ISSN 1061-8503

ARGIA

THE NEWS JOURNAL OF THE DRAGONFLY SOCIETY OF THE AMERICAS

VOLUME 11 15 JUNE 1999 NUMBER 2

PUBLISHED BY THE DRAGONFLY SOCIETY OF THE AMERICAS

THE DRAGONFLY SOCIETY OF THE AMERICAS

Business address: c/o T. Donnelly, 2091 Partridge Lane, Binghamton NY 13903

EXECUTIVE COUNCIL 1997-1999

President	R. Garrison	Azusa CA
President Elect	M. May	Cranbury NJ
Past President	K. Tennessen	Florence AL
Past President	G.L. Harp	Jonesboro AR
Past President	T.W. Donnelly	Binghamton NY
Past President	C. Cook	Center KY
Vice President, SIO Affairs	M. Westfall, Jr.	Gainesville FL
Vice President, Canada	R. Cannings	Victoria, British Columbia
Vice President, Latin America	R. Novelo G.	Jalapa, Veracruz
Secretary	S. Dunkle	Plano TX
Treasurer	J. Daigle	Tallahassee FL
Regular member	R. Beckemeyer	Wichita KA
Regular member	J. Abbott	Denton TX
Regular member	S. Valley	Albany OR

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

T. Donnelly (address below) is the interim editor of **ARGIA.**

BULLETIN OF AMERICAN ODONATOLOGY is devoted to studies of Odonata of the New World. This journal considers a wide range of topics for publication, including faunal synopses, behavioral studies, ecological studies, etc. The **BAO** publishes taxonomic studies but will not consider the publication of new names at any taxonomic level. Enquiries and submission of manuscripts should be made to **BAO** editor T. Donnelly, 2091 Partridge Lane, Binghamton NY 13903. Final submissions (after review) should be made on floppy disk, as above, with illustrations in final form and preferably adjusted to final size.

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: Photograph of ***Williamsonia lintneri***, at Ponkapoag Pond MA. This is the bug all the excitement is about. Photo by Nick Donnelly.

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

IN THIS ISSUE

The Adirondack meeting is coming up! If you are planning to come, please make your plans now and let us know about it.

We have some more exotic meetings to announce: A South African collecting trip, a meeting in Norway, and a meeting in Siberia. The last is in 2001, so don't pack your bags just yet.

The big news this quarter is the discovery of ***Williamsonia lintneri*** in yet another state. Mark O'Brien informs us that the species has been found in two Michigan counties.

Raymond Hutchinson and Benoit Menard have been very active in Québec, but very few of us hear of their exploits. They have sent us several short pieces that attest especially to their impressive accomplishments with larvae.

Archilestes grandis continues its inexorable march across the face of North America. Broughton A. Caldwell reports that it has reached Georgia.

Paul Brunelle has conducted another of the popular Odonata seminars at Eagle Hill, in Maine. This one was devoted to larval dragonflies and was quite a success.

There are some records of interest. ***Gynacantha mexicana*** has been photographed by Bob Behrstock in south Texas ("The Valley") and is thus added photographically to the US faunal list. Jerrell Daigle reports that ***Cordulegaster sayi*** is back in its Florida haunts in good numbers.

Seth Williamson contributes a neat little note about a bittern catching a dragonfly. Bet none of you have ever seen that!

Fred Goodwin is into swarms, and he reports on some really stupendous swarms of (mainly) ***Aeshna*** species in Massachusetts. Come to think of it, no one has ever really recorded the behavior of swarming dragonflies.

Dennis Paulson is starting what we hope is a regular column summarizing a topic discussed widely on his ListBot e-mail discussion group. This has been a very popular service and the topic Dennis discusses in this issue ("cannabilism") is only one of the interesting topics developed.

We have a few notes and book reviews. The good books just keep rolling in!

The Dot-Map project is really coming along well, as I report. I still need data, but every part of North America now has some data.

And remember the Hamilton Symposium, held just after the **DSA** meeting.

=¡= =¡= =¡= =¡= =¡= =¡= =¡= =¡= =¡= =¡= =¡=

ADIRONDACK MEETING – FINAL NOTICE

Nick Donnelly (607 722 4939; tdonnel@binghamton.edu)

We have a nearly complete complement of people heading for Paul Smiths, and we promise great weather, great bugs, and great companionship.

If you plan to attend and haven't notified us, please do so now!

We will need to supply the College with our final tally by 28 June, so if you are planning to come, now is the time to act. After that, there will be motels and camping but we will not be able to guarantee a place at the college.

If you are coming to the college, remember to bring sheets (single bed, long), pillow cases, and towels. The college supplies blankets. We will have a few extras for people traveling a long way who will find it difficult to bring these things.

It is also recommended that you bring a small reading lamp. The rooms are said to be a bit dim in the evening for close bug examination.

There will be stores in the vicinity to stock up on picnic supplies. Breakfast and dinner will be at the College. The first meal will be Thursday at 6 – 7 P.M.

For those of you planning to show slides or make short presentations, there will be an auditorium and

35 mm slide projector. Please tell me what you are planning in advance.

=¡= =¡= =¡= =¡= =¡= =¡= =¡= =¡= =¡= =¡= =¡=

DSA BUSINESS MEETING

The **DSA** Business Meeting will take place during the Adirondack gathering. We need to select a new incoming president, to take office in 2001. A nominating committee is gathering names; please send your nominations to Nick Donnelly.

=¡= =¡= =¡= =¡= =¡= =¡= =¡= =¡= =¡= =¡= =¡=

NORDIC DRAGONFLY MEETING IN AUGUST 1999

Hans Olsvik, N-6694 Foldfjorden, Norway
Telephone: 71645294, 90669529 (gsm)
E-mail: olsvikha@online.no

Welcome to the 5th annual summer meeting of the Nordic Odonatological Society, at Aure, Nordmoere, central Norway 6-8 August 1999

This summer's meeting will be held at Aure, Nordmoere, central Norway (on the Atlantic coast about. 100 km west of Trondheim). Please let us know your travel plans, and we might be able to organize transportation from nearest railway-station or airport. We will also assist if you need information on how to get here.

The schedule of this year's meeting follows the pattern of earlier meetings, with field trips during the day, short lectures in the afternoon/early evening, and the usual social events after that. Accommodation is in cabins; bring sleeping bags. Please send a message if you think you might participate, as we need to know how many beds will be necessary. The area has very few restaurants; we will be preparing our own food.

This is the very preliminary program: (1) The local Odonata fauna. (2) Odonata as indicators for local key-habitats. (3) Sea fishing (bring own equipment), with island stops and cooking of the catch.

The area has about 20 Odonata species, among them some of the northernmost localities for more common species further south. The attractions will be the dark northwest European near relative of ***Sympetrum striolatum nigrescens***, and the two ***Somatochloras: alpestris and arctica***. All should be present both as larvae and adults.

We would appreciate receiving a preliminary title as soon as possible from those of you who would like to hold a short lecture. If you are interested in a before- or after-meeting dragonfly trip, please get in touch. Maybe others will join too.

Welcome! Please send non-binding registration to Hans Olsvik (address above).

=¡= =¡= =¡= =¡= =¡= =¡= =¡= =¡= =¡= =¡= =¡=

SOUTH AFRICAN BUTTERFLY TRIP ALSO FOR DRAGONFLIES

John Heppner, Assoc. for Tropical Lepidoptera, P.O. Box 141210,Gainesville, FL 32614-1210

The ATL expedition to South Africa in November can accept applications from odonatologists, since they work well with butterfly collectors in general.

Plans are for a 3-week trip beginning Nov. 1 and returning Nov. 23. Flights will be round trip from Miami direct to Cape Town (an 18 hour flight). All land travel, airfares from Miami, and meals are included in the cost. Plans are to begin in the Cape Town area, then proceed along the southern and eastern coast to the Drakensberg escarpment, then north to near the Mozambique border, followed by longer stays at nature retreats between Pretoria and Kruger National Park. For further information, anyone interested should contact me via e-mail: jbhatl@aol.com

Cost is $4,950 per person (unfortunately the airfares to Cape Town are nearly half of the cost; thus the high charge).

=¡= =¡= =¡= =¡= =¡= =¡= =¡= =¡= =¡= =¡= =¡=

15th INTERNATIONAL SYMPOSIUM OF ODONATOLOGY

Novosibirsk, Siberia, Russia, July 10-14, 2001, plus a 5-6 day Post-Symposium Tour.

The Institute of Animal Systematics and Ecology of the Siberian Branch of the Russian Academy of Science cordially invite all those interested in damselflies and dragonflies to a stimulating fortnight in Novosibirsk. Scientific papers and posters, informal presentations and demonstrations,

slide and film programs, field trips, and all the other traditional events are scheduled.

The Symposium will be organized by the Russian Section of Societas Internationalis Odonatologica, headed by Professor Dr Anatoly Yurevich HARITONOV, Institute of Animal Systematics and Ecology, Siberian Branch, Russian Academy of Science, Frunze ave.11. RUS - 630091. Novosibirsk. Russia, Tel / Fax: 383-(2)17- 09-7317-06-77, e-mail: ei@zoo.nsk.su

All correspondence is to be addressed at the Organizing Secretary, Dr Oleg KOSTERIN, Institute of Cytology and Genetics of the Siberian Branch, of the Russian Acad.Sci., Lavrentiev Ave. 10 RUS - 630090, Novosibirsk Russia, Tel / Fax: 383-(2) 33-12-7833-34-66, E-mail: kosterin@bionet.nsc.ru

The Mid-Symposium Trip will go to the Ob River valley. We shall also visit several odonatologically interesting localities in the Novosibirsk area. The Post-Symposium Tour will combine the odonatology and the sightseeing. Several biological stations of the Russian Academy of Science will be visited in the forest-steppe region and in the Altai Mountains.

Estimated costs (February 1999):
Registration:
US $ 100 (incl. Mid-Symposium Trip)
US $ 40. for accompanying family members
US $ 50. For students
Hotel, per night, single room US $ 30; double room per person US $ 22.

All suggestions and comments will be much appreciated. They are to be directed at the Organizing Secretary and/or Professor Haritonov.

Those wishing to receive the information on details by airmail are kindly requested to notify the Organizing Secretary to this effect.

The Novosibirsk part of the world odonatological family consists of 13 members, who are eager to render a warm welcome and home to all odonatologists and dragonfly lovers who will be able to come.

=¡= =¡= =¡= =¡= =¡= =¡= =¡= =¡= =¡= =¡= =¡=

WILLIAMSOMIA WANDERINGS

Mark O'Brien

You can now add Michigan to the number of locations where ***Williamsonia lintneri*** is found. Thanks to the speed of e-mail, I was able to alert Michigan Odonata Survey members to be on the lookout for emergences at the end of April. Stephen Ross of Mecosta Co., found ***W. lintneri*** in Mecosta Co. in a bog on May 2. That specimen was collected, and verified by me that it is indeed, ***W. lintneri***. Stephen observed additional individuals on May 9 and May 11, all within 1/2 mile of the original site of discovery (a full article on this will be submitted later to **ARGIA**). On May 9, Stephen also found ***W. fletcheri*** near the original ***W. lintneri*** location. Two days later, he saw several more ***W. fletcheri*** on a sandy two-track skirting the bog. The ***W. fletcheri*** are also new county records and extend the range southward in the state to about halfway up the lower peninsula.

