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THE DRAGONFLY SOCIETY OF THE AMERICAS

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JOURNALS PUBLISHED BY THE SOCIETY

ARGIA, the quarterly news journal of the **DSA**, is devoted to non-technical papers and news items relating to nearly every aspect of the study of Odonata and the people who are interested in them. The editor especially welcomes reports of studies in progress, news of forthcoming meetings, commentaries on species, habitat conservation, noteworthy occurrences, personal news items, accounts of meetings and collecting trips, and reviews of technical and non-technical publications. Articles for publication in **ARGIA** should preferably be submitted and 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 above) 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.

MEMBERSHIP IN THE DRAGONFLY SOCIETY OF THE AMERICAS

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: *Neurocordulia*, undescribed species, Canoose Stream, Charlotte Co., New Brunswick.
Drawing by Paul-Michael Brunelle

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

IN THIS ISSUE

The Spring and much of the Summer have come and gone, and many of us are weary from the efforts that always accompany the prime time of the year for dragonflies. This has been a difficult year in one way or another over much of North America: relentlessly cold and wet in the northeast and excessively dry in much of the south central region. Yet, the bugs were there, and all that was required was more effort and endurance than usual for dragonfly hunters.

The popular press has picked up on our activities big time. Most of you have seen Richard Coniff's fine article in **SMITHSONIAN**. It has certainly brought us a flurry of enquiries. I have recently seen three newspaper articles, that have displayed our members and their activities in terms that can be readily appreciated. The first two articles (from Bangor ME and St. John NB) dealt with the New Brunswick gathering; the third (Beckley WV) featured Sandy Garrett on her home turf.

The Southeastern field gathering taught several of us that early April can be very cold in southern Mississippi. A grand time was had by all, and none of us had to put away specimens in the evening! The Annual Meeting in New Brunswick enjoyed one of those truly rare intervals of bright sunshine and heat in an otherwise uniformly cold and dreary fortnight. A "pick-up" gathering in the Adirondacks a few weeks later again magically found a window of sunshine in an otherwise dreary week of rain.

The really big news this quarter is the appearance of Minter Westfall and Mike May's long-awaited manual to damselflies. As I write this, my copy is winging my way (slowly, as it turns out). I have seen the page proof, so I know how valuable an addition to our literature it is. Now I can't wait for the final copy to arrive via "snail mail". In addition, several other publications of interest have appeared. Odonates are finally getting some long overdue

publication coverage. Surely a general field guide cannot be far off?

Most of the reports of local collecting have been from the northeast US this time. The genus *du jour* this year has been *Neurocordulia*, which is relatively unknown, largely because the adults fly fast at dusk and are very difficult to see. Our considerable success with the undescribed species in New Brunswick has obscured the success that the Ohio group has had with the little-known species *N. molesta*.

We include accounts of some foreign trips to whet appetites and to show that dragonflies can be sought around the world - and that not all beautiful scenery is in North America.

On an historical note, George Bick shares with the readers an account of his early days in the study of Odonata. George tells us of several people who are known to most of us only as authors of articles.

Dan Spada contributes an intriguing note on swallows and dragonflies. The suggestion that birds may enjoy sport rather than catching food is though provoking. Ailsa and I saw last summer a similar event, but with the shoe on the other foot. We watched a peregrine falcon trying to catch a tree swallow. Was this dinner or sport? We couldn't tell.

Dennis Paulson ponders the significance of fewer females in collections than males. His provocative article reminds us, however, that in some groups it is difficult to find males! We need to learn lots more about male - female behavior in all dragonflies.

At the end we print the final version of the **COLLECTING GUIDELINES**, which sets out the official policy of the Society on this important topic.

As an appendix we print the final list of **Common Names of North American Odonata**, following the recent canvassing of the

membership. Thanks to Jerrell Daigle for the compilation of this list.

EMERGENCE AT THE BARLOWS

We congratulate Nancy and Allen Barlow for their new son Scott Ross. The dragonflies of northern New Jersey got a breather this year, but just wait 'til next year. . .

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DRAGONFLIES AND DRAGONFLY PEOPLE IN THE NEWS

Nick Donnelly

Following our brief appearance in **NATURE CONSERVANCY** (May / June 1994), which featured our Bend, Oregon 1993 meeting, the **DSA** and some of our members have been featured in several magazines and newspapers. The articles are especially interesting - not only do we know the people featured, but we get an interesting insight as to how others see us - and our hobby.

SMITHSONIAN July 1996. "**It's a bird . . . It's a plane . . . It's a Dragonfly**" by Richard Coniff, whom many of us met at the Grants, New Mexico, 1995 meeting. This is an excellent article which has attracted much attention to our group.

TENNESSEE CONSERVATIONIST, April 1996. Ken Tennesen has recently published an article entitled "**The Tennessee Snaketail Dragonfly**". Accompanying this article are spectacular color photos by Ken of *Ophiogomphus acuminatus* and *Gomphus sandrius*. With a few more photos like these we wouldn't need a field guide!

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THIS SEASON'S COLLECTING NOTES

NEWS FROM CAPE COD

Jackie Sones [adapted from e-mail]

REGISTER-HERALD (Beckley, West Virginia) "**Madame Dragonfly**" Sandy Garrett's interest in dragonflies and her work at the College of West Virginia were described recently in a nice article by Mannix Porterfield. Only one thing was missing. What was the name of the dragonfly she netted shortly after getting off the plane returning from New Brunswick? ("He was a high-flying species and I didn't think I would catch him, but I did.")

BANGOR DAILY NEWS (Bangor, Maine, 4 July 1996) "**Chasing Dragonflies**" Reporter Diane Graettinger came to the New Brunswick meeting to see what we were all about and was reminded of "excited youngsters headed for a treasure hunt."

NEW BRUNSWICK TELEGRAPH JOURNAL (St. Johns, New Brunswick, 1 July 1996) "**Dragonfly Enthusiasts Gather to View New Species**" David Young was the other reporter at our meeting. He began his article with an account of Paul Brunelle's dramatic "bownet" with which he catches dragonflies in the front of his jeep as he drives down country lanes. I found this the most engaging article, even if I failed to catch the "thrill of good road kill."

RAM-PAGE (Randolph High School, Randolph New Jersey, 30 April 1996) "**Teacher Goes Crazy for Flying Bugs**" John Michalski's high school biology students describe how his interest in dragonflies developed and flourished in Trinidad and New Guinea. They failed to report, however, that he served insects as tasty treats at a school picnic.

A short note to let you know that we had some dragonflies moving along the Outer Cape (Cape Cod) today (21 May 1996)! We counted over 100 individuals in about 4 hours. The predominant species were *Anax junius* (mature

males) and *Pantala hymenaea*. We observed a few pairs flying in tandem, and some feeding behavior...otherwise, most were individuals moving steadily, parallel to the coastline and perpendicular to the winds (west southwest 10-20 m.p.h.).

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ADIRONDACKS

Bob Barber [adapted from e-mail]

I made two short and relatively unproductive trips to the Adirondacks this year, with poor weather, high water, and the worst black flies and mosquitos that I have ever seen (12-14 June and 27-29 June). I found very few exuviae anywhere. I primarily looked at places that I visited last year on the Hudson. I did find one small spot at Thurman (418 bridge West of Warrensburg) with twenty seven *Ophiogomphus anomalus* and three *O. howei* exuviae. These were high on a sand bank and mixed with a lot of detritus. I found a great access down river near Lake Luzerne (State Forest Preserve - Hudson River Recreation Area) just north of the confluence of the Sacandaga River and the Hudson. I found twelve *O. anomalus* and one *O. howei* exuviae there. These were high up on a steep bank. Both of these areas are new for *O. howei*, and the latter extends *O. anomalus* a considerable distance down river. I estimate that this is about 40 river miles where *O. anomalus* is apparently common. I found one adult *anomalus* perched on a bush on 29 June between Thurman and The Glen. This was the same site of the adult I took last year in early July. Only six exuviae of *O. howei* in four visits probably indicates the population is small, but they occur over many river miles as well.

I wanted to search the lower Sacandaga River, but I couldn't find access to good areas. I didn't have much time to search. I did look at some beautiful sections above Sacandaga Lake, where the river is small and rocky, and found nothing but *O. aspersus* and *S. albistylus*, just what I expected from the look of the river. This area didn't look like it has potential for any big surprises.

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MASSACHUSETTS TO NEW BRUNSWICK AND BACK

Blair Nikula [adapted from e-mail]

We ended up with 17 species of Corduliids for the trip; in addition to 7 *Somatochloras* (*elongata*, *forcipata*, *franklini*, *kennedyi*, *minor*, *tenebrosa*, and *walshii*), we ended up with 3 *Neurocordulias*. On the way home we happened to be passing the Cambridge Reservoir in Waltham at dusk, so on a whim we decided to stop and damned if Jeremiah didn't catch *N. obsoleta* within 5 minutes of getting out of the car! We ended up catching 3 more in short order. None of us had ever seen a Neuro of any sort prior to the weekend (obviously just a lack of looking), so it was an exciting conclusion to the trip.

This past weekend we had another good bug on the Cape. Saturday, Jeremiah and I found a *Libellula axilena* at the Eastham vernal pools that have been so productive for us (*I. prognata*, *A. mutata*, etc.). Due to some embarrassing ineptitude on my part, we failed to catch it, and it didn't stick around to give us a second chance. However, I returned the following morning (7 July) and it was still there - I didn't miss this time! As far as we know, it's a first for the state.

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CONNECTICUT RIVER

Dave Wagner [adapted from e-mail]

Mike [Thomas] and I had a red letter day here on the upper Connecticut near the Massachusetts line (0.5 mi S). It was highly overcast so decided to look for exuviae. We picked up *Gomphurus* sp. (keys out as *vastus* but Mike and I doubt it, read on), *Gomphus abbreviatus*, *Epitheca princeps*, *Macromia illinoiensis*, and the kicker: *Neurocordulia yamaskanensis* (common). Paddled over to another sand bar and picked up *Ophiogomphus rupinsulensus*, more *Gomphurus*, and an exuvia of *Stylurus amnicola*! Life didn't get any better, but decided to head out and up river. Found what looked to be a sand bar on the map, somehow managed to grovel and beg permission

to visit. Saw a *Gomphurus* on the wing soon as we arrived. Beached the canoe and started walking this enormous sand bar and were rewarded by a teneral male *Stylurus amnicola*. We kept it and are feeding it. Further up the sand bar we ran into *Gomphurus fraternus*--saw more than 20. Walking further we got a more vegetated part of the island and encountered two *Gomphurus ventricosus* on territory doing their thing...amazing! Even though our exuviae all key out to *vastus* such would be too hard to believe, especially since we didn't see any adults. But any case it was a remarkable trip, esp. since we knocked off by 2:00 PM.

[later] Went out on the Connecticut in central Massachusetts yesterday. Picked up exuviae of *Stylurus amnicola*, *spiniceps* and *scudder*, *Gomphurus vastus*, *Neurocordulia yamaskanensis*, etc. We were very fortunate to see a nice show of *Gomphurus vastus*--guess we saw 20 in less than 2 hours. We got some great behavior data on the male display behavior. We also had WONDERFUL sport netting these on the river from a canoe. Can't remember the last time I had that much fun...wicked fun. Nailed five without too much effort and let the rest maximize their Darwinian fitness.

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CORDULEGASTER ERRONEA FINDS IN OHIO

Bob Glotzhober and Dan Riggs

Between July 20th and 28 our search for this rare Ohio dragonfly has taken off in high gear. Until the folks at OSU accidentally caught three *Cordulegaster erronea* with malaise traps in 1992 (see ARGIA, May 1995) we had only seven records of this species in Ohio. After two years of trying to duplicate their work, we finally found good populations along small woodland streams at the "Barneby Center" in the Hocking Hills south of Lancaster. This is the same site that Norm Johnson and company collected them in 1992, but until we quizzed them repeatedly we had not been looking in the right habitat. The Barneby Center was recently an OSU training center for environmental education, and a church camp before that. Now it is part of a 5,000 + acre metro park, operated

by the Columbus Metro Parks. Much will be kept wild. In addition to *C. erronea*, bobcat are present - an Ohio endangered species- along with wild turkey, black vultures, and other common species. We found at least three ravines with *C. erronea*, and the area has numerous other similar streams. As we have seen it, the habitat appears to be small streams about 1 foot wide and 1/2 to 3 inches deep. These are spring-fed streams which appear to flow all season. The ones where we have had success in are steep-sided ravines, sometimes with side walls and small waterfalls up to 15 feet high cut through the Black Hand Sandstone (Mississippian). The hills are covered with various ages and types of forest, including oak-hickory hilltops, scrub pine, mixed mesophytic hardwoods, and localized hemlock.

