

THE NEWSLETTER OF THE SOCIETAS INTERNATIONALIS ODONATOLOGICA
AND THE U.S. NATIONAL OFFICE

Vol. 22, No. 1

Johnson City, Tennessee

March 1, 1993

REQUEST FOR DAMSELFLY ECOLOGY/
BEHAVIOR PAPERS

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We are Mexican students working on ecology and behavior of adult damselflies. We want to interpret our work in the context of a basic framework on natural history of the order, with reference to other researchers. But we lack several references on important ecological parameters (maturation time, longevity, survivorship, sex ratios, etc.) because in our position it is difficult to get them. We are mainly interested in papers published before the 1980's on African, Asiatic, and European species. We can pay for photocopies, but will be happy to receive free contributions. Any papers you can send will produce beneficial results in our work, and we acknowledge in advance all kinds of help.

Two dragonflies
mating in the sunlight-
water over stones

tombo

PRECOPULATORY BEHAVIOR:
CORRESPONDENCE REQUESTED

Milen Marinov
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I am a student of Biology at Sofia University. I have been working for a year now at the Natural History Museum at the Biosphere reserve "Srebarna." This job gives me the possibility to study dragonflies much more thoroughly. My interest in these insects dates back to my first year of study at the University. It is very exciting and interesting to observe their behavior (and especially their precopulatory behavior) and I would be very pleased to correspond with somebody having similar interests and working over the same questions and problems.

SHORT NOTICES

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An encouraging increase in volume of material submitted to SELYSIA has forced me to initiate a new format for short items written by me, often based on information sent by someone else. These "short notices" will be dispersed throughout the newsletter to optimize use of space. They can be identified by distinctive borders, and lack of headings with authors' addresses.
.....

DOES CORDULEGASTER EXIST
IN NORTH AMERICA?

The 10 November 1992 issue of *Opuscula zoologica fluminensia* [96:1-18] contains a paper (in German) by H. Lohmann [Biologisches Institut I (Zoologie), Albert-Ludwigs-Universität, Albertstrasse 1a, D(W)-7800 Freiburg i. Br., GERMANY], "Revision der Corduligastridae. 1. Entwurf einer neuen Klassifizierung der Familie (Odonata: Anisoptera)." This paper will interest many odonatologists, perhaps especially those in North America, because it proposes to change genus names for many of our species. Minter Westfall and Sid Dunkle are beginning to study the paper; but an English translation would help them (and others) a lot if there is someone willing to do the work!

Bastiaan Kiauta has provided the following annotation of Needham and Westfall (1955) *A Manual of the Dragonflies of North America*, page 79, to reflect Lohmann's proposed changes:

former species	new genera	comment
<i>sayi</i>	<i>Archegaster</i>	gen. n. (type sp. of genus!)
<i>diadema</i>	<i>Lauragaster</i>	gen. n. (type sp. of genus!)
<i>erroneus</i>	<i>Kalyptogaster</i>	gen. n. (type sp. of genus!)
<i>fasciatus</i>		merely a subspecies of <i>obliquus</i>
<i>obliquus</i>	<i>Taeniogaster</i>	gen. n. (type sp. of genus!)
<i>diastatops</i>	<i>Zoraena</i> Kirby,	1890 (type sp. of genus!)
<i>maculatus</i>	<i>Pangaegaster</i>	gen. n. (type sp. of genus!)
<i>dorsalis</i>	<i>Lauragaster</i>	gen. n.

A reprint, or subscription to odonate issues of *Opusc. zool. flumin.*, is available from S.I.O. with reference to respective catalog numbers 1209 or 1223.

SELYSIA
A Newsletter of Odonatology

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This newsletter is designed to disseminate facts and news about the activities of Odonatologists and Odonatology. It is not intended as a journal nor an organ for the publication of articles or technical papers. The name is based upon that of the "Father of Odonatology," Baron Edmond de Selys Longchamps.

SELYSIA was founded in 1963 by Dr. B. Elwood Montgomery at Purdue University, and edited from 1970-1986 by Dr. Minter J. Westfall, Jr., at the University of Florida. With V. 13, #1 (1 March 1984) it was recognized as the official newsletter of the *Societas Internationalis Odonatologica* as well as the U.S. National Office of S.I.O.

SELYSIA is issued semi-annually, 1 March and 1 September. Items submitted should reach the editor no later than one month before publication date.

This newsletter is produced as a public service of the Department of Biological Sciences, East Tennessee State University.