Carl Freeman of Benzie Co., MI found ***W. fletcheri*** at Lost Lake Bog in Grand Traverse Co. on May 11 and 13, and although it was not a new county record, it was good to see it recollected in that area again.

Based upon what Stephen and Carl have so far found, it would appear that the key to finding either species of ***Williamsonia*** is to get out early and look! With the recent spate of early warm springs, it seems imperative to get out as early as possible. These two bog-obligate species seem to prefer habitats where small, persistent pools are found amongst hummocks of sphagnum moss. I have now found some really good bog sites in SE Michigan, and will survey them next spring for any possibility of ***Williamsonia***.

=¡= =¡= =¡= =¡= =¡= =¡= =¡= =¡= =¡= =¡= =¡=

ODONATOLOGICAL NEWS FROM QUEBEC, CANADA: THE MARVELOUS WORLD OF QUEBEC DRAGONFLIES

Raymond Hutchinson, 12, chemin de la Savane, apt. 12, Gatineau (Québec), Canada, J8T 1P7; phone: 1-819-561-3679.
Benoît Ménard, 58, rue Smith, Gatineau, Quebec J8T 1P7.

[Raymond Hutchinson and Benoît Ménard sent in several short pieces, which I have run seriatim. Ed.]

SEARCHING FOR SIGNS OF *STYLURUS NOTATUS, GOMPHUS FRATERNUS* AND *GOMPHUS VASTUS* IN THE OTTAWA

RIVER

We had never encountered these three species of gomphids in all our expeditions prior to 1996. We thus decided to find out if they could be found in the Ottawa river, a very impressive, wide and vast body of water and a tributary of the St. Lawrence River.

We examined four sites along the river between Aylmer and Bristol Mines, a stretch of about 40 miles. Only one enabled us to become acquainted with these three gomphids. This site at Luskville (Quebec), which gives us much pleasure, must be described. The shore is anything but pristine and wild. In fact, the original shore has all but been destroyed and replaced by stone walls which protect the riverine cottages from the seasonal floodings of this majestic river.

Some aquatic plants, mixed with weeds, take root in the unnatural surroundings, made up of debris, sand and mud. Many of the cottagers' boats are moored there and it is an area where we had to befriend the cottage owners and make our intentions known as to what we are there for. The stone walls became our main collecting area.

We visited this site 15 times in June and July 1996 and 1997. We collected the following specimens: ***Gomphus fraternus***: 1 male, 1 female, 53 exuviae or larval skins; ***Gomphus vastus***: 7 exuviae; and ***Stylurus notatus*** 17 emergences (with the teneral adult and its skin), 69 exuviae and 1 larva.

Most of these specimens were collected on the stone walls. The larvae, in many cases, walked out of the water on to the wet sand, debris and mud, before climbing to the walls and emerging at different heights, from a few inches to about three feet. Some exuviae were found on wet sand at water's edge and between aquatic plants growing near or in shallow water.

While a majority of ***S. notatus*** emergences took place on the walls, three were found on the wet sand or mud hidden amongst the aquatic plant stems close to the shore. In one case, an emerging adult was found clinging to the stem of a plant in very shallow water.

The Ottawa River has come under much stress from human activity over the years. Navigation is heavy at times. Lumbering, pollution of all kinds, and damming have had some deleterious effect on the river. In fact, RH has read in one report that 97% of Quebec domestic and industrial waste went directly into the river untreated. It seems that attempts are now made to reverse the situation, and that the water quality of the Ottawa River and the St. Lawrence River is improving.

Our sporadic collectings does not enable us to come to any conclusion as to the fate of the large river gomphid populations in the Ottawa River. We have collected over twenty species of Odonate larvae, including a fair number of ***Gomphus exilis*** and ***Dromogomphus spinosus***. Larvae of ***Didymops transversa, Epicordulia princeps, Macromia illinoiensis*** and ***Neurocordulia yamaskanensis*** also seem numerous. Trichoptera, Plecoptera and Ephemeroptera larvae are still found in the river. Surprisingly, we found a few larvae of ***Ophiogomphus rupinsulensis*** and two ***Ophiogomphus colubrinus***, the latter in a small stream, coming from the north and flowing into the Ottawa river.

A systematic survey would have to be undertaken to assess whether the odonata specific to large rivers are in danger, in stable condition or recuperating from past negligence. Their plight remains unknown as we arrive in the new millenium.

All we know is that we can still collect ***G. fraternus, G. vastus*** and ***S. notatus*** and we intend to look again during the coming season (1999).

It is noteworthy to report that Dr. Jean-Marie Perron, a retired Laval University professor, is finding these species in the St. Lawrence River, near Quebec City, which is amazing and very interesting for us. He apparently will be publishing his results soon.

RH would like to go in the middle of the Ottawa River by boat to check whether the ***S. notatus*** patrol just like ***Stylurus spiniceps*** does in the Petite Nation River, about 40 miles east of Ottawa on the Quebec side of the river.

TWO NEW QUEBEC LOCALITIES FOR *WILLIAMSONIA FLETCHERI*

This early spring dragonfly (corduliid) has given us much pleasure and excitement over the years (Ménard, 1990, 1996). When we turn our calendar to the first week of May, we find ourselves heading for our two familiar "fen-bogs" to observe and collect specimens of ***Willimsonia fletcheri***. These two sites are the fen-bog-marsh-swamp complex of

Alfred in eastern Ontario and a small section of a swamp-marsh area covered with sphagnum north of Ste-Cecile-de-Masham in Quebec. The latter habitat is a quaking shore which covers about one fifth of the total wetland area, where carex, gramineous plants and certain types of shrubs grow on the quaking mat. Both collecting areas have the small pools of water where the larvae of ***W. fletcheri*** are found.

In May 1996, we discovered two new localities and sites where the nymphs (larvae) thrive: namely a fen near lake Danford (Quebec) and another small one near the village of Poltimore (Quebec). Both sites are within an hour's drive north of the Ottawa-Hull area.

Finding ***Williamsonia*** larvae is still grueling work, with the possibility of returning home without specimens. However, these new sites are now our best collecting spots. As a matter of fact, in the Poltimore fen, we actually collected 14 larvae during a two-hour excursion. We have now collected close to 60 larval specimens (larvae and exuviae) at the four sites all within a forty mile radius around Ottawa (Ontario) since 1988. The reader will find hereafter a rundown of our 1996-1998 ***Williamsonia*** field-trips, with numbers and types of specimens found.

Williamsonia fletcheri collecting data for 1996-1997 :

Lake Danford (near), pools and ditches in a minerotrophic bog: two larvae, 7.v.1996; one larva, 5.vi.1997; five exuviae, on gramineous plants or carex-type plant, found two inches from the pool water surface, 18.v.1998.

Poltimore (near the village), small fen, adjacent to a small lake, with minuscule pools, ditches, brooklet types of microhabitats: seven larvae, 11.v.1996; five larvae, 27.v.1996; fourteen larvae of different sizes or age-group (two near emergence), one exuvium, 5.vi.1997.

Total for 1996-1998: 35 larvae or exuviae. RH has about 20 in his home and BM has a few also.

We now feel confident that for us the habitat and microhabitat of ***Williamsonia fletcheri*** are fen-type of terrain or environment with small pools and often interconnected ditchlike strands of standing water. Standing-water here does not mean water without movement whatsoever, but perhaps with a minor flow coming from springs, wind, and precipitation.

An important strategy for us is to look for any signs of fen-type habitats around or near lakes, swamps, streams and ombrotrophic bogs. However, we have yet to find one larva or exuvium in habitats mentioned by Pilon and Lagacé (1998) ". . .ponds, lakes, marsh, swamp, brook . . ." or Hilton (1987) who gives the ombrotrophic bog as the main habitat for the species.

We try to define an odonate habitat by the place where larvae are found, exuviae collected, and females seen laying eggs, in that order. As avid dragonfly observers, we try to locate fen-type habitats close to any of the familiar habitats where most dragonfly species live. Readers can find additional information on ***Williamsonia fletcheri*** in an article by Ménard and Hutchinson in FABRERIES 1999 where we summarize our collectings and observations since 1988.

Hilton, D.F.J. 1987. Odonata of peatlands and marshes in Canada. IN: D.M. Danks (éditeur). Aquatic insects of peatlands and marshes in Canada. Memoirs of the Entomological Society of Canada No. 140, pages 57-63.

Ménard, B. 1990. Captures d'odonates dans la vallée de l'Outaouais, dans la Haute-Gatineau, et la région de Port-au-Saumon (Charlevoix-Est) en 1989. Fabreries 15: 80-89.

Ménard, B. 1996. Liste annotée des odonates de la vallée de l'Outaouais. Fabreries 21: 29-61.

Ménard, B. & R. Hutchinson. 1999. ***Williamsonia fletcheri*** Williamson (Odonata: Corduliidae) au Québec: nouvelles récoltes, habitats et notes biologiques.

Pilon, J.G. et D. Lagacé. 1998. Les Odonates du Québec. Entomofaune du Québec (EQ) Inc. Chicoutimi, Québec. 367 pages.

RANDOM ODONATOLOGICAL OBSERVATIONS FROM QUEBEC, CANADA

1. PROTECTING EMERGING *STYLURUS NOTATUS* FROM ANT ATTACKS (1996-1997)

While we were observing individuals of ***S. notatus*** emerging on stone walls facing the Ottawa River, we witnessed a number of attempts by ants to attack the defenceless emerging dragonflies shedding their larval skin or preparing for their maiden flight. We

both became guards, warding off these ants trying to attack the dragonflies. Many of these ants were prowling the stone walls searching for prey to carry back to their nearby nests.

Of course, we intended to bring back a number of newly emerged ***S. notatus*** with their larval skin, which we did. It is interesting to surmise what would have been the fate of some of the ***S. notatus*** we perhaps stole from the prowling ants. Our intention was to document the presence of this species in the Ottawa River.

2. AN UNUSUAL OBSERVATION: A *CICINDELA LONGILABRIS* (COLEOPTERA) LARVA TRYING TO DRAG A MALE *LEUCORRHINIA GLACIALIS* INTO ITS BURROW

One summer in the 1980's, Father Jean-Baptiste Genest, the founder of our natural science camp which is celebrating its 40th anniversary in 1999, wanted to accompany my dragonfly students in the field at the beginning of July. We were on a field trip near, lake Port-au-Saumon, a lake with sandy shores a few miles north of our Port-au-Saumon campsite.