Having fixed a searching image at the Barneby site, we have spread out to other sites nearby, and just this weekend have had double luck. Five miles away from the Barneby Center is Wahkeena Nature Preserve, operated by the Ohio Historical Society. One of the 10 previous records for *C. erronea* in Ohio came from Wahkeena in 1983. We had tried unsuccessfully to re-find the species here for the past two years. With our new searching image, I set up a modified malaise trap on Friday afternoon much higher into the hills than we had searched before. While setting the trap I saw one flying 1-6 inches above the stream bed, but did not succeed in collecting it. The trap was up by 4:30 PM, and when Tom Shisler, our site manager, checked the malaise trap at 8:00 pm, there were two males present. One was collected, the other marked with permanent magic marker on the wings and released. During the same weekend, Dan Riggs returned to Crane Hollow, a private nature preserve about 25 miles southeast of the Barneby Center and Wahkeena. It has a major hollow/ravine that runs for over 3 miles, with a large number of smaller side hollows. We had been checking the main stream (2 to 10 feet wide, 2" to 2' deep) and the lower ends of the side channels. Now Dan set up the malaise trap further up a ravine, and explored several others. By Sunday he had collected one male (caught while flying) and seen a few others. As at the Barneby Center, a check for larvae produced positive results here also. We have been finding larvae in shallow pools, often off to the side of the main flow,

which have a few dead leaves and often less than 1/2 inch of brown organic silt above the packed sandy bottom. Some of these pools have less than one inch of water. Forget the big D-frame dip nets. We sifted through them with our fingers, looking for wiggling bodies in the muck and silt brought up into our hands.

In the last week we have collected seven males. The first four were dead in our trap at the Barneby Center the day after Dan had to forgo checking the trap - something about his first child being born 3 1/2 weeks early the preceeding day! We have also caught, marked, and released nearly another dozen. We are experimenting with marking / recapture techniques, as well as constantly re-modifying our malaise traps. This is in preparation for a major study planned to start next season. While it is not certain yet, this could become Dan's master's thesis at Ohio University.

Dare I say that this species is enthralling! The yellow markings seem much brighter than any other *Cordulegaster* I have seen, and the depths of its eyes are mesmerizing green. Combined with its atypical Odonate habitat, it is a fascinating species.

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OHIO - WHERE THE *NEUROCORDULIA* ARE

Nick Donnelly

Although the attention has been on the undescribed species of *Neurocordulia* found in New Brunswick by Paul-Michael Brunelle, and caught by most of the participants of the Annual Meeting, there has been considerable success with another little known species of the genus - *N. molesta* - in Ohio. Starting with Bernie Counts' find of larvae of *molesta* in the state, a small group organized by Bob Glotzhober (with Bernie Counts, Bob Restifo, Dan Riggs) has assembled weekly in the cold waters of the Scioto River to catch adults. I joined them on

Saturday, 20 June, to try my luck, only to meet my usual nemesis - a river in flood. We didn't see any of them that evening, but this season the group has taken less than a dozen specimens, all but one a female, of this little known species. The Ohio specimens are of interest in probably corresponding to Walsh's type (now missing), which was from the Midwest. Recent records have all been from Florida, and the southern specimens that I have seen differ in what could be an important way. The Midwestern form has a prominent process on the mid-trochanter that has no counterpart in other Odonata in the world known to me. that has such a process on any trochanter. We need to see more material to find if there is a regional difference that merits consideration of an additional species, or if there is merely variation in the expression of this feature.

My trip wasn't totally in vain. For two nine-hour drives I did take a male and female of *Gomphus externus*, which has one of the widest distributions of any species of *Gomphus* in North America.

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NEW RECORDS FROM NEAR LAKEFIELD, ONTARIO

Peter Burke [adapted from e-mail]

I was meaning to write to tell you that we collected some new species for Ontario recently. Back in June (the 27th actually) my friend Colin Jones and I were out just north of where I live for a couple of hours in the afternoon. Luckily we decided to check a spot with a shallow sandy lake, and lots of sphagnum bogs nearby. To our surprise, we caught three *Gomphaeshna furcillata* (new to Ontario) and a *Progomphus obscurus* (new to Canada). Not knowing their current status, I contacted Paul Pratt, who told us the good news. In fact, I have heard of another *Gomphaeshna* collected since!

NOTICES

NABS MEETING (SAN MARCOS TX) TO FEATURE DRAGONFLY SYMPOSIUM

Dan Johnson

At 5-year intervals since 1982 I have organized sessions on Odonate Ecology during annual meetings of the North American Benthological Society (NABS). These sessions, and related contributed paper or poster sessions, provide opportunities for dragonfly researchers to convene in the context of a relatively small, high quality, scholarly meeting, to share ideas with each other, and to showcase contemporary odonate research before an appreciative audience of aquatic-- predominantly macroinvertebrate--ecologists and taxonomists. I hope to continue this tradition at the 45th Annual Meeting of NABS at Southwest Texas State University, San Marcos, Texas, 24-28 May 1997.

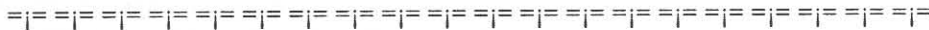
Tom Arsuffi, Program Chair for NABS, has agreed to schedule a "special session" tentatively titled "Odonate Conservation, Ecology, and Evolution," if I can demonstrate sufficient interest in participation by 1 July 1996. I am contacting you to see if such interest exists. If you might like to participate in

such a session, or in related contributed (oral) paper or poster session, please respond right away. I would appreciate knowing a tentative title, or at least the topic you might address, as well as whether you prefer to use 15-minute oral presentation or poster format. A formal "call for papers" will appear in the Summer NABS Bulletin; the deadline for receipt of abstracts will probably be early December. If you are not a NABS member, let me know, so I can send you pertinent information from the Bulletin.

Please respond right away if you can. I can be reached by mail, phone, FAX, or e-mail at addresses described below.

Please forward this announcement to potentially interested colleagues.

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BOOK NOTICES

DAMSELFLIES OF NORTH AMERICA

Minter J. Westfall, Jr. and Michael L. May,
July 1996. 650pp.
Scientific Publishers, ISBN: 0-945417-94-4.
\$69.50

The first monographic treatment of the smaller Odonata, the damselflies, of North America, including northern Mexico and the West Indies, covers 161 species. Keys to species and precise descriptions allow identification of all adults and larvae of these important aquatic insects. Written by two well-known experts, this work is the companion volume to a similar book on the

dragonflies of North America, by Needham and Westfall. Numerous illustrations are included, plus 8 pages of color plates. The work includes a checklist to species, an extensive bibliography, glossary, and index.

LIST PRICE IS US \$69.50 but a special advance order discount for DSA, BDS, SIO or any other affiliate of the SIO: 20% (US \$55.60) This price was originally offered through July. Since the Summer issue of *ARGIA* was delayed, **this offer is being extended for DSA members until SEPTEMBER 1 1996.** Non-members 10% advance order discount (US \$62.55). Add shipping and handling (Library rate) \$5.00 for US addresses, \$7.50 for all others. Florida

residents must add 7% sales tax. All funds are US and must be by check or money order made payable to "I.O.R.I." Shipment will be within a week of the receipt of the first printing (sometime in mid to late Summer). This will probably be before the book is available by other sources. All profits will go to the International Odonata Research Institute, so lets all help out.... Please send order along with check in US funds by snail mail to: I.O.R.I. % Division of Plant Industry, P.O. Box 147100, Gainesville, FL 32614-7100 USA

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The Dragonflies and Damselflies of Algonquin Provincial Park

by **Matt Holder**, illustrated by Peter Burke and Andrea Kingsley.

Algonquin Park Technical Bulletin No. 11. Published by: The Friends of Algonquin Park, PO Box 248, Whitney, ONTARIO K0J 2M0 CANADA; Price: \$2.95 Canadian. This can be purchased with a VISA card.

This excellent small guide introduces the reader to habits and life history, continues with accounts of 36 of the most common species, each of which is illustrated with a handsome color painting by Peter Burke. The cover features a painting of *Gomphus borealis*. This guide will be very especially useful for beginners in northeastern North America and is a model for future guides.

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HAWAIIAN DAMSELFLIES. A Field Identification Guide

by **Dan Polhemus and Adam Asquith**
Bishop Museum Press, 1525 Bernice Street, Honolulu HI 96817
Price: \$19.95

This book has not appeared as of press time. The main damselfly group in Hawaii is the endemic genus *Megalagrion*. Dan Polhemus is

an authority on this genus, which is one of the world's most interesting (and threatened!) ocean-island endemic groups. Other Zygoptera are mainly introduced species of *Ischnura* and *Enallagma*.

SOME INSECT BOOKS CONTAINING ODONATA INFORMATION

Roy Beckemeyer

Occasionally I come across a general insect book with coverage of Odonata. These seem to be worth noting, so here is a summary of what is contained in two books: "**Hawaiian Insects and Their Kin**", by **F. G. Howarth & W. P. Mull**, Univ. Hawaii Press, 1992, and "**Insects of Southern Africa**", Ed. by **C. H. Scholtz & E. Holm**, Butterworths, 1985.

The Hawaii book contains a general discussion of Hawaiian insect origins and evolution, and an excellent set of color photos. Specific Zygoptera included are: *Megalagrion blackburni* (male), *M. calliphya* (male), *M. nigrolineatum* (female), *M. peles* (female & naiad), *M. koelense* (naiad), *M. hawaiiense* (male), and *M. oceanicum* (naiad). Photos are large and well done.

Coverage of Odonata in the Southern Africa book is short, but of interest: Plate I contains dorsal views (color drawings) of *Orthetrum julia falsum* (male) and *Trithemis annulata* (male). Chapter 4 (pages 41-48) is by E.C.G. Pinhey, and includes a key to suborder, superfamily and family for adults and larvae. Brief discussions of the families are included, with references to the literature cited (almost invariably to Pinhey's work). Black and white ink illustrations of *Anax imperator mauricianus* (male), *Palpopleura lucia* (male), *Lestes plagiatus* (male), and *Platycypha caligata* (male) (all dorsal views) are also included.



The gang gathers on the bank of the Homochito River. Notice how one dresses in southern Mississippi in April!



Steve and Bernie look for larvae in the woods

A MISSISSIPPI MATH LESSON

Steve Krotzer

At the third annual southeastern DSA meeting held in McComb, Mississippi on 5 and 6 April, 1996, eleven intrepid adventurers learned a "Mississippi Math Lesson": 1 cold winter + 1 late spring + 1 Friday night hailstorm = 3 *Gomphus lividus* + 2 *G. exilis*!

Actually we did see a little more than that (I seem to recall a few *Anax junius*), but the collecting can only be described as "poor"! Although different collecting groups were able to find some good-looking habitats in the nearby Homochitto and DeSoto National Forests, the late spring and poor weather conditions limited collecting for "goodies" such as *Ophiogomphus australis*. The critters that were flying were the common spring species like *Libellula deplanata*, *Epithea costalis*, and *E. cynosura* (in addition to the aforementioned *Gomphus* spp. and *Anax*).

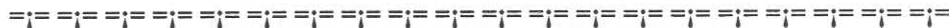
Actually, I wasn't surprised to see the abnormal weather, since Mary Jane and I were organizing the meeting this year and we just seem to attract stuff like that (does anybody remember the Monroeville tornado of '94?). Then, when I found out that Nick and Ailsa Donnelly were coming, I knew we were in for something; Nick's track record for regional meetings and bad weather is approaching legendary status! -- just kidding, Nick--. In addition to the four of us, the other attendees included Bernie Counts, Jerrell Daigle, Bill Mauffray, Sam O'Dell, Clark Shiffer, Ken Tennessen, and Steve Valley.

On Saturday morning, a good time was had at Little Joe's Restaurant as we renewed old acquaintances and made new ones. After waiting for it to warm up a bit, we ventured out to explore the nearby national forest. Several hours and too many dead-end roads later, we realized that our map was definitely out of date, and made our retreat to the hotel. Saturday

night Ken led a very informative and spirited workshop on different techniques for larval collection and rearing. And, as always, the informal get-togethers in several hotel rooms provided much discussion about a myriad of taxonomic problems, the proposed English names list, upcoming expeditions, the possibility of finally seeing the damselfly Manual in print, etc., etc.

All in all, I think the meeting was successful even if the collecting wasn't outstanding, and I hope that the other participants will agree. Oh, and after shivering our way through two decidedly cool April days and nights, we voted to have next year's southeastern meeting in the Everglades!! Hope to see many of you there.