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RARE ANISOZYOPTERAN SIGHTINGS

Editor's note: In the November 1992 issue of *KIMMINSIA*, newsletter of the U.K. Office of S.I.O. [Editor Jill Silsby, 1 Haydn Avenue, Purley, Surrey, CR8 4AG, UNITED KINGDOM], Dr. Allen Davies reported "*Epiophlebia laidlawi* - FLYING!" [*KIMMINSIA* 3(2):10-11]. After recounting the history of this unusual, rare, and endangered anisozyopteran, he reported penetrating a dense bamboo forest near Darjeeling, India, finding a clearing at 11,000 feet (@3300 meters) above clouds and rain, and sighting "several Blieriot-like, not very manoeuvrable dragonflies ... looking like *E. superstes* but with longer bodies" circling above treetops. A wider search was "well rewarded along the Nepal/India border at 10,000 to 12,000ft (@3000 to 3600m), again in the sun above the clouds: what a niche!" The final paragraph reads as follows:

"So the niche is clarified. The old veteran breeds in high waterfalls, fortunately above 'piping' level and flies on top of mountains high enough to protrude into the sun above the clouds. At the chosen latitudes these 'foothills' are frost-free in winter. Very few such mountains have paths or plausible access to the top and, viewed from the places we reached, there is a panorama showing dozens of 'foothills' (only 2 to 3 times the height of Ben Nevis) in the 40 mile (64 km) or so gap to the high snowy peaks in the background. It is food for thought that this old relic chose nearly half the height of Everest to escape our attentions for so long - and we believe that the species is not threatened."

* Louis Bleriot (1872-1936) was a French aviator whose monoplane was the first to fly across the English Channel on 5 July 1909.

Davies makes one misstatement in his report, "Never before had an O.A.P. (odonatologically-aware person) seen this ancient beast in flight." He was not aware of Mahendra Mahato's experience in June 1987 when he was Assistant Lecturer, *Natural History Museum, Tribhuvan University, Kathmandu, Nepal*. I have asked Mahendra to recount that experience and to comment on Davies' report.

EPIOPHLEBIA LAIDLAWI — A LIVING GHOST

Mahendra Mahato
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Dr. Davies' note on *Epiophlebia laidlawi* [*KIMMINSIA* 3(2):10-11] was very interesting and good news for the I.U.C.N. Odonate Specialist Group. However, I am concerned about his conclusion that the species is not threatened. It would be helpful if there were more convincing evidence of large population size and no habitat destruction. Previous studies show that *Epiophlebia laidlawi* larval habitat ranges from 2200m to 2700m. It is quite interesting that adult flight was observed as high as 3600m — almost 1000m above known breeding sites.

While in Nepal, I have attempted two times to study this ghost dragonfly at Shiwapuri Hills, Kathmandu Valley. My first attempt was on 13 June 1987. The weather was partly cloudy but with plenty of sunshine. I started hiking from the Burhanilkant at 9 AM. After three hours of hiking, I reached an open area with a small stream (headwater of Bagmati River) at 2500m. Suddenly, I saw an unique dragonfly flying above the stream. The body looked like a dragonfly, but the wings were like a damselfly. The flight was very weak. It did not take me long to recognize it; and it was very easy to capture in my butterfly net.

My collection was the fifth adult specimen in *E. laidlawi* history. The specimen has been preserved in my personal collection. Unfortunately, it was a female specimen, the same as collected from Shiwapuri by Tani and Miyatake in 1979. I also looked for larvae from the same site, but failed. However, I did take physical parameters of the water. The stream was covered with many *Elastostema hookerianum* plants. The water current was relatively fast flowing in between rocks. The water was very clean. The water and air temperature were 15° and 20°C respectively. Similarly, pH and dissolved oxygen were 6.75 and 9 mg/L respectively. Besides these I also collected some other high-altitude odonate specimens during the trip: *Megalestes major*, *Ceriatrigon* sp., *Neallogaster hermionae*, and *N. ornata*.

My second attempt to search for *Epiophlebia laidlawi* was in spring 1990. Due to political disorder, I was unable to visit the site.