Father Genest brought my attention to a medium-size blackish dragonfly moving in strange ways on the ground. As I approached it closely, I realize that something was keeping the odonate fastened to the ground. Surely enough, I discovered that some ground creature in a burrow was holding the dragonfly and trying to pull it in its hole. I captured the ground larva and its victim, a male ***Leucorrhinia intacta***. I identified the fierce-looking grub as a larva of a beetle, ***Cicindela longilabris*** with the help of camp animators specialized in Coleoptera. The dragonfly was quite damaged.

The site actually had many of these burrows close to one another and many still had active larvae in them. The site of this unusual act of predation left everyone of us dumbfounded. We could observe that other ***Leucorrhinia*** were alighting from the ground where the burrows are which could explain what we had witnessed.

The habit of observing odonates that frequently alight on the ground should enable observers to discover more cases of dragonflies preyed upon by organisms such as tiger-beetles.

3. ADULT *LEUCORRHINIA* CAPTURED BY THE INSECTIVOROUS PLANT, *DROSERA ROTUNDIFOLIA*

RH has been in two habitats where the insectivorous plant ***Drosera rotundifolia*** formed a tapestry covering a large part of the ground : one in the Laurentians, near a lake, about 50 miles east of the Ottawa-Hull region, and another one at Berthierville, near the St-Lawrence River, about 40 miles east of Montréal.

In both instances, ***Leucorrhinia*** and ***Enallagma*** were caught in the sticky leaves of the plants. As a matter of fact, André Larochelle, a noted coleopterist, was able to fill a small jar with dragonflies, victim of ***Drosera*** at Berhtierville.

The habit of observing odonates who frequently alight on the ground should enable entomologists or odonatists to discover more instances where dragonflies become stuck between the leaves of plants such as ***Drosera***. It is a phenomenon worth following...

4. FEEDING *WILIAMSONIA* LARVAE IN THE LAB

While collecting ***Williamsonia fletcheri*** larvae, we were trying to find out what food items could be given to the larvae in a lab situation. We are talking here of grown nymphs that we are keeping in aquaria a few days before they are ready to emerge. We noticed that the pools where we collect these larvae are populated with small corixid bugs. Benoît tried with some success to feed these bugs to ***Williamsonia*** larvae. But the problem is far from resolved. We are still wondering what prey in these fen pools is the staple food for these larvae. The pools also contain small crustaceans, the daphniid and cyclop types. According to Benoît, larvae in his aquaria have eaten some of these. Any readers having some clues as to the food regimen of ***Williamsonia*** larvae could contact us and give us the information.

5. A TINY SPIDER SUBDUING A *LEUCORRHINIA GLACIALIS* MANY TIMES ITS SIZE

In very early July, 1995 A group of Port-au-Saumon campers, whom I was accompanying on a field trip in a bog, were quite surprised to witness a very young spider, *Misumena vatia* holding to a mature male of ***L. glacialis*** many times its size on a flower leaf. The front legs of the spider seemed to be holding the prey while the chelicerae were

puncturing it, injecting the deadly venom. The dragonfly in maybe less than a second became lifeless (motionless). Both the prey and its predator were collected and brought back to the camp lab for further examination. The site of this predation is an ombrotrophic bog situated about five kilometers north of Port-au-Persil, a small village near the hamlet of Port-au-Saumon.

6. *AESHNA UMBROSA* LARVAE FOUND IN EXTREMELY SHALLOW WATER

This species of dragonfly is one of the commonest in Québec and in Canada. I have thus encountered it very often in the larval as well as in the adult stage. Some of my observations would seem to demonstrate the exceptional hardiness and survival capacity of the larvae when confronted with stressful or dangerous situations. I will refer to four instances were it seemed to me that the larvae could find themselves in a rather precarious predicament.

Many years ago, Port-au-Saumon campers found four almost mature ***Aeshna umbrosa*** larvae in a very small pool of standing water on the highest section of a rocky seacliff, which would have to be replenished only by rainwater sliding on the rocks into the pool or perhaps water vapors from the sea air keeping the area moist almost all the time. I hypothesize that the nymphs may have come from a roadside ditch which is fed by springs and a small brook nearby; thus they would have walked about three hundred feet to their new habitat. At any rate, we have never observed over the years these cliff pools to be completely devoid of water.

In the roadside ditch just mentioned, a few ***A. umbrosa*** larvae were found, along with some ***Cordulegaster maculata*** in water about one inch deep from 1980 up to recently. One can hear the gentle gurgle of water active (secretly finding its way through) in the surrounding soil where many common water-hungry orchids grow each year.

At this ditch, I witnessed many years ago an emerging ***A. umbrosa*** unable to free itself from entanglement of its wings in the surrounding leaves of plants. The wings were quite damaged from the odonate efforts to free itself from its awkward situation.

In the Gaspe Peninsula, in the town of Maria, I have become familiar with another ditch which sustains very little water at any given time where ***A. umbrosa*** larvae can be found, with larvae of ***Cordulegaster maculata*** and the tiny coenagrionid, ***Amphiagrion saucium***. This ditch is quite extensive along the railroad tracks ; it is spring-fed and interconnected with other modest waterbodies in the area. Last summer, I have actually collected some of these nymphs live in wet mud with hardly any water at all.

The final observation supports even more the idea that ***A. umbrosa*** larvae are extremely hardy and capable of surviving under very adverse conditions awaiting for water to fall in their habitat. In the early nineteen-eighties, we were looking for specimens in a ditch, which is an extension of Lake Priscault, north of Joliette in the Quebec Laurentians.

With youngsters of another nature study camp, we witnessed a most fascinating happening at the end of September. About ten ***Aeshna*** larvae were clinging to the underside of a large stone, with their backs "immersed" in wet mud. The ditch was without water, but the mud was still wet. I identified two specimens as *Aeshna umbrosa*.

The capacity of dragonfly larvae to withstand extreme conditions in nature is only beginning to come under the scrutiny of odonatists and researchers, if I go by some of the references I have come across. It is a fascinating subject and may in the future yield some extraordinary discoveries. I believe that the larvae of some, if not many, species of odonata are probably among the most hardy and adaptable creature on this planet. I am inclined to call them "little war tanks". Many more observations are necessary to substantiate my belief.

THE *LANTHUS PARVULUS* ENIGMA AT PORT-AU-SAUMON (QUEBEC, CANADA)

Many North American odonatists are probably aware that tracking the enigmatic ***Lanthus parvulus*** in the field can be a most daunting task. This small and elusive dragonfly is very secretive in the adult stage and little is known about its natural history. Records are usually very sparse in most state or regional odonata list.

The discovery that the species is present at Port-au-Saumon (Charlevoix-County, Quebec), about 100 miles east of Quebec city, not too far from the Saguenay river, takes us back to the early nineteen-seventies when two adult individuals were collected from the outside of two building walls, many years apart.

In July 1979, a first larva was picked up from the Port-au-Saumon river where small round stones litter the bottom. This section is very close to the Port-au-Saumon Bay, part of the St-Lawrence estuary.

Also at the beginning of July 1979, a few exuviae were collected at a site of the Port-au-Saumon river where our teenage campers swim twice a day, when the river is tame and the current not too violent. The exuviae were found on boulders, debris, plants, soil at water's edge where the current can be torrentuous and very difficult to withstand.

From 1981 to 1989, each year at the beginning of the first week of July, more exuviae were found (over 100) at almost exactly the same spots and the same substrates. At the site, no larva was found in the surrounding waters. Subsequently, larval skins can be seen each year, and some have been collected up to 1998 under the same circumstances, when the campers go for the first swim at the beginning of the first camp session which takes place the first two weeks of July. We further discovered that perhaps hundreds of exuviae could be observed by searching carefully along the shore of the river.

July 1989 is important for the camp dragonfly enthusiasts. Firstly, Benoît Ménard captured seven males, and campers collected four more males at a site about 3 or 4 kilometers north of the camp swimming site. The adult population was located where the Port-au-Saumon meets a small tributary also strewn with boulders and stones of different sizes. That same year, the most spectacular event for us was the discovery of two sites where a number of larvae (over 30 in each case) were found at different depths in small sandy areas about a foot in diameter. These sites were completely hidden from view until we spotted them. Thus, in a boulder and stone river, small populations of ***L. parvulus*** larvae can develop in tiny areas where accumulation of sands and some mud is created by the velocity of the current which in some years could be described as walls of water rushing down from the mountainous backcountry towards the St-Lawrence estuary, a true sea environment.

Finally, on the sixth and seventh of June 1998, we had the privilege of witnessing about twenty emergences lf ***Lanthus parvulus*** at the Port-au-Saumon camp swimming site on almost exactly the same substrates where exuviae have been picked up since 1979.

Our relationship with ***Lanthus parvulus*** is a most fascinating and rewarding experience. Readers of **ARGIA** would have to visit the rugged terrain and experience the violence of the Port-au-Saumon river currents at certain times to appreciate what is going on and realize what the living environment of our marvellous little gomphid really is. The Port-au-Saumon river is not a dragonfly river close to the estuary and on most of its course, except in sections of the backcountry that the locals call "les eaux mortes", the dead waters. It's the realm of stoneflies and mayflies which cling tightly under stones.

The water rushing down this river can become so powerful in periods of heavy precipitation that we can sometimes hear stones hitting each other has they are forcefully carried towards the estuary. During the Saguenay rain storms of four years ago, impressive accumulation of stones were observed at the mouth of the Port-au-Saumon river in the bay, which is a true estuarine environment. It is not exceptional for us to find a ***Lanthus parvulus*** skin in the bay itself.

Any odonata student looking for a challenging research project could select the ***L. parvulus*** population of Port-au-Saumon. He may be able to elucidate whether these gomphids are part of the drifting phenomenon of insect larvae in streams, map the comlete wherabouts of larvae in a special habitat for them, learn about the spatial and temporal displacement of individuals in a very rugged environment, and address many other problems as one observes this population in a peculiar setting.

As far as we are concerned, we know, we are confident, that come the first week of July 1999, traces of ***L. parvulus*** will be found once more in the Port-au-Saumon river.

The two following articles have documented our knowledge of the Port-au-Saumon population of ***L. parvulus***.

Hutchinson, R. 1990. Notes sur la biologie de ***Lanthus parvulus*** (Sélys) (Odonata: Gomphidae) à Port-au-Saumon (Charlevoix-Est) et les environs. Fabreries 15: 63-68.

Hutchinson, R. 1998. Observations de quelques émergences de ***Lanthus parvulus*** (Selys) (Odonata: Gomphidae) à Port-au-Saumon (Charlevoix-Est). Fabreries 23: 117-119.

AN INTERESTING REQUEST: FINDING TINY PARASITIC WASPS ON DRAGONFLY THORAX

Dr. Lubomir Masner, retired Agriculture Canada Entomologist and the world authority on a group of parasitic wasps called Proctotrupoidea, has asked me to watch for small wasps *Thoronella* Masner that ride on dragonfly bodies (thorax) and can lodge themselves in the depression at the base of the wings. Among the dragonflies to watch are the ***Boyeria*** and ***Aeshna*** species. It is advisable to look for these wasps on recently emerged specimens.