By the way, has there ever been a hurricane in the Everglades in April?



QUALITY NOT QUANTITY IN CANADA, OR, WHERE OH WHERE DID THE OPHIOS GO?

Paul-Michael Brunelle

The 1996 Annual Meeting of the DSA, hosted by ADIP (Atlantic Dragonfly Inventory Project) in St. Stephen, New Brunswick, occurred on three of the very few sunny days the northeastern seaboard has enjoyed this spring. Which was something of a relief to me, having spent the previous four days testing the waterproofing claims of my tent's manufacturer (which were found to be very shaky indeed) and contemplating the various methods of suicide available if the weather did not improve by Friday.

But improve it did, on Thursday no less, and the meeting informally commenced when I met Nick and Ailsa Donnelly at Canoose Stream on that sunny evening. We netted females of the new *Neurocordulia* and Nick tried out his BIG net, later seen operating to such good, and dramatic, effect on the highway bridge

The following day everything became a bit of a blur, and this rather romantic soft-focus continued for me for the balance of the meeting.

The scheduled collection sites seem to have held up fairly well although there was a certain mix-and-match phenomenon, with various collectors diving for the bog early or perhaps sampling the streams. I was certainly at the agenda sites at the posted times. I think. At any rate, everyone apparently got everywhere at one point or the other, and some got elsewhere also, sometimes more than once, or so I'm told. I don't think we lost anyone collecting or to customs at the border but it's hard to be absolutely sure.

I haven't received the collection notes of most of the participants (hint) so the following will have to be taken lightly as the product of my memory, but the diversity of the fauna of the region seems to have been well displayed although the number of individuals seen was definitely down. For example, along the St. Croix River last year at this time the *Cordulegaster maculatus* are usually lined up like buses at rush hour, whereas during the meeting they were only as numerous as available taxis.



The group gathers outside of the St. Stephens Inn

The following seem to have been taken (* teneral only, ** new provincial record): *Calopteryx aequabilis*, *C. amata*, *C. maculata*, *Lestes inaequalis*, *L. dryas***, *Argia fumipennis violacea**, *A. moesta**, *Chromagrion conditum*, *Nehalennia irene*, *Coenagrion resolutum*, *Enallagma boreale*, *E. signatum***, *Ischnura posita posita***, *Boyeria vinosa**, *Gomphaeschna furcillata***, *Basiaeschna janata*, *Hagenius brevistylus*, *Ophiogomphus anomalus*, *O. mainensis*, *O. rupinsulensis*, *Stylogomphus albistylus**, *Gomphus adelphus*, (*G. descriptus*?, *G. exilis*, *Cordulegaster diastatops*, *C. maculatus*, *Didymops transversa*, *Macromia illinoiensis*, *Neurocordulia yamaskanensis***, *N. new species*, *Epitheca canis*, *E. cynosura*, *E. spinigera*, *Helocordulia uhleri*, *Williamsonia fletcheri*, *Somatochlora forcipata*, *S. franklini*, *S. kennedyi*, *S. walshi*, *S. minor*, *S. tenebrosa***, *Cordulia shurtleffi*, *Dorocordulia lepida*, *D. libera*, *Nannothemis bella***, *Libellula exusta*, *L. incesta**, *L. julia*, *L. quadrimaculata*, *Leucorrhinia frigida*, *L. hudsonica* and *L. intacta*. More than 50 species is not too shabby for this area.

The seven new provincial records (bringing the provincial list to 118) were a treat but I fear a true confession is called for. I had been searching for *Gomphaeschna furcillata* and *Nannothemis bella* in New Brunswick for four years and knew that once Jake Harding (10 years old, native of Prince Edward Island, approximately five feet of energy and grin in equal proportions) reached there this year he would bag them. Hence my vigil in the moist tent and my ignoble delight at getting *Gomphaeschna* on Thursday morning. But make allowance for me, Jake did get *Gomphaeschna* less than 15 minutes after starting and *Nannothemis* within the hour.

The "Somatochlora Swat Team" from Massachusetts (Blair Nikula, Dick Forester, Peter and Jeremiah Trimble) were apparently very successful in their search for that genus, always staring in a distracted fashion into the distance over your shoulder and haunting the woodland roads in their vehicle. There is an unsubstantiated rumor that their most successful technique was to drive into the sun and, when they had spotted a dragonfly ahead, open a window and launch Jeremiah. He would then



Paul Brunelle swings on the Canoose while Jan Trybula looks on. Photo courtesy of David Young / The Saint John TIMES GLOBE

run it to ground. The rumor seems credible to me since to reach the catch speeds that Jeremiah achieves on foot I had to mount a net on the front of my Jeep.

Our experiences at Cranberry Lake Bog (a "floating" bog) were interesting; those of us who actually went out onto the bog mat enjoyed seeing the "land" bob up and down for a considerable distance around us, an experience usually not encountered in geologically stable areas. Jake was first out onto the mat and got his *Nannothemis* record as a reward, his father Bob, Roy Beckemeyer, Tim Cashatt, Jan Trybula, and Oliver Flint following bravely behind. I, for one, have a substantially higher pounds-per-square-inch ratio than Jake and always carry my net horizontally in such habitats so I waited a discrete interval before following. I like to think I was serving a life-guard function.

The St. Croix River was picturesque but there were disappointingly few *Ophiogomphus* present, certainly not the numbers one would have expected from collection of up to 20 skins per foot on the banks several weeks previously. Its absence was not due to lack of searching effort: Hal White waded out to the center of the river and perched on a log like *Hagenius brevistylus* for quite some time and others scoured the banks. The genus was sent to try us. An interesting note was that Jake collected five *Neurocordulia* (new species) skins on the bank; these *Neurocordulia* skins suggest that the species is more common in the larger running waters than I had thought. My vehicle got a flat at precisely the time when I should have been running into town to get the buns for dinner and as I was changing it I began to notice with some apprehension collectors drifting in with that glazed look that signifies low blood sugar. When informed of the delay they began eyeing me speculatively as though



Sid stalks the elusive Hot Dog

thinking "I wonder how he would cook up?" Bob Harding saved the day, -- or rather a part, and maybe all, of my anatomy -- running into town for the necessary and cooking the hot dogs beautifully (kindly donated by Maple Leaf Canada). It is a base canard that Carol Flint was heard to say "No really, I do like carbon, I really do! It cleans the system". Well done Bob.

While the diurnal collecting was fun, the locals were definitely most amused by our crepuscular activities. These are not completely novel to the area, I have been collecting and observing at the site for several years and residents know that Steven King-like happenings and mysterious lights can be expected there, but the crowd in the water and on the bridge sweeping the air with nets for invisible things seems to have entertained quite a number of passers-by. The air was filled with the sound of thrashing nets, reminiscent of a carpet-beaters convention or the passage of a flock of immense birds. I estimate the success ratio at about 1 specimen per 500 sweeps for those in the water, 1/1000 on the bridge. The water level was high in the stream

and there was the occasional forlorn cry as a collector submerged; those who were privileged to be there will long remember the emergence of Michael May, dripping like a nymph [finally we see the correct use of the word "nymph". Ed], after heroically confirming that the new species did not in fact fly under water. Anyone can speculate, true research demands confirmation. It should be noted for the record that when Bob Harding dived he breached with his target specimen in the net although we're fairly certain he caught it above the water's surface. Well done Bob.

Those of us who took our stand on the bridge were not immune to peril, after all it was still possible to end up in the water, albeit with a bigger splash. There was also the risk of being collected or even decapitated in the scrum following the sighting of a specimen, which was generally announced with a declaration such as "One just went under your armpit". Given the temperament of the group, any wounded would likely have been dragged by their heels to the railing and ignored until the flight had ended.

A definite pecking order evolved among the collectors which might prove of interest to anthropologists and which has been well-documented by John Michalski on video, at great risk to himself. In the water the better places seem to have been acquired morphometrically; Jerrell Daigle and Jeremiah were the furthest down and upstream respectively as they could easily reach from bank to bank without moving; we're not sure which of them first took *Neurocordulia yamaskanensis* which had not been seen in the province before. On the bridge the central position was coveted as it offered the most catching opportunities combined with the least likelihood of plummeting. Net diameter, maniacal enthusiasm and a disinclination to fret over the fate of one's neighbor appear to have been the dominant factors and it was observed that Nick held that central position on both of the main collecting nights, defending it against a Chevrolet on one memorable occasion. I was transported back to my days of youthful road-hockey by the choruses of "car!" and the attendant leaping to the railings. Oliver Flint's light trap yielded a number of the new species, suggesting that this may be a useful technique in studying crepuscular flyers, and gave a demoniacal

under-light to the proceedings which seemed quite appropriate at the time.

All in all we had fun in the evenings, even to the extent that the light overcast of the last night gave all but the truly hard-core a sensible reason to return to the hotel for slides and talk. Perhaps the only lack of the meeting overall was the difficulty in finding time to schmooze, due to the 12-hour collecting day.

The business meetings were held in an underground vault at the St. Stephen Inn and were remarkably short, compared to my experience with other such organizations. If anyone knows where the list of attendees went which was filled out during the meeting we would all really like to hear. Sid Dunkle gave a superb talk on introducing novices to odonate. Blair Nikula showed a series of excellent slides of Massachusetts odonates.

Our meeting has been reported on very positively by David Young in the Saint John Telegraph Journal and by Diana Gaettinger in the Bangor Daily News and has been covered twice by CBC Radio in Saint John. I understand that some of our members met Earl Hiltz, the landowner at Cranberry Lake Bog, and Fred Ross at Mohannes Stream. I am most indebted to these people for their hospitality to our group, it took a great load off my mind to know that we were welcome and that there would be no awkward incidents during the collecting. For the same reason I'd also like to thank Terry-Lee Gayton and Paul Depoe, residents of "Chateau Canoose" who wisely stayed indoors while we were there, Charles Wilkins who owns the property most of us parked on at the stream and Leighton McGaw, whose private road was so alluring to the *Somatochlora* Swat Team. Themadel Foundation of St. Andrews and Don McAlpine of the New Brunswick Museum both provided support without which I would have found it difficult to host the meeting. Those of you who dined at Carmen's diner in St. Stephen will appreciate why I have not succeeded in losing any weight this summer.

For myself, I met some very interesting and charming people, my studies of the order in this region and particularly of the new species were greatly enhanced, and I have a number of pleasant memories of which the most poignant

is of Nick Donnelly and Jake Harding engrossed in exuvia, demographically different but united by the fascination which is the reason and substance of DSA.

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ADIRONDACK GATHERING

Nick Donnelly

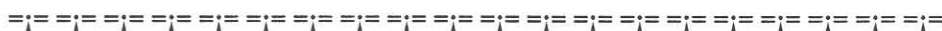
At last - a bug meeting (on 29 July) that I helped to arrange that was not rained out! This story really started last year when Paul Novak found *Ophiogomphus colubrinus* in the Ausable River and Mark Gretsich found *Sympetrum danae* nearby. The *colubrinus* was a state record, and Paul's find was quickly followed up by several exuvia finds by both Bob Barber and myself along both branches of this river. The *S. danae* was the third record for the state, but no stable populations had been found. I took advantage of Ailsa's renting of a cottage for a week in the Adirondacks to join forces with Dave Wagner, who wanted to come up with Mike Thomas to look for more *colubrinus*. Once the word was out we assembled a group of eight eager collectors (including Oliver Flint, Paul Novak, Hal White, Ken Soltesz, and Bob Barber) all of whom prayed (successfully as it turned out) for a break in the rainy weather that we had been experiencing. Collecting directly in front of the winter Olympic ski-jumps just outside Lake Placid (Did you know that they practice on these in the summer?) we found several *colubrinus* flying with no less than three other *Ophiogomphus* species: *mainensis*, *aspersus*, and *carolus*, which are almost impossible to distinguish in the field.

Following this success we all moved about half a mile down the road and plunged into a bushy marsh where we found several *Sympetrum danae*, which were avoiding the open-water areas where aggressive libellulid species had established territories. It seems odd that this species, which is conspicuous in both the Rockies and Cascades, is so scarce in the east, and behaves in an apparently rather cryptic manner, in contrast to its bold behavior in the west.

Those of us who were not satisfied by having found these two notable species moved on to the

Schroon River to visit the place where Bob Barber found *Progomphus obscurus* last year. This is the most northern inland occurrence of this species, and the bug seemed quite at home

on the broad sand beaches of this river. It is interesting that this bug's flight season is over no less than five weeks later than in New Jersey.



