounce" or similar anti-static cling products. Don't just stand there - try it!

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NEW NAME FOR ZONIAGRION EXCLAMATIONIS

Earlier this year, Kathy Biggs and Tim Manolis pointed out to Dennis Paulson, the chair of the DSA Common Names Committee, that "Sierra Damsel" was a quite inappropriate name for *Zoniagrion exclamationis*, a damselfly endemic to northwestern California. The species, while common in valley and foothill locations on the western side of the state, barely extends into the Sierra foothills. Therefore the committee recently voted to change the common name of this species to **Exclamation Damsel**, appropriate for both its scientific name and one of its most prominent field marks. It is one of several coenagrionids in which the males typically have pale exclamation marks on the dark thoracic dorsum. Others include *Ischnura posita*, the Fragile Forktail, and *Coenagrion interrogatum*, the Subarctic Bluet, neither of which occurs in the range of *Zoniagrion*.

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COMMON NAME FOR GOMPHUS ADELPHUS EMENDED

The Common Names Committee has adopted a modified common name for *Gomphus adelphus*. Formerly the "Moustached Clubtail", it is now the "Mustached Clubtail". The shorter spelling is more common in North America.

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MEMBERSHIP DONATES TO CORBET BOOK

Jerrell Daigle

The DSA membership responded quickly and most favorably with monetary contributions to the Philip Corbet Book Fund! I have written confirmation from the German Dragonfly Society's bank that our donation of \$1,465.00 was received and deposited.

I would like to heartily thank our American and Canadian DSA contributors as follows: Alice Phillips, George and Juanda Bick, Paul Michael Brunelle, John Hubbard, George Carmichael, Clark Shiffer, Dennis Paulson, Truman Sherk, Bob Hoenig, Roy Beckemeyer, Elizabeth "Cassie" Gibbs, Jerrell J. Daigle, Sid Dunkle, Hal White, Bohdan Bilyi, Victor Hellebuyc, Nayeem Hoq, Ollie Flint, Ken Soltesz, Nicholas

The most interesting portion of the site for the biodiversity/biogeography specialists will undoubtedly be the assessments themselves. In that section, the star of the show is the "Assessment of Species Diversity in the Mixedwood Plains Ecozone" report. The home page for this report is at:

<http://www.cciw.ca/eman-temp/reports/publications/Mixedwood/intro.html>

The stated purpose of the author is "...to present a series of reports...on the species composition and biogeography of selected taxa...inhabiting the Mixedwood Plains Ecozone...to provide the foundation of a comprehensive framework for analyzing the status and dynamics of species level biodiversity..." After a brief introduction and review of the Mixedwood Plains Ecozone (southern Ontario south of the Precambrian Shield and the St. Lawrence Valley of Quebec east to the region of Riviere-du-Loup), there are links to the floral/faunal assessments themselves. These are remarkably diverse, covering: Pteridophytes, Vascular Plants, Freshwater and Terrestrial Molluscs, Crayfishes, Mites, "Short-Horned" Bugs, Sawflies, Butterflies and Moths, Ground Beetles, Freshwater Fishes, Birds, Mammals, Mushrooms, Amphibians and Reptiles, and yes, of course (why else would we be doing this review?), the Dragonflies and Damselflies.

The Odonata assessment is located at:

<http://www.cciw.ca/eman-temp/reports/publications/Mixedwood/odonata/intro.html>

The introduction to the Dragonflies and Damselflies report contains a linked Table of Contents with the titles: History [of] Changes; Biogeography; Research Background; Statistics; Zonal Boundaries; Information Gaps; Major Needs With Respect to Biodiversity Protection; References; and Table 1: Damselflies and Dragonflies of the Mixedwood Plains. Again the pages are short and fast loading, and there are links to figures so that these can be accessed separately as required. (A bug in the Dragonfly report caused the figures to fail to load properly although figures in the earlier portions of the site did load correctly. It appeared that the figure images were either not cited properly in the link or were not named correctly. I did email the authors about the glitch but do not know if the problem has been fixed.)

This paper should stir up some interest among the DSA membership, dealing as it does with assessing the state of diversity of Odonata in this ecozone. I very strongly urge you to access the site, read the report, and then offer your comments to the authors of the site (P.M. Catling, R. Hutchinson, and B. Menard) via the Feedback link on their pages. This should be one of the major advantages of putting such information on the web - real-time dialogue and discussion. Furthermore, such discussion could obviously take on any of a number of flavors. One would be input on more effective use of the advantages of the HTML language and the Internet linkages. Another would be with the approaches used and data presented or the conclusions reached. Web publications with this kind of direct email link back to the authors allow queries and comments similar to those that take place at scientific meetings.

It is interesting to be able to read through the odonate assessment, then move on to another group of organisms and compare that assessment. A current weakness of the site is that there is no overall attempt to synthesize the various floral and faunal reports and draw some general conclusions. For example, one could attempt to assess relative strengths and weaknesses and to define further work required to have a balanced state of knowledge across the groups. Or one could use the various reports to rank the taxa as to which are the better indicators of ecozone health. Perhaps such a synthesis is forthcoming.

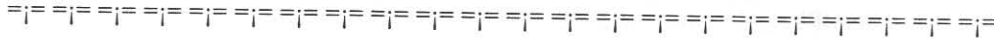
In any event, I think that you will find something here to pique your interest, perhaps even to inspire in you other ways in which to use our electronic connections to improve the state of our understanding of odonatology and of our world.

[Ethan Bright has added an interesting parallel site. In a recent e-mail he writes, "I thought you'd be interested in this web site pertaining to USFS ecoregion classification. It contains a lot of useful landscape-ecosystem information and a useful context in which to think about odonate (and other macroinvertebrate) species-distributions on a regional scale.

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