Any odonatist interested in this phenomenon could help me respond to this request and if successful in observing such wasps could communicate with Dr. Masner at the following address:

Dr. Lubomir Masner, Canadian national Collection of insects, arachnids and nematodes (CNC), ECORC, Agriculture Canada, Ottawa (Ont.); FAX: 613-759-1927.

=¡= =¡= =¡= =¡= =¡= =¡= =¡= =¡= =¡= =¡= =¡=

ARCHILESTES GRANDIS (ODONATA: LESTIDAE) FROM GEORGIA: NEW STATE RECORD

Broughton A. Caldwell 1035 Lewis Ridge Circle Lawrenceville, GA 30045-8899

A single larva of ***Archilestes grandis*** (Rambur) was identified during stream sampling to assess best management practice (BMP) effectiveness in controlling non-point source pollution. The larva was noted as unusual upon collection due to its size and robust appearance (late instar), coupled with the observation that the only other zygopterans observed at the site were a few early instar calopterygid larvae and numerous adults (***Calopteryx maculata*** and ***C. dimidiata***). In their revision of the damselflies of North America, Westfall and May (1996) record the species from 30 additional states, with extralimital distribution south into Mexico, Colombia, and Venezuela.

Westfall and May (1996) state that all species of the genus apparently are most often found on streams, generally in pools or backwaters with slow current or small brooks with a modest gradient. For ***A. grandis***, breeding occurs in streams of slow or moderate flow as well as permanent ponds or impoundments. Westfall and Tennessen (1996) list the species as a climbing predator in lotic (on detritus and vascular hydrophytes) and lentic (on vascular hydrophytes) habitats.

The Georgia collection site was a first/second order, spring fed tributary of Pitts Creek, Hall County, Georgia, south of Oliver Mill Road (latitude 34°29' N , longitude 83°42 34'W, elevation about 1320 ft., approximately 1.5 miles N. E. of Holly Springs Church. The stream originates just north of Oliver Mill Road (wet weather channel) and is heavily shaded by tree canopy, with dense low growing understory. Livestock from adjacent pasture areas had been excluded by fencing to reduce non-point source loading and habitat alteration. Downstream of the wet weather channel, the spring-fed upper portion of the site consisted of separate wet areas and small shallow, often connected channels and pools. The lower length consisted of one-two channels with additional lateral seep inputs. The tributary flows through a very small pond further downstream prior to joining Pitts Creek.

The larva of ***A. grandis*** was collected on August 20, 1997 by dip net from a root mass along a short length of undercut bank in the lower portion of the site. The predominant bottom substrate was sand, with small amounts of gravel and organic matter. The collection date for the nearly mature larva falls well within the June 10-12 (Texas) and November 16 (North Carolina) flight period of adults presented by Westfall and May (1996). The species is apparently quite rare in Georgia, and is listed for Alabama by Harris (1990) as rare or restricted in distribution. The species is, however, not considered as rare or vulnerable to extirpation for the southeastern United States by Morse et al. (1996), or at risk in North America north of Mexico (McCafferty et al., 1990).

References

Harris, S. C. 1990. Preliminary considerations on rare and endangered invertebrates in Alabama. J. Ala. Acad. Sci. 61(2):64-92.

McCafferty, W. P., B. P. Stark, and A. V. Provansha. 1990. Ephemeroptera, Plecoptera, and Odonata, pp. 43-58. In Systematics of the North American Insects and Arachnids: Status and needs. M.

Kosztarab and C. W. Schaefer (eds.). Virginia Agricultural Experiment Station, Virginia

Polytechnic and State University, Blacksburg, VA, 247 pp.

Morse, J. C., B. P Stark, W. P. McCafferty, and K. J. Tennessen. 1996. Southern appalachian and other southeastern streams at risk: Implications for mayflies, dragonflies, stoneflies, and caddisflies, pp. 17-42. In Aquatic fauna in peril: The southeastern perspective. G. W. Benz and D. E. Collins (eds.). Lenz Designs & Communications, Decatur, GA (Special Publication 1, Southeast Aquatic Research Institute) 554 pp.

Westfall, M. J., Jr. and M. L. May. 1996. Damselflies of North America. Scientific Publishers, Gainesville, Florida, 650 pp.

Westfall, M. J., Jr. and K. J. Tennessen. 1996. Odonata, pp. 164-211. In R. W. Merritt and K. W. Cummins (eds.), An Introduction to the Aquatic Insects of North America. Kendall/Hunt Publishing Company, Dubuque, Iowa. 862 pp.

=¦= =¦= =¦= =¦= =¦= =¦= =¦= =¦= =¦= =¦= =¦=

A SHORT TEXAS COLLECTING TRIP

Nick Donnelly

In April Ailsa and I went to Texas, partly to look for Odonates, and partly to see kids, birds, plants, and the desert in bloom. The Big Bend was beautiful but essentially devoid of odonate interest (A bobcat seen at very close range was exciting, however, and the sight of my wife creeping through the cactus to get a better look at a herd of peccaries was memorable! Watch out, piggies – Momma's coming!)

Our first good collecting place was the Devils River State Natural Area, on the western edge of the Hill Country north of Del Rio. There was nothing really exciting here, but there were many species of odonates in spite of the cool, breezy day, and we felt the season was definitely under way. I was cheered to find ***Pseudoleon superbus***, which actually let me approach it closely. I haven't experienced this good a look since the early 1970's in Guatemala, when we almost had to kick them aside on the hot, dry paths in the scrubby hills.

Moving on the Valley, again we found little of interest, except that ***Tramea calverti*** was present in small numbers. One locality merits further work, but not for those who want to avoid foul odors. The sewage treatment plant at Weslaco had been recommended to us, probably because it is great for water birds. We were amused to find a picnic table outside the office, but noted that it was not being used on this particular day! Wonder why?

Narrow canals here had ***Micrathyria hageni, Erythemis plebeja, Brachymesis furcata,*** and ***Orthemis ferruginea***. Those of you who have read my stuff in the past will remember that I am especially fond of the "Roseate Skimmers", which come in two described and one still undescribed species. I am not very fond of English names (preferring the common ones), as many of you know, but this name bothers me especially. There are at least two color phases of this bug, and I am not certain which one should be called "roseate". As I see these colors, the common form is purplish and the uncommon form (which was represented by several individuals at Weslaco) was – to my admittedly weak eyes – roseate, or, at least reddish, and with a red frons. There were no examples at Weslaco of the "normal form"! In contrast, the specimens I found of this species in Val Verde County (Devils River) and Gonzalez County (Palmetto) were the ordinary purple variety with a magenta frons. Anyway, this was a good spot to be introduced to the knotty problems of color forms of this species. I wish I knew what was going on – I am fairly certain, however, that these forms (at least in south Texas) have nothing to do with the distinction among the three species. This should be considered a cautionary note to people who want to identify these bugs without catching them.

Moving north, we visited Palmetto State Park for the 'nth time since I first visited it in the early 1960's. This is a great place, and there were lots of good bugs. Teneral ***Macromia annulata*** were flying along the roads, and I found several ***Erythemis plebeja*** on the spring-fed ponds. This is the farthest "up-country" penetration of this Mexican (and on to Argentina) species. Of really great interest here was ***Tetragoneuria costalis***. In 1966 I took ***T. semiaquea*** here, and this is, to my knowledge, the first time the two very closely related species have been taken at the same locality (although 33 years apart). The problem whether these species are distinct or not vexes several of us. This is another pair of species (if they are that) that should not be separated by sight alone.

=¦= =¦= =¦= =¦= =¦= =¦= =¦= =¦= =¦= =¦= =¦=

A COURSE ON LARVAL DAMSELFLIES AND DRAGONFLIES OF THE NORTHEAST

Paul-Michael Brunelle

On May 16-22 the Humboldt Field Research Institute (aka Eagle Hill) in Steuben on the Maine coast, conducted a seminar on the larval lifestage of the Odonata, attended by; Bronco Quick, Dave Moskowitz, Paul Novak, Fred Sibley, and Greg Stevens, and taught by myself. Humboldt was, as usual, a delightful venue for the course; the facilities excellent and the cuisine robust.

With the recent increase in interest in dragonflies, there has been a slight interest increase in their larvae (= nymphs, naiads) - but not proportionate to the interest in adults. This is scarcely surprising given the characteristics of the larvae:

1) determination (identification) is more difficult than for adults as:
   a) larvae go through a number of molts as they grow in size, and in earlier instars they may show characteristics contrary to those used to determine in the penultimate instar; and also size is therefore an even less useful characteristic for determination than it is with adults,
   b)coloration is of little value since it is dependent in large measure on the time the larva has spent since the last molt; often materials are deposited on the exoskeleton which greatly influence color, and can obscure the few markings which are of use,
   c)determination keys and guides are technical; there is as yet no field guide to larvae;
2) their collection is somewhat more difficult than that of adults as:
   a) it is largely blind netting under water, until an idea of the specific microhabitat preferences is gained collection may not be particularly successful,
   b)many of the conventional methods of collecting benthic invertebrates do not seem particularly effective in taking odonate larvae;
3) preservation is more involved and laborious than for adults as it entails alcohol and bottles;
4) reference to specimens is more difficult because of their containers.

Due to these difficulties there is much still to be learned from the aquatic lifestage. Of the ca. 22,000 records of Odonata in the Atlantic Dragonfly Inventory Program (ADIP) database, predominantly from Atlantic Canada, Maine and New Hampshire, 94% are of adults (91%) or tenerals (3%). Only 6% are of larvae, 3.5% of larvae per se, and 2.5% of exuviae.

Because adult odonates are so vagile, adult records in any one place are not an assurance that the species is resident there, although male territorial behavior or female ovipositing is of some value. Larval records are a much better indication of a resident population, and exuvial records are better still, as they indicate that the habitat is viable for the full immature development stage.

The students were taught to find the larvae and exuviae in various habitats, sample selectively in microhabitats, prepare, preserve and document and last (but certainly not least) determine. In order to get over the difficult initial step in determination - recognizing basic appearance types and relating them to families and genera - I prepared a sheet of larval illustrations which showed most of the basic forms, although it was not complete in the Gomphidae, Corduliidae and Libellulidae. This seemed to help them greatly at the beginning, as did Ken Soltez's consolidated keys.

They all seemed to enjoy the course, and worked hard to wear out their instructor, who also learned a thing or two. I believe they left with a good basic foundation for further study, and they have contacted me with their observations and questions since, some of them very interesting.

Invigorated by the enthusiasm of the students, I went on to the bogs and streams of northern New Brunswick, where I took a number of ***Somatochlora*** and ***Aeshna*** larvae I had not encountered before, including a (possible) late instar of ***S. brevicincta*** - a spectacularly hairy little beast. It is amazing to me that the suave and elegant emeralds generally have such grungy children.

In my experience nobody gets more out of these courses that the instructor.

Reference

Soltesz, K. 1996. Identification keys to northeastern Anisoptera larvae. University of Connecticut, Center for Conservation and Biodiversity. Unpublished seminar paper.