ESCAPADE IN ECUADOR Part 2. "Going Looney in Yasuni"

Ken Tennessen

If you read Part 1 of the "Escapade" (ARGIA, 1996, vol 8, no. 1:5-8) and are a bit leary of following the saga further, rest assured that we finally did get to see some of the fabulous Odonata that inhabit the rain forest of Ecuador. I have tried to recapture some of the beauty and exhilaration we experienced on this part of the trip in the following few pages. The story picks up again after we had a good night's rest in Quito on June 6.

On the morning on June 7, with renewed exuberance, we took the Quito Highway east toward Baeza, passing over the Andes and viewing spectacular cloud forest and waterfalls on our way to the Oriente. Dropping in altitude as we went, we stopped at some small streams and wetland areas between 6000 and 4000 feet. Species of note were *Cannaphila vibex*, of which we collected several males and two females, *Erythrodiplax ines*, and *Sympetrum illotum gilvum*, perhaps the most gorgeous of all the red dragonflies. Several characteristics of our specimens make one wonder if it is merely a subspecies of *illotum*: thorax with one obscure lateral yellow spot or none, no dark brown marking in base of wings and much less extensive light-brown infuscation, and outer arm of hamule divergent. Other goodies were *Aeshna cornigera*, *Hetaerina capitalis*, and a new species of *Oxyagrion*. For the night, we had to head back west to Chaca where we stayed at the Residencia La Costeñita. The room was 15 mil sucres for the three of us (about \$5 total).

The next day we continued toward Lago Agrio, along the way catching *Polythore derivata*, a large beautiful damselfly with white and black markings on the wing tips; it inhabits small, overgrown streams. We also saw quite a number of libellulids, including several species of *Erythrodiplax*, the small, slender *Macrothemis*

musiva, which flies over small stream riffles, and *Perithemis electra*. Interesting damselflies collected were *Argia thespis* and an apparently undescribed *Metaleptobasis*. This night we stayed at the Hotel Cofan in Lago Agrio, where we ordered "Lomo Fino a la Plancha" with arroz and papas fritas (yes Rosser, we ate a lot of papas fritas!). We speculated that perhaps the Lomo Fino was llama, and when our curiosity kept growing, Sid asked the waitress, in Spanish of course, what kind of animal it was. This was to no avail, as apparently she did not understand the question (o no comprendimos la respuesta). Later we figured out that lomo fino means a fine cut of beef.

On the morning of June 9 we ferried across Rio Aguatico at Lago Agrio, and then proceeded with linguistic ease (not!) through a military checkpoint on our way to Limoncocha, where we had trouble finding the Rio Napo ferry crossing. After an hour lost looking and then waiting for the ferry, which was literally surrounded by armed military guards, we finally ferried across the Napo. Immediately after crossing we had to register with the officials at the Maxus Oil Company, who were very friendly and helpful, providing us with directions to the Yasuni Research Station and identification badges. And now the moment we had been itching for, entering the relatively newly formed Yasuni National Park (Parque Nacional Yasuni). Yasuni is special because it is a survivor of the last ice age and therefore is much older than most rain forest islands in the Amazon basin. We decided to drive directly to the biological station to register, and collect afterwards. The most unbelievable sight was the condition of the road we were on--a perfectly smooth, wide gravel road. Here we were, driving at 55 mph through the Amazonian rain forest! We met the director of the station, got situated,

ate a quick lunch, and headed for some of the small streams that are so numerous in this region near Rio Tiputini.

During the next three days we collected for exciting but hard to find damselflies such as *Perissolestes*, *Philogenia*, *Heteragrion*, *Mnesarete*, protoneurids, polythorids, forest *Argias*, *Metaleptobasis*, and *Palaemnema* that perch or hang in the heavy growth surrounding the small, slow, and often muddy streams and trickles. We had some success in finding these, but they were not present in numbers, which is quite typical of these types of neotropical damselflies. At one site, I found a serene area near a small stream, and while I stood in the shaded jungle and enjoyed the moment, I spied a damselfly perching on a large leaf catching a small ray of sunshine, quite a distance from the water. It looked like a dark *Argia*, but as I approached, it quickly flew up and disappeared into the overhead canopy. I stood still and watched and waited. After about 5 min, it came back down to the sunlit patch, and I approached much more slowly. A quick upward swing netted it--later Rosser informed me it was *Argia difficilis*. I had one other encounter with a forest *Argia* in this area which behaved quite similarly, but was perching at the top a large bush over a 12-foot wide stream. It was extremely difficult to catch, but I did get 3 males and a female, which was worth the work as it turned out to be a new species.

Along the road, where ditches and pools had formed, we found numerous libellulids, such as *Orthemis biolleyi*, *cultriformis* and *schmidti*, *Perithemis electra*, *thais* and the golden *parzefalli*, *Nephepeltia phryne*, a few *Oligoclada*, and several *Micrathyria* and *Erythrodiplax* spp. The only gomphid in Yasuni of which we saw more than one individual was *Aphylla boliviana*. Some of the males we saw had a red abdomen, while others were black. Sid has not found any structural differences between these two color morphs, and convinced us they belong to one species. We took 4 species of *Acanthagrion*, namely *apicale*, *lancea*, *obsoletum*, and *peruvianum*. At one small stream, Bill got 2 males of *Phasmoneura ephippiger*. One of the best finds happened on our last day in Yasuni as we stopped along the road to photograph a huge kapok tree. Bill,

without camera and therefore unoccupied, spied a small, unusual blue damselfly near the roadside; we netted several more males and also some females, which are a beautiful yellow! It appears to be a new species, either a *Chrysobasis* or a new related genus; Sid is studying this one.

We saw several fabulous birds in Yasuni, some in numbers one rarely experiences. Blue and yellow macaws flew over us six at a time and landed in trees to feed, all the while squawking loudly. We also felt fortunate to see numbers of toucans, also flying over and stopping to feed in trees. Perhaps best of all, we saw two guans high in a tree. These are turkey-like birds of the rain forest, prized by native hunters and now rather uncommonly seen, especially outside of prime rain forest. Other species included the caracara, white-tailed trogon, oropendolas, anis, some type of hermit hummingbird, and, near the station perched on a bare branch, a roadside hawk.

After leaving Yasuni, we headed toward Shushufindi, where we stayed the night of June 12th. The next day we found a fabulous area at a tributary of the Rio Payamino. The various types of microhabitats here supported quite a diverse assemblage of Odonata, and after about 3 hours we tallied approximately 40 species. At a small pool I found a new species of *Lestes*, the males of which are beautiful blue. Other neat damselflies included *Telebasis limoncocha*, *livida*, and *rubricauda*; *Helveciagrion chirihuanum*, *Acanthallagma caeruleum*, and *Neoneura rubriventris*, and another new *Chrysobasis*, although we did not find any males. Some of the libellulids I had not experienced before were *Nephepeltia leonardina*, *Micrathyria ocellata*, and *Erythrodiplax attenuata* and *tenuis*. Sid caught one *Rhodopygia cardinalis*. It was here Sid pointed out jacana birds to us.

At a pond about 10 km west of the above tributary (on the road to Coca) we made our last stop for this day. Here we found tandem pairs of the new blue *Lestes*, plus *Micrathyria catenata*, *M. occipita*, and *Zenithoptera americana*. In addition, I caught a female of an *Idiataphe* sp. that I have not been able to identify. That evening was to provide us with the second most

memorable lodging of the trip (for the most memorable, see Part 1). We pulled into the small village of Loreto just before sundown and had trouble finding a "hotel;" we decided to try the Residencial Salinas. The rooms reminded me of pine coffins--the dimensions were about 5 feet by 8 feet; the walls and ceilings were rough boards, and there was a bare light bulb hanging from a wire. The electricity stayed on for little over an hour. For 5 mil Suces each, what more could one ask for? Well, without asking, we got more. When the fellow in the room next to mine came in and turned on his bulb, light rays came right through my "wall." Dogs, cocks, buses and trucks provided an undelightful, sleep-preventing serenade through the night. Around midnight the sky opened up with a tropical downpour and Sid discovered that his room was not waterproof. He had to get up and rearrange his room, and found himself rebuilding his bed. Bill had to move all his specimens to keep them from getting soaked. And the blanket they gave me must have been a chigger-rearing factory--the next morning I must have had more than a hundred welts that kept itching for at least a week. I will try never to stay in Loreto ever again, despite the advice never say never!

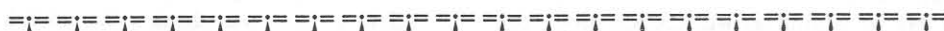
The next day (June 14) made up for much of the misery dealt us the previous night. We collected on our way to Tena, and found *Erythrodiplax melanorubra*, *Aeshna cornigera*, *Macrothemis mortoni*, *Oligoclada crocogaster*, *Acanthagrion yungarum*, undescribed *Argias* and *Beteragrions*, *Palaemnema picicaudata*, and the large, gorgeous *Polythore concinna*. The latter species is one of the most glorious damselflies in flight, especially males with their golden-brown wings a-flashing.

On June 15 we visited the Rio Sindy, where Sid had discovered *Aeolagrion axine* on a previous trip. Among the species we encountered here were *Phyllocycla anduzei*, three species of *Macrothemis*, *Brechmorhoga praecox*, *Elasmothemis cannacioides*, *Mnesarete metallica*, an undescribed *Epipleoneura*, *Argia adamsi* (males are bright blue), and a large, undescribed, red-eye *Argia*. Sid found a couple of his *Aeolagrion* near some stream-side pools.

We then continued further down the road to Jatun Sacha, and collected more of the same species, plus *Mnesarete devillei*, *Micrathyria hippolyte*, *Erythrodiplax tenuis*, and *Elga leptostyla* (only a single female). Near sundown, as we headed back to the Hotel Auca in Tena, I felt remorse that this would be our last full day of collecting.

On June 16, we made one stop on the way back to Quito. We had to make a pit stop, and with our luck slowly turning from mostly bad to good, we happened to park near a small, marshy seep overlooking a large pasture 10 km south of Baeza (elev. 5600'). The first thing we saw was an *Aeshna* flying over the seep, and the scramble for the nets was on. It proved to be *A. marchali*. I thought of our experience on Pichincha, and how this species acted as the bookends for our trip. We stayed a while longer than intended, and turned up *Lestes apollinaris*, *Argia medullaris*, the n. sp. of *Oxyagrion*, plus *Sympetrum i. gilvum*, *E. ines*, and *Cannaphila vibex*. Very reluctantly we headed for Quito.

That evening the Ecuadorians were bound and determined that they would have a celebration in the Hotel Savoy that exceeded the wedding reception that greeted us two weeks ago at the Aeroporto Hotel. How the percussion and loud clapping permeated the hotel was as unbelievable as the persistence of the celebration through the night! The next morning, three tired gringos ended their escapade and left Ecuador "con no mas problemas!"



FARANGPO 96 - THAILAND REVISITED AND VIETNAM ADDED TO OUR LIST

Nick Donnelly

If a dragonfly trip has to have a theme of some sort, then the theme of this year's trip to southeast Asia was "big ones". The sheer size of many of this year's specimens was impressive, even though the number of species was not.

THAILAND - This year Ailsa and I decided to return to Thailand for yet another trip, and to add Vietnam to our itinerary. Following the procedures we used on our previous trip in July 1994 (see *ARGIA* 6(4), 1995), we flew into Bangkok on 19 May, dog tired after more than 24 hours *en route*. That same afternoon we were again on the overnight train for Chiang Mai with Brother Amnuay Pinratana and his good friend and field companion Mr. Somnuk Panpichit. Our main destination was the Siriphum Waterfall, near Chiang Mai, which has become one of the premier places to find dragonflies in southeast Asia.

The waterfall combines the familiar elements of tropical collecting: two major cascades (which themselves have few odonates) and large and small streams at the base of the cascades which flow through patches of tropical forest. Around the falls are plots of land which the local Meo tribes-people have turned into flower farms. Ailsa saw workers carrying vast baskets of colorful gerbera daisies; she is delighted when she can grow a few of these in her garden. Odonates of main interest were several species of gomphids, most of which had not been seen in a previous trip in July. What a difference a month or two makes! There are also many types of damselflies, including several genera of Euphaeids, which are the most conspicuous large, colorful damselflies along streams in southeast Asia.

Among the several gomphids we found was *Leptgomphus gestroi*, which has the same appearance in the field as *Epigomphus* in tropical America. Some males of this largish species fly slowly and fearlessly in tiny rivulets

where they are oddly difficult to spot down in the grass! Another gomphid of great interest was a lovely, unknown, onychogomphine species with a green body and reddish end of the abdomen. Upon arriving back in Binghamton I figured out that it had to be an *Amphigomphus*, of which there was a single species (not this one) in China. In the mail the next day appeared a reprint from Matti Hämäläinen with a description of his new species *Amphigomphus somnuki*. Talk about timing!

One of the best finds for me was *Asiagomphus xanthenatus*, which looks for all the world like a big *Gomphurus*. For a moment I thought I was down on the levee, stomping boll weevils, or doing whatever they do down on the levee. . .

Not everything was huge. Our most interesting find here was *Davidius fruhstorferi*, which is one of the world's smallest gomphids. This fascinating species prefers tiny seeps away from the main rushing streams, which were also the home of *Calicnemia erythromelas* -- one of the reddest damselflies I have ever seen. Flying with these was *Mnais andersoni*, a large calopterygid which comes in two flavors: clear wings and salmon-colored wings. The meaning of the two wing colors is not simply a matter of age or anything else that I can see.

In keeping with the theme of the trip, however, the best find for me was the large cordulegasterid *Chlorogomphus* (an undescribed species). Ailsa took the first specimen in what can only be described as a heroic (can I add lucky?) swing at an object flying towards her face at warp speed (Her little dance of triumph wouldn't have been out of place in the Steeler's end zone.). I was later to add a male and female flying up a rocky cascade in the forest. So rapidly did this species fly that I couldn't really spot the insect itself in sufficient time to react. I removed one section of my net handle to swing faster and then had to learn how to see them coming. I found that when one is coming upstream, all the *Mnais*

along the stream fly out to challenge it, somewhat like dogs along a road darting out at a passing Ferrari. When the *Mnais* did their "wave", a biggie was coming. Netting *Chlorogomphus* was like hitting a Roger Clemons fast ball which takes a sharp turn over the plate - all in a dimly lit ballpark.

Other beauties of the tropics delighted us at every turn. Such things as interesting ferns and pretty birds were anticipated, but a flying lizard that Ailsa saw was a definite and memorable first.

VIETNAM - This year we decided to include Vietnam in our wanderings. Several friends of ours had visited the country recently, and I mentioned in a previous **ARGIA** that I had received last year five odonates in triangles from one of these- including an undescribed species of *Indocnemis*! We were determined to visit this place and find more specimens.

We arranged in advance for a car, driver, and (very important) an interpreter to take us to Tam Dao, which is a few hours drive north of Hanoi, and which had been a hill station for the French during their occupation. The 300 villas in this picturesque town had all been destroyed in the war with the French, and all that remained to remind us of their previous occupation, were dozens of stone and concrete staircases almost submerged like archeological ruins in thick vegetation.

Before we left the hot plains and reached Tam Dao, we found a large stream at the foot of the hills. We decided we couldn't pass this up, so off we trod in the humid heat. There were few odonates, and we were about to abandon this seemingly unpromising place, when I spotted a large gomphid on a bush. It was *Ictinogomphus rapax*, which I remembered from numerous encounters in southern India. The species is also common in southern China, but why it is nearly completely absent from Thailand is an interesting biogeographical mystery.

Flying with the *rapax* was a larger and more vivid species which took some time to catch as it flew warily in the thorny scrub. My main impression of this insect was the rear view which featured expanded flaps on the abdominal

tip which were so large it looked like an insect with a small stealth bomber attached to its tail. It also looked like the an upside-down version of the "V" tails of some small airplanes. What a superb device to help a heavy-bodied insect to maneuver at high speed! This species is the magnificent *Ictinogomphus clavatus*. In the last issue of **ARGIA** I speculated about photographing an *Ictinogomphus clavatus* (which was then unknown to me) sitting on a *Gomphus clavatus* (which turns out to be a fungus). Little did I suspect at that time that I was about to find this handsome species.

We stayed in one of the less fancy hotels in Tam Dao; it suited our needs very well, and the food was delicious. It was the beginning of the rainy season and most of the rain came at night, leaving the days fairly clear for roaming. There were masses of visitors besides ourselves, but almost all were Vietnamese, with only a very few European faces in the crowd. In addition to the Hanoi residents escaping the heat, numerous bus loads of high school students (it was the end of the school year) came up for outings.

Our guide had told us that the children of Tam Dao were quite accustomed to insect collectors. Japanese collectors visit, not so much to collect, but to purchase butterflies ("buom buom", but written with oodles of diacritical marks) and beetles ("xén tóc"). The kids quickly noted my interest in "chuôn chuôn". I first resolved not to lower myself by buying specimens, but quickly relented when a boy appeared with two live females of *Heliogomphus scorio* in his fingers. More on this later.

The main feature of this place is a waterfall, which will come as no surprise to any one who has toured in southeast Asia. This particular waterfall is very high, with a long concrete staircase (352 steps, but who's counting?) to the second level, and it is here that all visitors go immediately on their arrival. The Vietnamese custom on holiday is to go rapidly from one scenic place to another, taking numerous photographs of each other posed in front of the scenic feature. There were always hordes of people crowded into this tiny, wet place. One lady appeared in a fancy cocktail dress just to be photographed with her equally elegantly dressed children, all drenched in the spray. The next

ODONATA IN CHILE, DECEMBER 1995

Dr. John B. Heppner

Florida State Collection of Arthropods, Gainesville, FL

Participants on this December trip to southern Chile, the Lake District, were treated to spectacular mountains, volcanoes, lakes and forests, and to many species of endemic butterflies and moths, as well as odonates. The trip was sponsored by the Association for Tropical Lepidoptera, so the emphasis was on Lepidoptera, but as usual, I also collected many Odonata for the Florida State Collection of Arthropods. Butterflies recorded for Chile total only 161 species but almost all of them are found only in Chile. Odonata, likewise, are few in number and many of them rare in collections. Although connected to South America, Chile is actually somewhat like an island, since the Atacama Desert in the north and the north-south barrier of the Andes completely isolate Chile from the Amazonian rainforests and even from most of the faunas of neighboring Bolivia and Argentina. Many of the animals and plants of Chile have affinities to those of Australia, a legacy of the ancient Southern Hemisphere distribution when the continents were still joined as Gondwanaland.

After departure from Miami on December 8 and the 8 hour flight almost due south to Santiago (4117 miles), another 90 minute flight was needed to arrive at the southern Chilean city of Temuco (385 miles south of Santiago). At the Temuco airport, Prof. Andrés Angulo, a specialist in Chilean moths and a professor at the Universidad de Concepción, and his son Geno, plus our van driver, José Cires, met us for the 2 hour drive to the Lago Villarica area, Cautín Province, where the two towns of Villarica and Pucón are along the lake. The drive to Termas de Palguin was spectacular, as the great white cone of Volcán Villarica (2847m) grew steadily larger in size. This volcano overlooks Lago Villarica from the south and is to the north of the canyon home of the Termas de Palguin lodge (668m). The volcano still smokes and last erupted in 1984.

The first week was spent at the rustic 60-year-old Termas de Palguin lodge, Cautín Prov., which has hot springs for both hot water and

sulfur water. A 30m wide sparkling river adjoins the lodge, while the baths and swimming pool have hot water pumped from underground. This site is in a canyon with a fairly intact southern beech forest (*Nothofagus* sp.); some of the trees being very large. Many other native plants abound in this area, like the colorful Chilean flowering protea shrubs (Proteaceae); this plant family is typical of Australia! This area was excellent, with many interesting odonates taken here at various microhabitats such as woods, seepage and creek areas, and the large river. At this home base species found included *Gomphomacromia paradoxa*, *Sympetrum villosum*, and *Aeshna diffinis*. Nearby also are many waterfalls, such as Salto Leon; here were found *Phyllopetalia apollo* and *Aeshna diffinis*.

During the first week, day trips were taken on a few days to other sites nearby. At Lago Tinquilco, Cautín Prov., just at the border of a national park, a large female *Phenes raptor* was taken, as well as many *Cyanallagma interruptum* and *Gomphomacromia paradoxa*. One long drive north to a mountainous area east of Temuco, in Malleco Prov. provided viewing close-up of a large araucaria forest was traversed, prior to a stop on a high plateau (ca. 1200m) near the border with Argentina; no odonates seen in this forest. Some difficulty was encountered in attempts to find higher altitude sites at the passes into Argentina. Our encounters at the border stations determined that the Chilean border guards would not allow any collecting within a so-called "frontier zone" next to Argentina (e.g., the 1884m Paso de Piño Hachado), supposedly to prevent interchange of faunas between Argentina and Chile: we will remember this for future trips (4000m elevations can be attained by road near to Santiago but in southern Chile the elevations are lower)! On the return to Palguin, a tunnel of over 3 miles in length was transited, going under large mountains called the "Sierra Nevada."

One of the treats for participants was seeing mature forests of monkey puzzle trees

LOOKING BACK

George Bick

I was goofing off from summer school at the edge of Audubon Park lagoon across from Tulane University in New Orleans. Along came *Erythemis simplicicollis* dipping eggs, and she just flew into my net. That hooked me. I rushed to the lab with the live female, and got the eggs in a finger bowl. The Department Chairman, E. S. Hathaway (ESH to all), happening by, said "You will never rear them to adults". I was resolved to do so and did, keeping a desk lamp continuously burning over the dishes. Clarence Kennedy (more of him later) said, "Why in H. did you keep the lamp burning?" Even now our good friend, Ken Tennessen, wonders why. I don't know.

I fed the early stages protozoans, the later ones field-caught mosquito larvae. Ken says my odonates developed slower than his because they didn't get the volume of food they get today. But my pets did come through, egg to adult, under my daily observation. I realized that I was in, when ESH announced my blessed event to his usually somber basic course students and they clapped. Those students were nervous wrecks that ESH would keep them out of Medical School.

Tulane Biology was very field oriented; everyone seemed fascinated with wetlands. We field-tripped for mosquitoes and dragonflies in the Pearl River Swamp and in the fresh and salt marshes south of New Orleans. The latter areas were often teeming with Odonates. Being coaxed to rate their numbers on some scale or other, one student opined that he would consider the place to be "cannacriated" with them. Oh well, that will be wasted on the younger generation who call them *Brachymesia*. Interestingly, the newly arrived geneticist from "up north", as we would say, thought that the draping Spanish moss was debris left from the 1927 flood. Gosh, the flood was bad but not that bad.

Mike Wright was periodically around. I cannot say who got Mike started, but he was devoted to the Odonata when we met. As I recall, we were always arguing about something; he supported Williamson; I, Needham. He moved between

Vanderbilt and Tulane, and maybe was at the University of Alabama briefly. Eventually, he was the big chief lab assistant at Tulane. He certainly was big, grossly overweight with a serious glandular disorder which caused his early death. How he managed to move sufficiently for collecting I cannot imagine. He loved opera, would sit humming, peeping at his odonates, and eating tuna sandwiches. I remember not being sufficiently enthusiastic over a specimen of *I. ramburii* to suit him. But they were so very common. Mike eventually taught at Tusculum in Tennessee and passed the torch to Ed Kormondy, who later became a University President on the West Coast and who eventually wrote Mike's obituary.

In those years we were working almost entirely with Needham & Heywood (1929) and with Byers (1930), even though the latter was meant for Florida. Concentrating strongly on the New Orleans area, we found few gomphines. I must have been so enthusiastic about them that Whitey Hall nicknamed me "Gomphus". Whitey later went all out for plants, becoming a very enthusiastic plant worker with TVA and an acquaintance of Ken Tennessen.

ESH had a penchant for acting out everything. One had to visualize, act it out, or think of some model. In the big lecture room, he would roll up his trousers to show how his elderly wrinkled gastocnemius extends the foot. Once, in a small class, he demonstrated the extension of the nymphal (forgive me, Bastiaan) labium very realistically using the quite sexy Penny as the food source. Then he said, "Now, in sexual reproduction...." and Penny moved to the door saying "I'm getting out of here."

Needham came to Tulane and gave a popular lecture to the local Biology Fraternity. Coming to the campus after dinner, we drove along Audubon Park Lagoon to hear the Amphibian "Music". ESH took pains to imitate the frogs by rubbing coins together. Needham didn't seem impressed. Later he told me, "I didn't want to offend the good Doctor, but I am tone deaf and didn't hear a thing." JGN made the blackboard come alive with color chalk sketches of ponds

and streams and their odonates. He also told stories of his China experiences to the delight of E.C. Fuast's PhD Parasitology students. We had the difficult odonate larvae lined up, each with a card listing why it could be *L. vibrans*, or *L. incesta*. JGN said, "You people studied these much longer than I can do now. You just go ahead and name them, but be sure to consult my Bulletins 47 and 68." [Needham's famous chapters in two volumes of the New York State Museum Bulletins, which initiated the study of larvae of Odonata in North America] Later we searched in vain for a long-tail Gomphine which interested Needham very much. He just said, "Slim pickings, maybe next time." I never saw him again. He had retired to Florida when I arrived at Cornell.