=¦= =¦= =¦= =¦= =¦= =¦= =¦= =¦= =¦= =¦= =¦=

DEFORMED DRAGONFLIES – A CLARIFICATION

Wayne Steffens

I find it interesting that there is another fellow in Minnesota with my name who studies dragonflies!

Seriously, there are several news articles floating about on this story, some better than others. The one that was posted here is one of the better ones, with the exception of the reference to frogs that I feel is inappropriate. I just want to clarify some things that people may see in other articles. These articles seem to mutate as they pass from one news source to another, each time becoming more sensational. In one of the articles I am a Minnesota DNR Zoologist, but my paycheck and health benefits don't bear that out.

Most of the abnormalities that we saw were of a relatively "minor", yet easily noticeable nature. There were no extra limbs or eyes, or legs and organs hideously growing out of places that they shouldn't be growing (eeeek!). Most of what we saw were things like a missing lateral or dorsal hook, asymmetrical or twisted hooks, spines or terminal appendages, asymmetrical mouth parts, or antennae with segments that were too long, short, or wide. There were only a small percentage of specimens from the Rainy River that had what I considered "severe" abnormalities such as grossly misshapen mouth parts. I saw two specimens that each had a severely malformed leg, and one that had an asymmetrical abdominal segment with an extra, misshapen lateral spine. These were the exception however. What concerned us most was the consistent rate of occurrence (about 4-6%) of the less severe abnormalities at two sites on the Mississippi and all along the Rainy River. We collected several thousand exuviae on the Rainy River, and the results were similar at most sample sites.

One of the articles floating around mentions that we found abnormalities at 4 sites on 3 other rivers too, but they fail to mention the circumstances. Two of those sites were at or near the rivers' mouths where they enter into the Rainy River. The Rainy River has a decades-long history of very serious pollution problems, and it had never been sampled before. The third were very minor abnormalities from a very small sample, and several larger samples on that river (the Cloquet R.) showed no abnormalities. The fourth site had only 1 minor abnormality out of 78 specimens (1.3%), certainly no cause for alarm. In other words, the problem, whatever it is, does not seem to be a widespread one like the frog problem but I guess only time and more sampling will tell.

=¡= =¡= =¡= =¡= =¡= =¡= =¡= =¡= =¡= =¡= =¡=

BAR-SIDED DARNER (*GYNACANTHA MEXICANA*) SELYS, 1868 (ODONATA: AESHNIDAE), A NEW DRAGONFLY FOR THE U.S.

Robert A. Behrstock, Ted L. Eubanks, and **Paul Miliotis**

On 25 October 1998, photographers at two locations documented male darners of the genus ***Gynacantha*** at Santa Ana National Wildlife Refuge (NWR), Hidalgo County, Texas. Examination of the images by Sid Dunkle yielded a suite of observable characteristics establishing the identity of both individuals as ***Gynacantha mexicana***, formerly unrecorded in the U.S. Previous, unreported sight records of ***Gynacantha*** in the Lower Rio Grande Valley may represent ***mexicana*** or another taxon.

During late October 1998, the third annual Texas Butterfly Festival was held in the Lower Rio Grande Valley, attracting over 400 participants. On Sunday, 25 October, several lepidopterists including Paul Miliotis and Kathy Adams Clark converged at the butterfly garden at Santa Ana NWR, observing and photographing the diversity of subtropical butterflies. There, they were joined by Eubanks and Behrstock, working in the Lower Rio Grande Valley on several bird related projects. Late in the morning, Eubanks and Behrstock walked southeast on the shady, wooded trail skirting the east end of Willow Lake. In the lead, Eubanks spotted an unfamiliar dragonfly hanging vertically about five feet above ground within the outer branches of a tree. Behrstock obtained one photo before the surprised darner escaped further scrutiny. Luckily, the slide clearly depicted a male ***Gynacantha***. Suspecting that it represented a male ***G. nervosa***, not documented for Texas (in litt. S. Dunkle, J. Abbott, 1998), Behrstock sent out duplicate slides for identification.

After finishing at the butterfly garden, Miliotis and Clark walked southwest on a trail leading to the western portion of Willow Lake. In tall, open scrub, Miliotis located a male ***Gynacantha***, a genus he knew from work in the American tropics, which

Clark then photographed. Shortly thereafter, Clark sent a print of this second individual to Dunkle.

In his review of the photos, Dunkle noted "In this dorsal view of a juvenile but not teneral male, the brown stripe along the front of the wings is more definite than any I can recall in ***G. nervosa***. Other clues, like the shape of the auricles, length of the epiproct, and number and placement of certain wing veins all seem to indicate ***G. mexicana*** over ***G. nervosa***. Visible in these top views is the narrow waist at abdominal segment 3, blue markings at the base of the abdomen, the epiproct less than half the length of the cerci, and the definite brown costal wing stripes. All these indicate the beasts are ***G. mexicana, not G. nervosa***." Additionally, he noted that Clark's photograph depicted a male with cerci of different lengths, suggesting that it was a different individual than that photographed by Behrstock.

Garrison (1998) recognizes 21 species of New World ***Gynacantha***. Of those, Paulson and González-Soriano (1997) list four in Mexico: ***helenga, laticeps, mexicana,*** and ***nervosa***, with records of ***mexicana*** in the Caribbean lowlands from the Yucatan Peninsula northward to San Luis Potosí, and inland in the State of México. Southward, it has been collected throughout most of Central America through Panama (Paulson 1997a) and is widespread from northern South America south into Brazil and Peru (Paulson 1997b).

The simultaneous presence of two ***G. mexicana*** at Santa Ana NWR begs the question of whether they were vagrants, or members of a new or previously undetected breeding population? Previous entomological observations at Santa Ana have concentrated on the Refuge's rich Lepidopteran fauna. These darners may have been driven northward in late October 1998 by Hurricane Mitch, or may have dispersed northward in response to Mexico's drought conditions during the early summer. Late 1998 (October through December) was deemed excellent for Lepidoptera in the lower Rio Grande Valley; many little known U.S. butterflies were observed and a number of rarities were photographed. Some experts suggested the Valley's butterfly populations simply returned to previous, normally high levels; observers at Santa Ana NWR said the Refuge had the highest butterfly diversity in many years. The reason for this diversity is not clear but may be biased by increased coverage, as well as the presence of several new butterfly gardens.

Some lepidopterists equate large populations with prolonged drought (which suppresses numbers of predators and parasitoids of all butterfly life stages) followed by massive rains that promote food plant density and larval survival (in litt. Mike Quinn, 1998, based on several publications). As aquatic predators, larval odonates might be less impacted by parasite suppression than by drought-related habitat loss. Drought earlier in 1998 suppressed odonate habitat and numbers from the Valley well north through the Texas Hill Country (pers. obs.), while catastrophic rains later in the year provided habitat and perhaps a dispersal avenue for both adults and larvae. Previous sightings of Gynacantha in the Rio Grande Valley (Miliotis, unpublished data) suggest that members of the genus may occur from time to time and observers familiar with their habitat requirements and perching behavior should keep a sharp eye out for further occurrences.

Color slides of these specimens are on file with John Abbott (Avondale, PA), Kathy Adams Clark (The Woodlands, TX), Sid Dunkle (Plano, TX), Richard Orr (Laurel, MD), Larry Ditto (Santa Ana NWR, Alamo, TX), and the authors. Additionally, Behrstock's slide will be reproduced in Dunkle's forthcoming Dragonflies Through Binoculars. We thank Sid Dunkle for critically examining our photographs and reviewing the initial draft of this manuscript, Kathy Adams Clark for photographing Miliotis' find, and Mike Quinn (Donna, TX) for information on butterfly populations. The name Bar-sided Darner (alluding to the dark stripe along the lower rear of the thorax), has been suggested to the Common Names Committee of the DSA (in litt. S. Dunkle, 1998).

References

Garrison, R.W. 1998. A Synonymic List of the New World Odonata. (a working list available on diskette) Available on the Internet at: http://www.ups.edu/biology/museum/NewWorldOD.html

Paulson, D.R. 1997a. Odonata of Middle America, by Country. Available on the Internet at: http://www.ups.edu/biology/museum/ODofMA.html

Paulson, D.R. 1997b. List of the Odonata of South America, by Country. Available on the Internet at: http://www.ups.edu/biology/museum/ODofSA.html

Paulson, D.R. and González-Soriano, E. 1997. Odonata of Mexico, by State. Available on the Internet at: http://www.ups.edu/biology/museum/ODofMexico.html

=|= =|= =|= =|= =|= =|= =|= =|= =|= =|= =|=

SAY'S SPIKETAIL FROM FLORIDA

Jerrell J. Daigle, daigle_j@dep.state.fl.us

A collecting trip for the rare Say's Spiketail (***Cordulegaster sayi***) at Goldhead State Park on March 27 was successful. Californians Rosser Garrison and Jeff Cole joined Bill Mauffray, Janette, Ken Tennessen, and myself in searching for this elusive dragon. While Ken and Rosser took photos, I was able to catch a male and give it to Jeff. All together, I saw 6 males and 1 female.

The following week, April 3, I went to Torreya State Park west of Tallahassee. Clark Shiffer and I saw and missed one here a couple of years ago. I was hoping to catch one and confirm a population inside the park boundaries. I had no luck along the western border, so I hiked to the south end. It was about 1130 A.M. when I entered a large turkey oak clearing on the hilltop. Immediately, I was attacked by a belligerent, territorial male. He darted at me 3-4 times before returning to perch on a downed oak branch. Needless to say, he became a State Park voucher specimen. Later in the day, I saw 4 more males, including 2 fighting males. They were all in turkey oak clearings along the southern fence line park boundary on this hot, clear day. If anyone would like to come visit and see this population next year, please let me know. Adios!

=|= =|= =|= =|= =|= =|= =|= =|= =|= =|= =|=

BITTERN CATCHES DRAGONFLY

Seth Williamson , Floyd, VA

I am excited today because I saw my first American bittern in a small wetlands on the Blue Ridge Parkway in southwest Virginia (about milepost 162.5). They're uncommon in these parts.

One additional treat came when, after watching the bittern hold itself motionless for what seemed like forever, it suddenly stabbed out its bill at lightning speed to grab a dragonfly that was zipping by. I did not get a good ID on the luckless ode--I think a green darner, but I'm not sure. Did not know that bitterns ate dragonflies--but why not? Don't know how regular a part of the diet odes might be, but they are apparently at least one energy vector going into the swamp ecosystem.