After a Tulane MS, I worked with the US Food & Drug Administration for 3 years which was a rather boring experience. I then worked with the LA Conservation Department for about 1 year, spending most of the time in the magnificent hardwood forest along the Tensas River of north LA studying wild turkey. This then beautiful forest, the last recorded location of the Ivory-Billed Woodpecker, has now been completely cut over.

Then came the Big War. For some time I rode on threadbare tires, then gave up, enlisted as PhM2/c US Navy, eventually becoming commissioned as Malaria Control Officer. After training programs in D.C., Jacksonville, Tallahassee (then Fl. State Women's College and site of the Boyd Malariology Lab), we were asked to select a preferred theater of operations. My preferences in sequence were: Caribbean, European, Pacific. I was sent to the Pacific. We reached Tasmania (that is really "down under"), traveled along the Australian coast, stopping for more training courses, and finally reaching Milne Bay, Papua New Guinea. For most of the almost two years stay in New Guinea and the Philippines, there wasn't much opportunity to be scientific. I once requested a "bug net". The officer in charge, stateside (as we would say) replied, "Denied, an entomologist with a bug net (there must have been a more official designation) will never do any mosquito work".

Unlike John Michalski, who so fascinatingly wrote in **ARGIA** of his New Guinea

experiences, I was stuck in the coastal coconut groves. There were no roads, the Navy would have said no to an official request to travel inland, and besides I was a little scared ("the Japs, matey, dontcha know" as the Aussies would say). However, like John I did get sick with an unknown and persistent fever. Fascinatingly, the MD had everyone donate their supply of candy to me. It must have worked and I got on with the mosquito collecting; alas there were few Odonates. Some of the men did manage to collect butterflies, but only to make patterns between glass and to decorate paired features of Vargas Girl Calendars.

I finally got home after a snail's pace surface voyage of about two months. Going under the Golden Gate Bridge was very dramatic and I cried as they brought the casualties ashore and a band played "God Bless America".

Then I was stationed at Parris Island, SC -- the infamous Boot Camp for those who sometimes scrubbed the barracks floor with toothbrushes. Fortunately, I was a "wheel", and a "boot" and was able to collect a few odonates. I was there when the first A-bomb was dropped and when the Japanese surrendered.

Discharge came very quickly. Having communicated with Dr. Robert Matheson earlier, we (it is now Juanda and I) headed for Cornell. Cornell was pleased to get the New Guinea mosquito collection and accepted for a thesis my data on Mosquito Larval habitats in New Guinea and the Philippines.

I am thankful for the GI Bill which got me and many others through and for the kind treatment given by all to the GIs. However, I was shocked when someone said you have to take the first language exam very quickly or you will be delayed a full year. I took it and passed with luck.

Juanda didn't quite understand meat rationing, thinking it more severe than it really was. On \$90 a month for G.I. support, \$35 of which was used for rent, the larder was far from luxurious. We had spam (yes, after all that Navy spam) and hot dog stew and I studied and studied and wrote a thesis in pen and ink and baby sat as

Juanda typed and cooked. Days were pretty crowded.

Then with a new PhD, a wife and baby, a job had to be found quickly. I was briefly at Ole Miss -- hence the 1950 MS list -- and then back to Tulane as assistant professor teaching everything except Entomology.

I received a grant to study Limnology with Paul Welch at the Univ. Michigan Biological Station at Douglas Lake. The most memorable event in the Limnological Methods course was Sodium Azide. I can still feel the burning on my lips when I pipetted it up as the boat rocked. I thought I would never taste again. The Station MD, finding no antidote in his Pharmacopeia, said, "You boys should be careful with those dangerous chemicals."

At Douglas Lake I met Kennedy. By then he had abandoned Odonates in favor of ants; his book plate showed an ant p---ing on an Odonate. I was surprised that he remembered my manuscript on the life cycle of *E. simplicicollis*. He said, "Why in H. did you make those drawings so D. big?" I replied, "My major professor said to do so." Kennedy said, "Well, he didn't know his A. from a hole in the ground." Marvin Bobb, who studied under Kennedy, considered him quite a character. Bobb would say, "Good morning Dr. Kennedy" only to be ignored. The next day Bobb though, "I'll just ignore him" only to have Kennedy say, "What's the matter, can't you bid a civil good morning?"

On the way back to New Orleans I met Leonora Gloyd, then in Urbana, Illinois, with the Natural History Survey. She was not enjoying her assigned task, preparing the index to "Mammals of Illinois". She treated me royally and demonstrated her Odonate Synoptic Series. It was remarkable how she crowded to many paper triangles into such a small box. As I (and Rosser Garrison also) learned later, only she could pack the envelopes in correctly. She told me about Williamson, her idol, and that I must copy his notes into my Needham & Heywood. From these, I judge that E.B. was not impressed with Needham's book. Leonora (others called her Dolly but I never could) talked about the importance of recording living colors. She had a tabular summary converting the old faded

preserved colors to living ones. Neither of us then knew anything of acetone. Subsequently she was very helpful, checking determinations, explaining how to differentiate *L. vibrans*, *axilena*, *incesta*, as well as others and sending many LA and MS records.

I finally reached Louisiana where, as already noted, I had worked earlier. I collected good Odonate records and realized that Bick, Wright, et al. had spent much too much time collecting in the New Orleans area. I saw living *L. luctuosa* in Louisiana for the first time and was excited about their capture. They just aren't in south Louisiana as far as I know. Meandering slowly back to New Orleans, I resolved to do more widespread collecting and in 1957 wrote "The Odonata of Louisiana".

Douglas Lake and other Biological Stations afforded great opportunity for collecting and for behavior studies. I spent a summer teaching at Stone Lab. of Ohio State on Little Bass Island in Lake Erie, two summers at the now defunct Oklahoma A & M Wildlife Station, and then settled for 14 summers at U. of Oklahoma Biological Station at Lake Texoma, a huge impoundment of the Red River. Here I taught field Entomology for only two days a week, so there was a good opportunity to record odonate behavior throughout the day on the other five. There were many small artificial ponds nearby which, although very turbid and, to say the least, not at all picturesque, had good odonate populations, and we had the ponds all to ourselves. Believe it or not, there was Looney Pond #1 (the owner's name), then #2 and finally #3. Looney #1 was nice enough at times but was periodically invaded by hogs who slopped things up a bit. In the middle of Looney #2 were landmarks of a recent tornado: a refrigerator and a television! Mr Looney visited only once. We had to explain how *E. civile* does it. He was aghast, especially by intra-male sperm translocation and only said "I'll be G.D. Well don't bother my hogs." There was also a nice spring-fed creek which provided a more pleasant setting for prolonged observations. Quite a few papers resulted from using these habitats.

Finally, Lothar Hornuff enters this story. First when I was a very new Professor and he a beginning Biology student, then in my

Limnology and Field Biology classes. He loved field work and decided to go ahead for an advanced degree which, alas, was interrupted for military service in Korea. He eventually earned a PhD from the University of Oklahoma. We had many summers together at the Univ. Oklahoma Biological Station and traveling the West, collecting odonates, photographing flowering plants and doing outdoor cooking, a hobby which he dearly loved. He was a good collector, but never used those monstrous nets, Daigle and Dunkle style. He would make his way to one end of a pond and say, "Just leave me alone and I'll bring them in". he insisted that a good spit would lure them close to his net. He had good stories, signs and gestures about how to quickly spot many common Odonates. He loved to photograph them and made important movie records for our papers. On extensive Western collecting trips we worked together, living in two vans. One van was the lab, the other the dining room. We identified, packaged and labeled everything in the field. He was a very good Instructor in my Entomology course at UOBS and saw that the students really knew the key characters and were not just spotting familiar species. He erected some of the best (though quite diabolical) laboratory practicals I ever experienced. Alas, he became very overweight and died suddenly, just as he approached retirement. We last saw him heading to the Minnesota North Woods after having just missed Ken Tennesen's DSA meeting in Alabama.

P.P. Calvert was an early influence giving much encouragement in correspondence and during one brief visit to his home in Cheyney, PA. Mrs. Calvert met me at the RR station. Rather elderly, she impressed me with her aggressive driving. I was just about as startled as when the Aussie "WAC", meeting me at the Melbourne Airport, drove on the "wrong" side of the road.

Alice Ferguson appeared first during a meeting of the Louisiana Academy when she spoke of her acquaintance with Needham and Mary Ries. I was on her Doctoral Committee for her LSU degree. Our paths crossed again when she, with husband George Beatty, visited UOBS briefly en route to Mexico. Finally, we visited the Beattys at their State College, PA, home, heard the huge tortoise (was it from Galapagos?) stomping

about, and glimpsed the wonderful Beatty collection.

There was the 1963 Purdue meeting organized by B.E. Montgomery, an international group because of the presence of Philip Corbet and Tony Watson, and considered to be the foundation of S.I.O. Memorable events included A Tony slide crumpling in the heat of the projector [Actually they were my slides. I was traumatized. Ed.]; the Carolina group ruining Monty's time schedule; Borror's proposed common names - the name and the word "common" vigorously opposed by Leonora Gloyd. All were much interested in Corbet's new **Biology of Dragonflies**, which I reviewed in glowing terms. We last saw Philip when he visited us in Florida and we drove together to Tennessee for the SIO meeting. Through the years Philip has provided much encouragement for our behavioral work.

In 1972 I had my one and only sabbatical. We set out for Europe. In Utrecht we met Bastiaan, Mary Ann and Janny who were wonderful hosts. I spoke at an informal meeting of Dutch Odonate workers about our behavior work with *E. civile*, *A. moesta*, *A. plana*, some of which soon appeared as the lead article in Volume 1, Number 1 of **Odonatologica**. Lieftinck and Dumont gave papers in French with Janny whispering an English translation for us. Later, Lieftinck spoke to us in perfect English. He wanted to know why the US was giving Macromiidae full family status and why wasn't *Plathemis lydia* a good *Libellula*. We do not seem to be entirely clear on these matters even now.

Bastiaan delayed us so much that we almost missed the train as we headed for Paris and Banyuls, on the Mediterranean. Just outside of Paris we met Heymer whose behavior work we much admired. He hosted us and showed us his magnificent lab and office in a Louis XIV chateau. I didn't understand why he wanted to leave such luxury. At Banyuls, site of Heymers work, we were disappointed with cold weather. No Odonate was flying. We shivered on the beach. But the technician supplied by the marine lab showed us the Heymer site where sadly there were no *Calopteryx*. Then we headed back to Paris, London, the USA and

The average CV in the number of species observed, based on counts of adults, on adjacent dates was 40%, and the average CV in the total number of dragonfly individuals observed on adjacent dates was 57%. At CV = 60%, it would take 4 visits per year during the peak season to detect a 10% annual decline for a species over 10 years (a net decline of 61%) at a single location.

Heavy siltation of the pond from heavy rains and the installation of a natural gas pipeline upstream occurred during the second week of August 1994. This siltation did not significantly affect the total number of dragonflies ($p = 0.12$, $t = -1.74$), but one species, *Tramea carolina* (Violet-masked Glider), which avoids muddy water (Dunkle 1989) was absent ($p = 0.025$, $t = 2.75$) in the weeks following the siltation.

DISCUSSION -- Data from surveys such as these can be used to obtain state or region-wide distribution and abundance information and are useful for determining the timing and occurrence of the most common species. The collection of breeding data may be useful for establishing breeding records and the recording of stable populations, and broad scale distribution maps could be produced based upon such observational data (see Schmidt 1979 and Glotzhober 1995). The presentation of the data in a chronological chart (Fig. 1) allows comparison of abundance and timing of flights. For example, the early flight of the *Libellula deplanata* (Corporal Skimmer) is clear. This chart would be suitable as a checklist for someone returning to the area

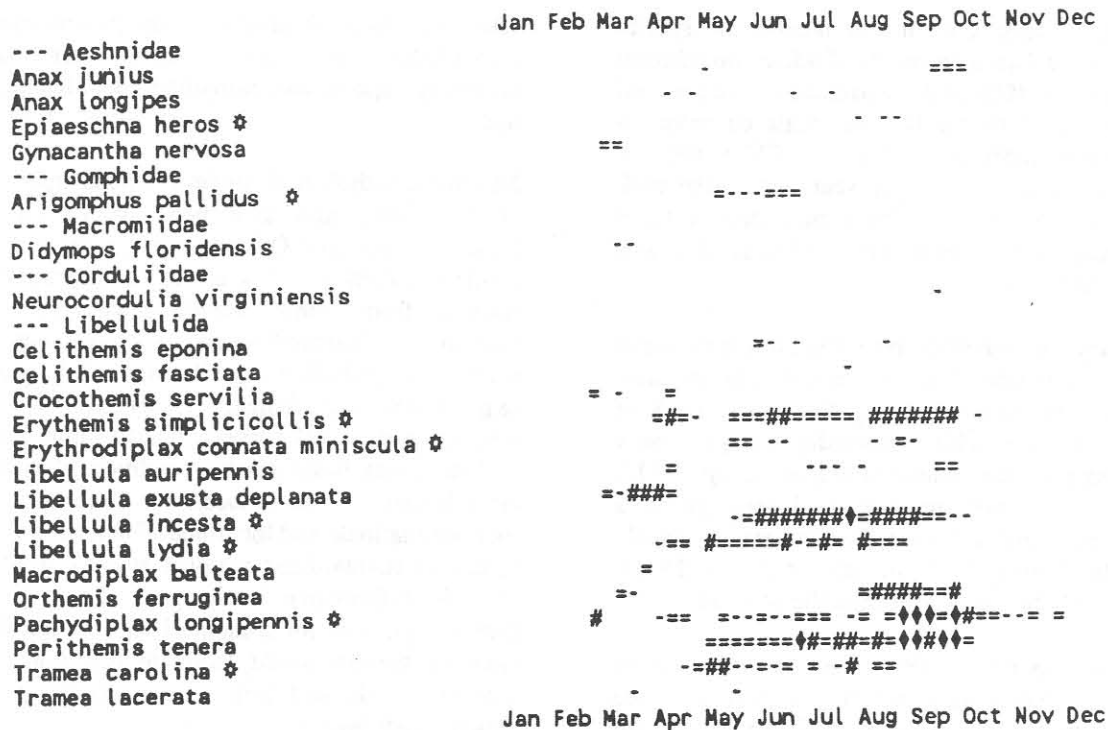
The high vagility of the adults may mean that nymphal material may be the most reliable and powerful method for environmental monitoring at a specific site (Carle 1979), although no estimate of the variance in sampling of nymphal material could be found in the literature. This observational method depends on the successful identification of adults. The standardization of common names, the availability of a field guide such as Dunkle (1989), and an area checklist aids in such a survey. Audubon Society in Massachusetts and New Jersey sponsors dragonfly and butterfly trips, which help train amateurs in identification of adults. Some species may still be difficult to identify based

solely on visual observations and professional entomologists play an important role in reviewing reports and providing identification tips.

National ornithological surveys depend upon a large, willing, and able body of volunteer birders. If national Odonata surveys are to be similarly initiated, a few useful things can be learned from these ornithological survey methods. Standardization of the census techniques, including classification of habitat (e.g. James and Shugart 1970) should be initiated early. All surveys should minimally include counts, basic weather conditions, habitat classification, and location information including latitude and longitude. Publishing the results of standardized national surveys would simplify information exchange. Finding a central repository for computerized data for all Odonata surveys would facilitate detection of national trends and further understanding of national distributions.

The intensive field technique used in this study was based roughly on the Breeding Bird Census (Hall 1946), which is applicable for a volunteer. Other ornithological surveys might be similarly modified for Odonata. A program similar to the Breeding Bird Survey (USFWS 1979) could be adapted for dragonflies by counting adults for 10 minutes at 25 different points along a transect in suitable habitat. A single-day count of Odonata similar to the Christmas Bird Count (Butcher 1990) or "4th of July count" for butterflies might be initiated to allow collection of distribution and abundance information on a single day. Dragonfly surveys may offer viewers greater densities of individuals than bird surveys. The average density of 25 dragonflies / hectare in this study, compared with a breeding bird density of roughly 3 pairs/ha for a breeding bird census plot at a nearby latitude (Sprandel 1994).

Dragonflies and damselflies currently have a higher percentage of species at risk (17.9%) than birds (13.9%) or mammals (15.9%) (Stein and Chipley 1996). Dunkle (1994) lists 33 of 156 (21%) of resident damselflies and dragonflies at risk in Florida. Odonata scientists should consider initiating nationwide surveys using volunteers to further the knowledge of Odonata distribution, abundance, and trends.



KEY	
◆	Abundant, 10 - 20 individuals observed
#	Common, 5 - 9 individuals observed
=	Uncommon, 2 - 4 individuals observed
-	Rare, 1 individual observed
*	Copulation or oviposition observed

Figure 1. Checklist of the dragonflies occurring on the Office Pond, Joe Budd WMA, Gadsden County, Florida, based on 4 counts monthly during 1994. Common names from Dunkle (1989).

and endangered Anisoptera of Virginia, United States. *Odontologica* 8:319-323

ACKNOWLEDGMENTS -- D. T. Cobb, N. F. Eichholz, K. M. Enge, and B. A. Millsap offered comments on this paper.

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Cottonwood Creek is quite pretty at this location, which is graced by an operating windmill. A total of 5 specimens of *A. tezpi* were taken, two females and three males, including a pair in tandem.

This is the fourth recorded collection of *A. tezpi* north of the Mexican border. Rosser Garrison (1994) reviewed the three prior collection records in his synopsis of the *Argia* of the U.S. Those records were:

1. Southwest Research Station, Cochise County, AZ, June 1956, M.J. Westfall, Jr.
2. Hidalgo County, NM, stream 18 mi. south of Rodeo, June 1966, C. Johnson (this area is close to the Cottonwood Canyon site)
3. Silver City, Grant County, NM, June 1993, C. Johnson

One male and one female specimen were deposited in the collection of R. Garrison in appreciation for his verification of the identification. The pair taken in tandem reside in the author's personal collection, and the remaining male specimen has been placed in the collection of the Kansas Biological Survey in Lawrence.

I would like to take this opportunity to thank Rosser Garrison for his great contribution (Garrison, 1994) to the study of the Zygoptera; these specimens might have gone unnoticed had the keys in his referenced publication not been available. He has made identification of specimens of this difficult genus much easier and less frustrating.

Reference:

Garrison, R. W., 1994, A synopsis of the genus *Argia* of the United States with keys and descriptions of new species *Argia sabino*, *A. leonora*, and *A. pima* (Zygoptera: Coenagrionidae), Trans. Am. Ent. Soc., 120(4)

SWALLOWS AND DRAGONFLIES

Dan Spada

Toward the end of July, 1981, I found myself in Iowa, just south of Geode State Park. Geode is located west of Burlington, in the extreme southeast corner of the state. At that time, although very interested in dragonflies, I had very little knowledge of them other than that needed to separate them from other insects. It was a hot, sunny day, as I recall, and as I watched, I saw flying formations of what I recognize now to be an aeshnid, anywhere from 10 to 40 feet or so above the ground. That was remarkable enough to me, but as I continued to watch, 15 to 20 barn swallows began swooping in and out of the mass of dragonflies. It seemed as if they were keying in on this mass of insect life to feed upon. Then I noticed that crunched dragonflies were raining down on me! The swallows were not feeding on the dragonflies! They were practicing aerial acrobatics and catching insects, but were only crunching the dragonflies and letting them drop. I know of no other situation where an adult organism would expend so much energy just practicing its predatory skills. I watched for about 20 minutes and did not see any swallow swallow! This note would be more valuable if I had been able to identify the species of dragonfly, or to verify migration. Unfortunately, I was at the very beginning of a continuing odonate learning curve.

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SEXISM AND ODONATA CONSERVATION

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There has been much discussion about the potential for the over-collecting of dragonflies. While respecting the opinions of those who express this view, I believe the view is not supported by what we know about dragonflies, and, in fact, their basic biology makes them immune to over-collecting. Many good reasons for the continued collecting of dragonflies have been expressed in this newsletter, but I would like to add a point that has been overlooked, one

I consider rather significant in arguing against the likelihood of over-collection. Dragonfly collectors are sexists! Our collections are full of male specimens and often conspicuously lacking in females. This isn't by choice. Females are hard to collect.

In the only collection for which I have an inventory, my own, I found that 32.8% of my specimens are females, a far cry from the 50% to be expected from the even adult sex ratio known to occur in dragonflies. To illustrate this further, I include the proportion of females in my collection in each of the families for which I have >25 specimens:

Polythoridae - 0.20 (N=166)
Euphaeidae - 0.14 (43)
Chlorocyphidae - 0.28 (124)
Calopterygidae - 0.29 (2470)
Lestidae - 0.30 (1781)
Megapodagrionidae - 0.24 (547)
Pseudostigmatidae - 0.49 (215)
Platystictidae - 0.24 (236)
Protoneuridae - 0.21 (581)
Platynemididae - 0.43 (153)
Coenagrionidae - 0.33 (16548)
Petaluridae - 0.23 (35)
Aeshnidae - 0.32 (2744)
Gomphidae - 0.29 (1487)
Cordulegastridae - 0.28 (95)
Macromiidae - 0.26 (133)
Synthemistidae - 0.36 (33)
Corduliidae - 0.31 (853)
Libellulidae - 0.36 (14510)

Only in the Pseudostigmatidae is the sex ratio even, and this is because the species of this family are not localized for breeding, so collectors encounter them in the forest at random with regard to sex.

However, even these figures showing that about a third or a fourth of the specimens collected are females are actually quite misleading as an indication of relative availability of the two sexes to the collector. The actual ratio of females to males *seen* is much lower than this. In some species females are seen only when paired with males, in others only at certain times of day, in still others scarcely ever.

Collectors usually make a special effort to acquire the females they see among the much

greater number of males (or, in the very few species in which females are more apparent, the reverse). My own collecting is consistently biased toward females, as at a minimum I attempt to preserve a male and a female of each species I encounter at every locality, and I have to hunt much harder to find a female among the larger numbers of males.

The difficulty of acquiring females is indicated by some of the species totals in my collection. There are 25 species for which I have 5 or more male specimens but no females. All of them are species I collected, and I looked long and hard for females. In many cases, I made special efforts to acquire females from other collectors. I have no species similarly biased toward females.

The point of these statistics is that dragonfly collectors collect relatively few females, except in certain circumstances in which the sexes are equally represented-e.g., at emergence or in feeding swarms. Otherwise, what you see when you go to a water body are males, and what you see is what you get. If you are fortunate, you also find a few females, typically in pairs or ovipositing. This is because of one of the most basic attributes of the vast majority of dragonfly species. Males must remain at the water for any chance of mating, while females can appear briefly, mate, oviposit or not, and leave. They are assured of mating at the briefest visit, as the sex ratio at the water is so highly male-biased. Many of the adaptations of females, in fact, are to *avoid* mating repeatedly, because this activity interrupts oviposition, while any male able to mate repeatedly is favored by natural selection.

Because females visit the water only briefly, they are at quite low risk from collectors. Because the sex ratio is so skewed, they should be able to mate even at a locality at which substantial collecting of males has taken place, as long as a few males remain. Under this assumption, *collecting of males cannot have any effect on dragonfly populations*, and only in an atypical species would this situation not prevail.

Now how about females? Let's calculate three probabilities: the proportion of the daylight period during which a given female will visit the water, the probability that a given female will appear in sight and in reach of the collector

during a given visit, and the probability that the collector will net a female that appears and is in reach. Multiply them for a reasonable estimate of collecting pressure.

From this estimate it follows that there is also *no danger of females being over-collected*. Because of this, every attempt should be made to collect this sex, especially of rare species, as females are woefully underrepresented in collections. This point was made clearly when no female specimen was available to be included in the description of a new North American species (K. B. Miller and M. A. Ivie, Proc. Ent. Soc. Wash. 97: 833-838, 1995), at least in part because the collectors specifically avoided taking females of common species because of their conservation ethic.

Although the intent expressed by Miller and Ivie is laudable, their statement that "females are basically non-useful for documenting a species' occurrence" must be answered by the question "what if a female was the only individual observed at a site?" I attempted to answer both this question and the question "how often are females collected as voucher specimens?" by analyzing my field records for 1995. For each locality on each date, I note the presence of each species observed, and I attempt to collect at least one male and one female of each species for voucher specimens and to continue to build up series of even the most common species for future studies. There are a total of 452 species records (one species at one locality on one date) in the 47 collections I made in that year in Washington, New Mexico, and Arizona. Of these, 23.5% were documented by collections of both sexes, 40.9% by males only, 8.4% by females only, and 27.2% by sight records only.

Thus on only 31.9% of my attempts was I able to collect even a single female, essentially the same figure as the overall proportion of females in my collection. A very large number of these females were damselflies collected in mated pairs, often the easiest way to acquire them and of special value because it associates the two sexes. This figure shows that females are under-collected as voucher specimens and indicates the reduced collecting pressure on the sex even with concerted efforts.