=|= =|= =|= =|= =|= =|= =|= =|= =|= =|= =|=

AN ON-GOING STUDY OF THE RELATIONSHIP BETWEEN ANTS, BIRDS, AND DRAGONFLIES DURING THE PHENOMENON OF SWARMS AT MASSACHUSETTS AUDUBON SOCIETY'S IPSWICH RIVER WILDLIFE SANCTUARY

Fred Goodwin, Massachusetts Audubon Society, Ipswich River Wildlife Sanctuary, 87 Perkins Row, Topsfield, MA 01983 (Home 978-887-6853), (Work 978-887-9264), E-mail fgoodwin@massed.net

In the summer of 1997 I was given the challenge to identify and to photograph species of birds and dragonflies involved in swarm feeding on small flying insects emerging from the soil. The time frame was from early August through mid-September. The area of activity was on grass fields and lawns near the top of the drumlin at the Ipswich River Wildlife Sanctuary (IRWS) from mid-afternoon to dusk. The swarms mainly consisted of 30 to over 200 dragonflies with the swallows and swifts mixing in. During the first season I concentrated on learning to identify the species with the help of Bob Speare (our Sanctuary Naturalist) and Jim and Stina MacDougall.

Bird species identified were:
Tachycineta bicolor (Tree Swallows)
Chaetura pelagia (Chimney Swifts)

Dragonflies were:
Aeshna canadensis (Canada Darner)
A. clepsydra (Mottled Darner)
A. constricta (Lance-tipped Darner)
A. tuberculifera (Black-tipped Darner)
A. umbrosa (Shadow Darner)
A. verticalis (Green-striped Darner)
Anax junius (Common Green Darner)
Pantala fiavescens (Wandering Glider)
Somatochora (not identified)

The first swarm of 1998 was observed on August 6 at 16:00 hrs. with over 100 dragonflies mixing in with swallows and swifts, feeding about 150 feet over a field forming the edge of the drumlin. To identify each species was not possible but the

swarm did include ***Aeshnas***, the first of our season. The swarm lasted about a hour. The cause of the swarm was flying ants.

The swarm phenomenon at IRWS occurs only when certain weather conditions exist; heat, fairly high humidity, and moist soil. These are the conditions needed for the ants to leave the nest for their mating flights. The moist soil seems to be the main key. The queens need the soil to be softened for re-entry. The males (if they make it back to the ground) die. Two species of ants involved as prey in the feeding swarms have been identified as *Lasius neoniger* , the Labor Day Ant and, *Solenopsis molesta*, a species of fire ant. Two different species of subterranean ants were also caught. Species names unknown at this time. The last swarm was observed on September 27, 1998. 30 to 50 dragonflies were flying just above our front lawn feeding on a flight of ants. I was able to net ten: 5 were ***Aeshna umbrosa***, (all males); 4 were ***A. clepsydra***, (3 males 1 female), and 1 was ***A. verticalis,*** (male). All were in rough shape with torn wings and missing body parts.

During the 1998 season I recorded 16 swarms and netted 223 dragonflies. After recording their species, sex, and length, all were released. They were:
Aeshna canadensis (5 males 3 females)
A. clepsydra (14 males 3 females)
A. constricta (82 males 56 females)
A. tuberculifera (4 males 2 females)
A. umbrosa (9 males 3 females)
A. verticalis (14 males 5 females)
Anax junius (6 males 10 females)
Somatochora williamsoni (1 male)

Also I observed 2 ***Pantalas*** within the swarms, no species identification was made. Although the ***Pantalas*** feed with the other species they are not readily accepted. Several times one of the other species made a pass as if to attack. The ***Pantalas*** would turn on their afterburner and loop away, but did not leave the area of the swarm.

The intensity of the dragonflies while feeding is hard to believe. Neither weather or several people swinging a net can deter them. One evening while working a large swarm, a cold front arrived with rain, thunder, and lightning. The dragonflies flew well into the storm until all the ants were either caught or had ceased flying.

The time period from mid-August to Labor Day seems to be the peak of the ant mating season. If conditions are right several flights can erupt during the same evening. During this period the dragonfly numbers also peak. After Labor Day the numbers start to decrease and soon the swifts and swallows migrate south.

I have a few unanswered questions for the coming season. How extensive is this ant-caused swarm phenomenon? Could there be more than just eyesight involved in finding the ants? Could the ants be providing a pre-migration food buildup for both the birds and the dragonflies?

=¡= =¡= =¡= =¡= =¡= =¡= =¡= =¡= =¡= =¡= =¡=

ODONATA GLEANINGS - DRAGONS EATING DRAGONS

Dennis Paulson dpaulson@ups.edu

This column, to be published regularly in **ARGIA**, will stem from discussions of aspects of odonate biology that have taken place among members of the ODONATA discussion group. I will add additional information and/or shameless speculation as I write the summary.

Anyone interested in joining the group should contact me at dpaulson@ups.edu. The list archives, with all past messages, can be viewed once you're a subscriber.

Anyone who watches odonates in the field knows that most of their prey is tiny, including flies, moths, and homopterans, all abundant soft-bodied critters. Some of them, however, seem to specialize in larger prey. Americans know about this predilection in the genus ***Erythemis***, libellulids that commonly take other libellulids up to just about their own size. When I was studying dragonflies in southern Florida, I saw ***Erythemis simplicicollis*** take other dragonflies on numerous occasions. During that time, I also singled out ***Nasiaeschna pentacantha*** as a persistent predator on other odonates. ***Orthetrum sabina*** is renowned for this in the Old World.

Damselflies commonly eat other damselflies, sometimes up to their own size, and this is certainly as impressive as the more spectacular feats of anisopterans, but it seems that most of this is directed toward tenerals, and much of it may happen as a consequence of mating attempts. The damselfly algorithm: if hard, mate with it; if soft, eat it. An ***Amphiagrion*** sp. ate a teneral

Nannothemis bella - a zygopteran feeding on an anisopteran!

Other large prey eaten by dragonflies include butterflies, and it would be interesting to determine if there are records of unpalatable (to vertebrates) butterflies as dragonfly prey. Another large prey item that I've seen was a large cicada being eaten by a ***Sinictinogomphus clavatus*** in Japan. One family conspicuously absent from the list below is the Corduliidae. Do they ever take large prey?

Are some dragonflies specially adapted to take larger prey? ***Erythemis*** seem to be so, with their large tibial spines. Is ***Dromogomphus***, with its long, spiny legs, also a specialist on large insects? Do these dragonflies have larger mandibles for their size than their relatives that take only small prey? I often saw ***Coryphaeschna ingens*** feeding in Florida but never saw them take other dragonflies, while I saw ***Anax junius*** do so on several occasions.

The following list includes only anisopterans, the predator species listed before the prey species. As tenerals are much easier game, these records concern only mature adults taken as prey. The literature has not been searched but includes many other records.

PETALURIDAE
Petalura gigantea, Orthetrum boumiera
AUSTROPETALIIDAE
Phyllopetalia sp., Aeshna sp.
AESHNIDAE
Aeshna eremita, Sympetrum obtrusum (pair)
Anax junius, Aeshna constricta
A. junius, Phyllogomphoides stigmatus
A. junius, Brachymesia gravida
A. junius, Erythemis simplicicollis
A. junius, Pantala flavescens
A. junius, Tramea carolina
Nasiaeschna pentacantha, Erythemis simplicicollis
N. pentacantha, Libellula luctuosa
N. pentacantha, Libellula needhami
N. pentacantha, Pachydiplax longipennis
GOMPHIDAE
Arigomphus pallidus, Celithemis eponina
Gomphus dilatatus, Gomphus cavillaris
Gomphus lynnae, Erpetogomphus compositus
Gomphus vastus, Ophiogomphus rupinsulensis
Hagenius brevistylus, Aeshna interrupta
H. brevistylus, Dromogomphus spinosus
H. brevistylus, Macromia taeniolata
Ophiogomphus anomalus, Ophiogomphus anomalus
LIBELLULIDAE
Brachymesia gravida, Erythrodiplax berenice
Erythemis simplicicollis, Celithemis eponina
E. simplicicollis, Erythemis simplicicollis
E. simplicicollis, Pachydiplax longipennis
E. simplicicollis, Perithemis tenera
Orthetrum sabina, Acisoma panorpoides

Other contributors: Bob Barber, Paul Brunelle, Carl Cook, Nick Donnelly, Ted Eubanks, Bob Glotzhober, George Harp, Jim Johnson, Mike May, Tim Vogt.

=¡= =¡= =¡= =¡= =¡= =¡= =¡= =¡= =¡= =¡= =¡=

GOMPHUS LARVAE/EXUVIAE NEEDED

Ken Tennessen, 1949 Hickory Ave., Florence, AL 35630, **tennessen@aol.com**

The larvae and exuviae of ***Gomphus viridifrons*** and ***G. adelphus*** are extremely similar, as are some of the other species in this group (***abbreviatus, parvidens***, etc.). Characters that have been used to separate these species are being found to be variable. This presents a problem for many state surveys that are trying to determine the range of ***G. viridifrons***, which is considered a species of concern in several areas.

In trying to find new distinguishing characters, I am hampered by a lack of reared specimens from certain parts of the range of ***adelphus*** and ***viridifrons***. I would like to borrow exuviae of reared or associated emerging individuals of these species from anyone who has collected them.

=¡= =¡= =¡= =¡= =¡= =¡= =¡= =¡= =¡= =¡= =¡=

BRIDGE'S CATALOG

The third edition of the magnificent catalog is available from April K. Walsh, 1615F Lyndhurst West, Savoy, IL 61874, (ph. 217-359-0129), (FAX: 217-244-2223). The price is $125.00. Please contact Ms. Walsh if you are interested.

=¡= =¡= =¡= =¡= =¡= =¡= =¡= =¡= =¡= =¡= =¡=

Review: **Libellen in Bayern** [Dragonflies in Bavaria], edited by **Klaus Kuhn** and **Klaus Burbach**. Published by **Bayerischen Landesamt für Umweltschutz** [Bavarian Agency for Environmental Protection] and by the **Bund**

Naturschutz in Bayern [Alliance for Protection of Nature in Bavaria]

Obtainable through **Barnes & Noble**. Price $35.00, plus $3.95 for shipping.

The book is subtitled "With the contributions of numerous dragonfliers". This is an understatement. Each of the 74 Bavarian species is discussed in detail by one of these contributors. The authorship of the book is a cast of hundreds. The amount of data gathered together here is absolutely staggering. Since before 1850 there have been 91,779 records of Odonata from 14,309 localities! 85% of the records and 75% of the localities were recorded since 1986, showing that in Germany, as in the United States, the growth of interest in Odonata in recent years has been phenomenal.

The book begins with a thorough and beautifully illustrated section on general biology, with superb emergence photographs. There is a section on the Dragonfly in art and history, with several quaint, old illustrations. There is a long section on the physical environment and habitats for Odonata of Bavaria, which is about the size of the Adirondack Mountain area of New York, but which contains a far greater variety of habitats. The 74 species recorded for this province (almost all the species known from Germany) are about twice that found in Great Britain and somewhat more than half of those found in the Adirondacks.

The dot-map scheme used here utilizes the 1:25,000 topographic maps covering Bavaria. The 636 maps are given four quarters, for a potential total of 2205 "quadrants" (many maps lie along the border and cover more than Bavaria), of which dragonfly species are recorded in fully 93%.

Each species is discussed in a few pages of text, with a superb color photograph, and a dot map, distinguishing those quadrants with older records only (five time periods). There is also a shaded map showing the distribution of the species in Europe. With the mass of data available, they show histograms of distribution of each species by elevation and by time of the year. I doubt that the density of data and the careful breakdown of this data will be matched in my lifetime for any other area.

The final sections are devoted to specific habitats, with long and careful accounts of the modes of environmental degradation being experienced in this part of Europe. Evidently the stories we have heard about environmental problems here are not exaggerated, but the other side of the coin is the abundance of carefully preserved habitats and the ethos that is permeating European society about the necessity of preservation.

What is there to criticize in this superb book? Very little. I have a few little quirky quibbles. I lack the status to object to the recent substitution of the name ***Ophiogomphus cecilia*** for ***serpentinus*** (I think this was a problem that would have been better resolved by conserving the junior name, under the provisions of the Code), but everyone's interests would have been better served by mentioning that this species was known by the other name for more than a century!

This is one of the most attractive books on Odonata I have ever seen. At the low price, the book is an absolute steal. Instead of doing just that, however, I recommend buying a copy.

=¡= =¡= =¡= =¡= =¡= =¡= =¡= =¡= =¡= =¡= =¡=

TWO LIMNOLOGY BOOKS OF POSSIBLE INTEREST TO ODONATOLOGISTS

Roy Beckemeyer

While these are fairly general limnology books, they contain a bit more material of interest on the Odonata than seems typical, and I felt that they might be of particular interest to some of our members. They are certainly worth looking for in your local university library, and belong in any library supporting limnological study and research programs.

The first in "**Tropical Asian Streams**: Zoobenthos, ecology and conservation" by **David Dudgeon (Hong Kong University Press**, 1999, 830 + xii pages, paperback, $62.50). This would seem to serve up at least three possible benefits for anyone interested in the Odonata of the Orient, or anyone planning a trip to that area. First of all, it offers a nice, concise overview of the geography and ecology of the stream systems of tropical Asia (which in this book includes Southeast Asia, the Indian subcontinent, China, and the East Indies, including New Guinea). Secondly it contains a nice summary of the invertebrate benthic organisms of Asian streams, genrally at the family level, including 26 pages on the Odonata (larval forms). Finally, there is an extensive bibliography (159 pages) that will be a benefit to anyone wishing to delve deeper into any of the subjects.

The Odonata chapter includes a list of genera of Odonata in tropical Asia, a brief discussion of the taxa which are lotic specialists, a number of observations on voltinism and phenology of odonates, a key to family level, and sketches of larvae typical of the various families. Figured are: Zygoptera: ***Euphaea decorata*** (Euphaeidae), ***Protosticta taipokauensis*** (Platystictidae), ***Philoganga vetusta*** (Amphipterygidae), ***Rhinocypha perforata*** (Chlorocyphidae), ***Mnais mneme*** (Calopterygidae), ***Tetracanthagyna*** sp. (Aeshnidae), ***Ophiogomphus sinicus***, ***Ictinogomphus pertinax*** and ***Heliogomphus scorpio*** (Gomphidae), and ***Zygonyx iris*** (Libellulidae).

The second book is an even larger tome, "**Invertebrates in Freshwater Wetlands of North America: Ecology and management**", edited by **D. P. Batzer, R. B. Rader, and S. A. Wissinger** (**John Wiley & Sons**, New York, 1999, hard cover, $156.95). This text seems to me to include more coverage of Odonata than is typical in studies of benthic invertebrates, though they are certainly not the focus of the book by any means. Weighing in at 1100 + xviii pages, it includes sections on "Marshes and swamps of the southeast", "Woodland ponds, peatlands, and marshes of the north and northeast", "Wetlands of the central prairies and Mississippi River basin", "Wetlands of the western mountains, deserts and valleys", and "Coastal freshwater wetlands".

An example of the gems of information on Odonata to be found hiding in the nooks and crannies of this book is the following:

"Species...that probably hatched from eggs deposited before or during the drought . . . included . . ***Aeshna tuberculifera***, ***Libellula lydia, Libellula julia,*** and ***Enallagma civile***, [which] all appeared as early-instar larvae in early November. The flight seasons for these species ended at least a month before these basins refilled, and we inferred they hatched from dessication-resistant eggs...early-instars of ***Lestes*** spp. and ***Sympetrum vicinum*** that first appeared in spring 1996 samples were also from dessication-resistant eggs that were deposited during the previous summer and fall, respectively ."

This quote is from Chapter 15, "Beaver pond wetlands in northwestern Pennsylvania: modes of colonization and succession after drought" by S. A. Wissinger and L.J. Gallagher.

Many of the other chapters in this book also contain information on odonates, and deserve to be summarized in one of the international dragonfly organization abstracting services.

=¡= =¡= =¡= =¡= =¡= =¡= =¡= =¡= =¡= =¡= =¡=

ATLAS OF THE DRAGONFLIES OF THAILAND – DISTRIBUTION MAPS BY PROVINCES

Matti Hämäläinen & Bro. Amnuay Pinratana

ISBN 974-87004-5-3
Publisher: **Brothers of St. Gabriel in Thailand**, 565 Samsen Road, Bangkok 10300
Published: June 1999
Format: 26. 5 x 19. 0 cm; Hardback
vi + 176 pages; including 28 pages of color photographs
Price: US$ 30 (+ postage)

The book provides an up-dated checklist and distribution maps by provinces (76 provinces in Thailand) of the 315 dragonfly species known from Thailand up to 1st April 1999. In the connection of each specific map (3 maps / page), some references and brief comments on the distribution, frequency and flight season are given. In addition, of 47 species additional taxonomic and faunistic notes are given in a separate chapter.

A brief history of dragonfly studies in Thailand is presented. Reference list contains 125 titles. Index of scientific names is provided.

In the 28 colour pages (printed on high quality paper) a total of 153 dragonfly photographs are presented. Most of them have been taken in natural conditions. They illustrate 124 species (69 Zygoptera and 55 Anisoptera); many of which have not been photographed earlier. Besides photoes taken by the authors, also those by Thomas W. Donnelly, Pisuth Ek-Amnuay, Rosser W. Garrison, Jarujin Nabhitabhata, Hans Olsvik and Ken-ichi Watanabe are included.

PLEASE, SEND ORDERS TO:
Bro. Amnuay Pinratana, St. Gabriel's College, Samsen Road, Bangkok 10300, Thailand
Fax: + 66 2 2432150
E-mail: thani@sg.ac.th

The invoice will be sent with the book. Payments (by International Postal Money Order only) are due within 30 days (airmail) or 70 days (surface mail)

after date of invoice. Goods supplied remains the property of Brothers of St. Gabriel until paid in full.

Please, specify whether you want the book to be sent by airmail Postage rates are not known presently but you will be notified when you place your order.

=¦= =¦= =¦= =¦= =¦= =¦= =¦= =¦= =¦= =¦= =¦=

Rhode Island Odonata Atlas

Note by **Nick Donnelly**

Ginger Carpenter recently sent me a copy of her "Rhode Island Odonata Atlas", subtitled "Information for Volunteers". This publication is not strictly an atlas, but a prospectus for her on-going project to inventory the Odonata fauna of our smallest state. Based on her efforts, this is certainly an interesting state, as the county list of Rhode Island odonates (the appendix) reveals.

The Atlas is a brief guide to dragonflies – what to look for, how to collect them, where to go for identifications, and generally what to observe. Although it shows wings of several families and gives names for dragonfly anatomy, it does not contain a key or other means of identifying species. The user of this guide will have to consult the several books she lists for identification.

Three species are selected for more than ordinary interest and discussed in some detail: ***Aeshna mutata, Enallagma recurvatum*** and ***E. laterale***. The first has a wide range but occurs locally and has a strong affinity for *Nuphar* leaves. The two Enallagma species are threatened in much of their limited ranges in the northeast and present a conservation problem.

The final section is something I have not seen elsewhere: a list of potentially good places where volunteers are advised to go to look for odonates.

Ginger pleads for more volunteers, saying that 3 is not enough for this state. I have news for you, Ginger. Three for a state your size is absolutely bounteous!

=¦= =¦= =¦= =¦= =¦= =¦= =¦= =¦= =¦= =¦= =¦=

STATUS OF THE DOT-MAP PROJECT

Nick Donnelly

We have now heard from every state and province. The coverage is not even, as we knew. But at least we have continent-wide coverage. Only British Columbia and Yukon data is not yet in hand.

There were several large data sets made available to me this quarter. Ontario was the largest (thanks, Don Sutherland especially), but I also received substantial contributions from Alberta and Rhode Island. I continue to add data from other states; California was expanded considerably this quarter. Oddly enough, my home state, New York, was expanded quite a bit also.

I have now "processed" about 80,000 lines, or species/county records. My scheme, which I will make available to everyone as the states get processed, is to produce five columns of data in pseudo-spread-sheet format. The columns are genus; species; state; county; notes. By "pseudo-spread-sheet" I mean spread-sheet format saved as text files, which take about 25% the space of an EXCEL file, and can be transmitted by e-mail much more easily. I reckon I have about another 20,000 lines to process. But almost every state now has additions to put in. The job never ends, but it is getting perilously close.

There are still unresolved taxonomic questions: (1) ***Sympetrum semicinctum*** and ***occidentale***. Are they one species or two? (2) ***Epitheca (Tetragoneria) costalis*** and ***semiaquea***. Same question. (3) ***Amphiagrion saucium*** and ***abbreviatum.*** Still the same question. (4) ***Lestes disjunctus*** and ***australis.*** You guessed it – the same question. Funny how I did not think much about these when I was involved with the fauna of a single state. Putting together data from a great many people forces one to realize that taxonomy is a never-ending exercise.

Nick Donnelly

E-MAIL SERVICES

The big news this past quarter has been the emergence of two e-mail discussion services. The first was established by Dennis Paulson and is called **dragonflies@listbot.com**

This discussion service has carried several themes, one of which Dennis summarizes in an article elsewhere in the issue. However, this service allows us to bounce ideas off of each other quickly. Judging from the responses, and noting especially the speed of the responses, this service has become a world-wide bull session. Whether it has changed any minds is doubtful, but it has certainly given us all things to think about.

The second service is more regional. Blair Nikula has set up a service called **NEodes@listbot.com**

This initially was used almost exclusively to record the first odonates seen in the Spring throughout the Northeast. There are signs that it will become much more, and serve somewhat the same service as Dennis's service, but for a region.

What did we do without these?

SOME RANDOM CONTRIBUTIONS

1) From Jochen Mueller: **http://www.uni-ulm.de/~s jmuell/**
Jochen Mueller' European site, also with pictures of the pond in Alaska where ***Nehalennia irene*** was taken. The page should soon be available in English, too and with some pics of dragonflies of Alaska.