Furthermore, for 8.4% of the records, I would have had no voucher specimen had I not collected at least one female. And, as females are typically more difficult to distinguish in the field than males, I might not have noted the species at the locality at all had I not collected females. Thus females are indeed useful for documenting a species' occurrence.

A final point I wish to make, from further analysis of my collection inventory, is one about the overall collecting pressure on odonates. I have been a relatively active collector over the years and have tried to acquire specimens from other people whenever I could. I have a collection of over 45,000 specimens, which might make eyes widen among those who are concerned about collecting large series. In fact, my collection averages about 25 specimens/species, or <1 specimen / species/ year for the 3.5 decades during which I have collected dragonflies! Bear in mind only one-third of these are females, the "sex of concern."

Most of my series are small (the largest, of course, being of the most common species). I have more than 500 specimens each of *Argia pulla*, *A. sedula*, *Enallagma boreale*, *E. carunculatum*, *E. cyathigerum*, *Ischnura ramburii*, and *Erythrodiplax funerea*, each of which has been extremely common somewhere I have spent considerable time and carried out regular sampling programs. I have 1,173 *I. ramburii*, or about 34 specimens/ year that I have actually preserved of this widespread and abundant species-of which 34 individuals can easily be seen in one field of view. The point to be made is that we collect large series only of common species. Rare species (those that one could imagine as potentially threatened by scientific collecting) are sufficiently rare that collectors simply can't find enough of them to endanger their populations.

I can conceive of no dragonfly a population of which could be extirpated by scientific collectors, short of a massive and concerted attempt that could never happen. I ask the reader to imagine the most enthusiastic collector you know and to contemplate whether that person would have the time in days or weeks and, perhaps more significant, the stamina and consummate skill with a net that it would take to capture the majority of the individuals of any

species of odonate at any site with which you are familiar. Remember also that they would have to do so before each individual had the opportunity to breed. I personally can't imagine this scenario.

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COMMENTS ON VENEZUELAN ODONATA NEEDING SPECIAL CONSERVATION ATTENTION

Jurg DeMarmels

In a recent article in *ARGIA* 7(4), 1995, Sid Dunkle presents a kind of World Red List of Odonata, which includes one Venezuelan species, *Rimanella arcana*. I am happy to emphasize that this taxon is common and widespread throughout the Venezuelan Pantepui and is known from Guyana and Suriname. As it lives in mountain streams of remote regions, mostly within National Parks, there seems to be little direct menace to this damselfly in the near future. However, representing a monotypic genus, *Rimanella* is truly a Mesozoic relic with its only close relatives in West Africa. Therefore, it seems wise not to lose it from view.

The official Venezuelan Red List so far includes only two Odonata, *Philogenia polyxena*, an endemic of the Sierra de Aroa in west Central Venezuela, and *Archilestes tuberalatus*, endemic to a small stretch of coastal forest near Puerto Cabello. Neither species' habitat lies within any protected area, and both taxa are severely threatened by expanding agriculture and human settlements.

There are at least another twenty species which would need protected status (whatever that would mean in a country like Venezuela). Some have not been recorded since the original description. From others less than ten specimens are known. Some species are common, but are of special evolutionary, biogeographical, and / or taxonomic interest (*Iridictyon*, *Chalcothore*). Several are known from neighboring countries but are on the brink of extinction in Venezuela, if not already extinct (*Polythore terminata*, *Erpetogomphus sabaleticus*).

I hope to prepare a list of these species in the future.

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VENEZUELAN FOLK NAMES FOR ODONATA

Jurg DeMarmels

In *ARGIA* 7(4), 1995, Roy Beckemeyer presents some Spanish terms applied by Latin Americans to the Odonata. In Venezuela, several folk names are being used, among them, of course, "caballito" (little horse), or "caballito del diablo" (Devil's Little horse). However, in the Andes of Merida dragonflies are called "corta narices" (cuts the nose). In the plains (Llanos) the terms "mojaculo" (wets its bottom), "lavaculo" (washes its bottom), and "rozaculo" (rubs its bottom) are widespread, referring, of course the libellulid manner of oviposition. Additional terms are "riegapozo" (extends the pool) or its opposite, "achicapozo" (reduces the pool). "Helicóptero" (helicopter) and "avión" (airplane) are other common names for dragonflies in Venezuela. The Indian language groups have well-defined terms for Odonata: in the Yanomami language dragonflies are called "omáo". The Pemon Indians call them "pirmó" and the Ye-kwana know them as "kourésedi".

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YET ANOTHER WORD FOR "DRAGONFLY" - IN VIETNAMESE

Nick Donnelly

In a recent trip (see article this issue) to Vietnam, we learned that the Vietnamese word for dragonfly is "chuôn chuôn", which, however, has an accent also on the ô, that I have not yet learned to print in a readable manner. The people who taught me this word do not know of a meaning for the term, but it very reminiscent of the Chinese term "chin chin" and reminds us of the ancient connection between the two languages. Both languages are highly tonal and the exact pronunciation of words is difficult to master. However, if you have a net in your hand and a determined look

in your eye, people will quickly grasp what you are looking for.

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1996 DSA FINANCIAL REPORT

Jerrell J. Daigle

At the request of Nick Donnelly, I have prepared a short summary of the **ARGIA** and **BAO** financial account from early 1996 to present. Dues for both journals are combined together in one savings account at the Sun Bank in Tallahassee, Florida. We began the 1996 year with a 1995 balance forward amount of \$4,813.55.

Presently, our current account is \$7,798.08. So far, we have received 1996 dues/interest totaling \$4,850.62. Our only expenses are \$1,886.09 for **ARGIA** 7:4 and 8:1 plus **BAO** 3:4.

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ANNOUNCING THE NEW INTERNATIONAL ODONATA RESEARCH INSTITUTE WEB SITE: "THE ODONATA INFORMATION NETWORK"

Bill Mauffray

The First Odonata web page launched over a year ago by me has been totally redone. The new Web pages have been designed as **HTML** documents and offer general information about the **SIO**, International Odonata Research Institute, Dragonfly Society of the Americas. Some of the new features include the e-mail directory with links and a brief biography on each person (the later still under construction), and a directory with links to other Odonata sites, as well as a site to post request for specimens, data, etc.

Between April 15 and May 15 There were over 200 "hits" to the site.

The new addresses are:

HOME PAGE: (Now called the Odonata Information Network (OIN))
= <http://www.afn.org/~iori/>
The International Odonata Research Institute
= <http://www.afn.org/~iori/ioriintr.html>
The Societas Internationalis Odonatologiae
= <http://www.afn.org/~iori/siointro.html>
The Dragonfly Society of the Americas
= <http://www.afn.org/~iori/dsaintr.html>
The Florida State Collection of Arthropods
= <http://gnv.ifas.ufl.edu/~entweb/dpifasca.htm>
The Odonata Collection at the Florida state collection of Arthropods
= <http://www.afn.org/~iori/odonata.html>
(This includes a list of the Types at the FSCA)
The FSCA "Dragonflies and Damselflies" Home page =
<http://gnv.ifas.ufl.edu/~entweb/draghome.htm>
(a "mirror" of the OIN home page above)

Please update your links, and look at my site and see what you think. Comments, suggestions, additions or postings welcomed.

If I do not have a link to your site, or if the address is wrong, please let me know. Also please link your site to mine (<http://www.afn.org/~iori/>) and label it the "I.O.R.I. Odonata Information Network"



Bill Mauffray doesn't spend all his time on the WEB.

THE DRAGONFLY SOCIETY OF THE AMERICAS

Statement of Committee on Collecting Policy

Preamble

Our ethical responsibility to assess and preserve our biological heritage, for the maintenance of biological diversity in perpetuity, and for the increase of knowledge requires that Odonatologists examine the rationale and practices of collecting Odonata, for the purpose of governing their own activities. While we recognize that historically most threats to preservation of odonate species have been a consequence of habitat destruction, we believe that there is a need for responsible collecting practices. To this end, the following guidelines are outlined, based on these premises:

0.1 Odonata are natural, rightful inhabitants of the biosphere.

0.2 Any human interaction with natural populations of Odonata should not hamper the perpetuation of those populations.

0.3 Collecting of Odonata:

0.31 is a means of introducing people to the awareness and study of their natural environment;

0.32 has an essential role in gathering of scientific information including the advancement of taxonomic knowledge, both for its own sake and as a basis from which to develop rational means for protecting the environment, and maintaining the health of the biosphere;

0.33 is an enjoyable educational or scientific activity which can generally be pursued in a manner not detrimental to a natural population.

0.34 must be done in a manner and spirit that embodies a respect for the environment and for dragonflies as species and as individuals.

Guidelines

Purposes of Collecting (consistent with the above):

- 1.1 To create a reference collection for study and appreciation.
- 1.2 To document regional diversity, frequency and variability of species, and as voucher specimens for published records.
- 1.3 To document faunal representation in environments undergoing, or threatened with, alteration by human or natural forces.
- 1.4 To participate in the development of regional checklists and institutional reference collections.
- 1.5 To complement a planned research endeavor.
- 1.6 To aid in dissemination of educational information.
- 1.7 To provide specimens for taxonomic studies.
- 1.8 To provide information for ecological studies.
- 1.9 To provide a resource for DNA material for genetic analyses

Restraints As To Numbers

- 2.1 Collecting adults or immatures should be limited to sampling, not depleting, the population concerned.
- 2.2 Numbers collected should be consistent with, and not excessive for, the purpose of the collecting.
- 2.3 Where the extent and/or fragility of the population is unknown, caution and restraint should be exercised when collecting.

Collecting Methods

- 3.1 Field collecting should be selective and should minimize harm to non-target organisms.
- 3.2 Field collecting should be conducted in such a manner so as not to cause undue damage to fragile habitats such as seeps and fens.

Live Odonata

- 4.1 Rearing to elucidate life histories and to obtain series of immature stages and adults is encouraged, provided that collection of the rearing stock is in keeping with the guidelines.
- 4.2 Reared individuals in excess of need should be released, but only in the region where they originated, and in suitable habitat.
- 4.3 Concerns about the introduction of disease and the dispersal of non-indigenous genetic material, makes it critical that release of excess reared individuals in areas removed from the larvae's origin be conducted only with a planned restoration program under the supervision of knowledgeable biologists.

Environmental and Legal Considerations

- 5.1 Protecting the supporting habitat must be recognized as essential to the protection of a species.
- 5.2 Collecting should be performed in a manner that minimizes trampling or other damage to the habitat.
- 5.3 Property rights and sensibilities of others must be respected (including those of nature photographers and observers).
- 5.4 All collecting must be in compliance with regulations relating to public lands (such as state and national parks, monuments, recreational areas, etc.) and to individual species and habitats.
- 5.5 Importation and movement of exotic species must be in compliance with international, national, or regional laws prior to importing or exporting live or dead material.

Responsibility For Collected Specimens

- 6.1 All specimens should be preserved with full data attached, including parentage of immatures when known.
- 6.2 All specimens should be protected from physical damage and deterioration, as by light, molds, and museum pests.
- 6.3 Collections should be made available for examination by qualified researchers.
- 6.4 Collections or specimens, and their associated written, electronic, photographic and other records, should be willed or offered to the care of an appropriate scientific institution, if the collector lacks space or loses interest, or anticipates death.

- 6.5 Type specimens, especially holotypes or allotypes, should be deposited in appropriate institutions.

Related Activities Of Collectors

- 7.1 Collecting should include permanently recorded field notes regarding habitat, conditions, and other pertinent information.
- 7.2 Recording of observations of behavior and other biological interactions are encouraged.
7. Fully documented photographic records are encouraged.
- 7.4 Education of the public about collecting and conservation, as reciprocally beneficial activities, should be undertaken whenever possible.

Traffic In Odonata Specimens

- 8.1 Collections of specimens for exchange should be performed in accordance with these guidelines.
- 8.2 Rearing of specimens for exchange should be from stock obtained in a manner consistent with these guidelines, and be so documented.
- 8.3 The sale of individual specimens or the mass collection of Odonata for commercial purposes (e.g. fish bait), and collection or use of specimens for creation of marketable artifacts, are not included among the purposes of the Dragonfly Society of the Americas.

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The editor is able to provide back issues of **ARGIA**. Several of the issues will be xeroxed, as original copies of many issues have been exhausted. Please contact T. Donnelly, 2091 Partridge Lane, Binghamton NY 13903. Each of the previous volumes of **ARGIA** has at least one issue that requires duplication. Because of high mailing and duplicating costs, the back issues cannot be sent at the old price. The present price schedule takes into account the different costs of duplication of each number of **ARGIA**. In the event that an issue becomes exhausted, then xerox copies will be sent. **Prices do not include postage; see below.**

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