2) From Paul Catling:
http://www.cciw.ca/eman-temp/reports/publications/Mixedwood/odonata/intro.html
DRAGONFLIES AND DAMSELFLIES: ASSESSMENT OF SPECIES DIVERSITY IN THE MIXEDWOOD PLAINS ECOZONE, by P. M. Catling, R. Hutchinson and B. Ménard, Biological Resources Program, Eastern Cereal and Oilseed Research Centre, Agriculture and Agri-Food Canada, Ottawa, ON ,K1A 0C6
This is a site devoted to the inventory of odonata in a biological zone of southern Canada, and to its interpretation.

3) From Dennis Paulson: I have just placed the revised version of Rosser Garrison's New World Odonata list on the web. **http://www.ups.edu/biology/museum/NewWorldOD.html**
This list represents a huge amount of work on Rosser's part and seems to be delightfully error-free. Rosser would appreciate any comments you have about the list, either errors or differing opinions.

4) The Getty Thesaurus of Geographic Names
This is a new service for the location of geographic names. **http://www.gii.getty.edu/tgn_browser**
I found this decidedly inferior to my regular three place name sources:
For Canada: **http://geonames.nrcan.gc.ca/english/Home.html**
For the U.S.: **http://mapping.usgs.gov/www/gnis/gnisform.html**
For the rest of the World: http://164.214.2.59/gns/html/index.html

5) from James Lasswell: Texas dragonfly pictures from Bob Berhstock are at
http://stephenville.tamu.edu/~fmitchel/dragonfly/index.html
This is the famous Texas Digital Dragonflies, which has been expanded since it was first noted in this column.

BACK ISSUES OF ARGIA AND THE BULLETIN OF AMERICAN ODONATOLOGY

The editor is able to provide back issues of **ARGIA**. Please contact T. Donnelly, 2091 Partridge Lane, Binghamton NY 13903. 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 are $2.00 per issue; these do not include postage; see below.**

Back Issues of the **BULLETIN OF AMERICA ODONATOLOGY** can be furnished at the prices given below. **Prices do not include postage; see below.**

1(1) The Odonata of New York, Thomas W. Donnelly p. 1-28	$3.00
1(2) Distribution of Dragonflies and Damselflies in Florida, Sidney W. Dunkle p. 29-50	$2.50
1(3) Morphological and ecological differences among species of *Ladona*, Michael L. May p. 51-56	$1.50
Comportamiento reproductivo y policromatismo en *Ischnura denticollis* Burmeister, Alejandro Córdoba Aguilar [with English summary] p. 57-64	
1(4) A checklist of the Odonata of the Dominican Republic by Province, Jerrell James Daigle p. 65-69	$1.50
Odonata de la Sierra de Huauchinango, Puebla, Mexico [with English summary] , José A. Gómez Anaya and Rodolfo Novelo Gutiérrez p. 71-73	
2(1) La Nayade de Archilestes latialatus Donnelly, 1981 [with English summary] , R. Novelo-Gutiérrez p. 1-7	$1.50
Descripción e Historia Natural de las Larvas de Odonatos de Costa Rica. III *Gynacantha tibiata* (Karsch 1891) [with English summary], Alonso Ramírez p. 9-14	
2(2) Description of the Nymph of *Epitheca* (*Tetragoneuria*) *spinosa* (Hagen, K. J. Tennessen p. 15-19	$1.50
The Larva and Adult Male of *Somatochlora georgiana* Walker, Jerrell J. Daigle p. 21-26	
2(3) *Macromia illinoiensis* and *georgina*: a Study of heir Variation and Apparent Subspecific Relationship, T.W. Donnelly, K.J. Tennessen p. 27-61	$3.00
2(4) The Subgenus *Tetragoneuria (Anisoptera: Corduliidae: Epitheca*) in New Jersey, Michael L. May p. 63-74	$1.50
3(1) The Odonata of Ohio - a Preliminary Report, Robert C. Glotzhober p. 1-30	$3.00
3(2) Four Decades of Stability and Change in the Odonata Population at Ten Acre Pond in Central Pennsylvania, Clark N. Shiffer & Harold B. White p. 31-40	$1.50
Descripción e Historia Natural de las Larvas de Odonatos de Costa Rica. IV. *Mecistogaster ornata* (Rambur, 1842) [with English summary], Alonso Ramírez p. 43-47	
3(3) The Distribution of Odonata in Alabama, Kenneth J. Tennessen, James D. Harper, R. Stephen Krotzer, p. 49-74	$3.00
3(4) Distribution Records of the Odonata of Montana, Kelly B. Miller and Daniel L. Gustafson, p. 75 - 88	$1.50
4(1) An Annotated List of the Odonata of New Jersey, With an Appendix on Nomenclature in the Genus *Gomphus,* Michael L. May & Frank L. Carle p. 1 - 35	$3.00
4(2) The Odonata of Patuxtent Wildlife Research Center and Vicinity, Richard L. Orr p. 37 - 67	$3.00
4(3) The Status of *Lestes apollinaris* Navás and *L. henshawi* Calvert, Thomas W. Donnelly p. 69-74	$1.50
4(4) The Dragonflies of Washington, Dennis R. Paulson p. 75-90	$1.50
5(1) The Dragonflies and Damselflies (Odonata) of Louisiana, Bill Mauffray p. 1-26	sub*
5(2) The Odonata of the Cayman Islands: a Review, R.R. Askew, R. Prosser, and P.S. Corbet p. 27-32	sub*
TAXONOMIC AND Population Studies of British Columbia *Aeshna* species, G. Peters p. 33-42	
5(3) Adapting the Townes Malaise Trap for Collecting Live Odonata, Robert C. Glotzhober & Dan Riggs, p. 43-48	sub*
Archilestes grandis (Great Spreadwing) in Central New Jersey, with Notes on Water Quality, David P. Moskowitz and David M. Bell, p. 49-54	
Variation in Head Spines in Female *Ophiogomphus*, with a Possible Example of Reproductive Character Displacement (Anisoptera: Gomphidae), Dennis R. Paulson, p. 55-58	

* subscription

Mailing and Handling Costs:

	SURFACE		AIR MAIL	
	1st number	each additional	1st number	each additional
United States	$1.25	$1.00	---	---
Canada, Mexico	$1.25	$1.00	$1.50	$1.25
Western Hemisphere	$1.50	$1.25	$2.00	$1.50
Europe, Asia, etc	$1.50	$1.25	$3.00	$2.50

ARGIA

Binghamton, New York **Vol. 11, No. 2, 15 June 1999**

IN THIS ISSUE		1
ADIRONDACK MEETING – FINAL NOTICE	Nick Donnelly	1
DSA BUSINESS MEETING		2
NORDIC DRAGONFLY MEETING IN AUGUST 1999	Hans Olsvik	2
SOUTH AFRICAN BUTTERFLY TRIP ALSO FOR DRAGONFLIES	John Heppner	2
15th INTERNATIONAL SYMPOSIUM OF ODONATOLOGY, Novosibirsk, Siberia, Russia, July 10-14, 2001		2
WILLIAMSOMIA WANDERINGS	Mark O'Brien	3
ODONATOLOGICAL NEWS FROM QUEBEC, CANADA: THE MARVELOUS WORLD OF QUEBEC DRAGONFLIES	Raymond Hutchinson & Benoît Ménard	3
SEARCHING FOR SIGNS OF STYLURUS NOTATUS, GOMPHUS FRATERNUS AND GOMPHUS VASTUS IN THE OTTAWA RIVER	Hutchinson & Ménard	3
TWO NEW QUEBEC LOCALITIES FOR WILLIAMSONIA FLETCHERI	Hutchinson & Ménard	4
RANDOM ODONATOLOGICAL OBSERVATIONS FROM QUEBEC, CANADA	Hutchinson & Ménard	5
1. PROTECTING EMERGING STYLURUS NOTATUS FROM ANT ATTACKS (1996-1997)		
2. AN UNUSUAL OBSERVATION: A CICINDELA LONGILABRIS (COLEOPTERA) LARVA TRYING TO DRAG A MALE LEUCORRHINIA GLACIALIS INTO ITS BURROW	Hutchinson & Ménard	6
3. ADULT LEUCORRHINIA CAPTURED BY THE INSECTIVOROUS PLANT, DROSERA ROTUNDIFOLIA	Hutchinson & Ménard	6
4. FEEDING WILIAMSONIA LARVAE IN THE LAB	Hutchinson & Ménard	6
5. A TINY SPIDER SUBDUING A LEUCORRHINIA GLACIALIS MANY TIMES ITS SIZE	Hutchinson & Ménard	6
6.AESHNA UMBROSA LARVAE FOUND IN EXTREMELY SHALLOW WATER	Hutchinson & Ménard	7
THE LANTHUS PARVULUS ENIGMA AT PORT-AU-SAUMON (QUEBEC, CANADA)	Hutchinson & Ménard	7
AN INTERESTING REQUEST: FINDING TINY PARASITIC WASPS ON DRAGONFLY THORAX	Hutchinson & Ménard	9
ARCHILESTES GRANDIS (ODONATA: LESTIDAE) FROM GEORGIA: NEW STATE RECORD	Broughton A. Caldwell	9
A SHORT TEXAS COLLECTING TRIP	Nick Donnelly	10
A COURSE ON LARVAL DAMSELFLIES AND DRAGONFLIES OF THE NORTHEAST	Paul-Michael Brunelle	11
DEFORMED DRAGONFLIES – A CLARIFICATION	Wayne Steffens	12
BAR-SIDED DARNER (GYNACANTHA MEXICANA) SELYS, 1868 (ODONATA: AESHNIDAE), A NEW DRAGONFLY FOR THE U.S.	Robert A. Behrstock, Ted L. Eubanks, & Paul Miliotis	12
SAY'S SPIKETAIL FROM FLORIDA	Jerrell J. Daigle	14
BITTERN CATCHES DRAGONFLY	Seth Williamson	14
AN ON-GOING STUDY OF THE RELATIONSHIP BETWEEN ANTS, BIRDS, AND DRAGONFLIES DURING THE PHENOMENON OF SWARMS AT MASSACHUSETTS AUDUBON SOCIETY'S IPSWICH RIVER WILDLIFE SANCTUARY	Fred Goodwin	14
ODONATA GLEANINGS - DRAGONS EATING DRAGONS	Dennis Paulson	15
GOMPHUS LARVAE/EXUVIAE NEEDED	Ken Tennessen	16
BRIDGE'S CATALOG		16
REVIEW: LIBELLEN IN BAYERN, edited by KLAUS KUHN and KLAUS BURBACH		16
TWO LIMNOLOGY BOOKS OF POSSIBLE INTEREST TO ODONATOLOGISTS	Roy Beckemeyer	17
ATLAS OF THE DRAGONFLIES OF THAILAND – DISTRIBUTION MAPS BY PROVINCES	Matti Hämäläinen & Bro. Amnuay Pinratana	18
RHODE ISLAND ODONATA ATLAS	Nick Donnelly	19
STATUS OF THE DOT-MAP PROJECT	Nick Donnelly	19
TRAMEA	Nick Donnelly	20