The observation made by Dr. Davies indicates either *Epiophlebia* can fly very fast towards high altitude or its breeding habitat might range above 3000m. I believe that *Epiophlebia* breeding habitat may vary between 2000m and 3000m in the Himalayan Mountains, depending upon slope and exposure towards sunlight. So far there have been no serious attempts to explore for this species in similar habitats in western Nepal. However, due to human population pressure, these regions face more habitat destruction than any others. Because of limited low flat land for cultivation in Nepal, forests are being cleared at a very fast rate — for fuel as well as terrace cultivation. For example, even though Shiwapuri is a well-protected area, I saw many cattle grazing up to the top of the hill during my study period. The cattle grazing may cause water pollution as well as habitat destruction — both threats to *Epiophlebia laidlawi*. The erosion rate of this range of Nepal is increasing every year. As I know the Himalayan country Nepal very well, I still believe that this ghost species is under great threat.

Information about the *XII International Symposium of Odonatology* to be held in Osaka, Japan, 1-8 (-11) August 1993, is available from Kiyoshi Inoue, Organizing Secretary [5-9, Fuminosato 4-chome, Abeno-ku, Osaka, 545, Japan; FAX No. 81-6-621-1328]. Registration fees and hotel costs are reduced considerably if you register before 31 March 1993. Those who need formal letters of invitation should contact Dr. B. Kiauta, S.I.O. Central Office, P.O. Box 256, 3720 AG Bilthoven, THE NETHERLANDS.

Gordon Pritchard has communicated tentative suggestions about the future of S.I.O. to members of the S.I.O. Council. He wants everyone to know that he, Bastiaan Kiauta, and Janny van Brink are "making progress." But he doubts there will be a solution in Japan; and he will be unable to attend the *XII Symposium* himself.

The *XIII International Symposium of Odonatology* will be convened, in summer 1995, in Essen, Germany. Dr. Eberhard Schmidt will be Organizing Secretary.

FOUNDING OF SLOVENE SECTION OF S.I.O.

M. Kotarac

Marohovih 11, SLO-62000 Maribor, SLOVENIA

On October 23, 1992 the National Section of S.I.O. in Slovenia was formed in Ljubljana. Eleven members attended the Charter Meeting. Dr. B. Kiauta and his wife, Marianne, were also present. Dr. Kiauta outlined the history, objectives, and constitutional set-up of S.I.O., whereafter the aims, Constitution and By-Laws of the National Section were discussed and accepted.

The concept for a bulletin of the Slovene Section, *EXUVIAE*, was presented by Mr. I. Geister, who was elected its Executive Editor. The journal will appear at least once a year and will bring articles (in Slovene and in Western Congress languages, all with English summaries) related to the odonate fauna of Slovenia and neighboring countries/regions of the Eastern Alpine "Alps-Adriatic" Regional Association. Authors are hereby invited to send in their contributions. Subscriptions outside Slovenia are handled by the S.I.O. Central Office, Bilthoven, The Netherlands, at Hfl. 30.- per issue.

Mr. M. Kotarac, elected President of the Section, stressed the need for a mapping survey of the Odonata of Slovenia. This will be one of the major tasks of the Section in the near future. The project will be facilitated by publication of a comprehensive descriptive key for the regional fauna, now in preparation by the Section and scheduled to appear shortly in the Slovene language. The organization of an odonatological training course for collaborators in this project is also being considered.

At the meeting, desire was unanimously expressed to invite the 1997 or 1999 *International Symposium of Odonatology* to Slovenia. Mr. I. Geister and Dr. B. Kiauta will jointly approach the Government for support in this matter. The famous Alpine resort, Bled, in the Julian Alps of Upper Carniola, was suggested as a tentative location for the venue. Support from the *Slovene Entomological Society*, the *Slovene Museum of Natural History* (Director Dr. M. Gogala), from relevant institutions of two Slovene universities and the *Academy of Sciences*, as well as from at least one regional Museum, is a matter the Section can with certainty reckon with.

The evening ended with a good drink, some good slides, and some interesting specimens from this young European country.

The address of the Section is: Slovenska sekcija S.I.O., (c/o Iztok Geister), Pokopaliska pot 13, SLO-64202 Naklo, SLOVENIA.

JEAN BELLE APPOINTED KNIGHT

Bastiaan Kiauta

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The accompanying photograph of S.I.O. member, Jean Belle, was taken at Vellereilles-les-Brayeux, Belgium, on September 20, 1992, when he was formally appointed "Knight of the Order of Bailleul." The other person, showing his coat of arms, is his squire. Belle's family has had, for many generations, a coat of arms showing three bells. With the new knightship he was given another coat of arms combining two of the family bells with a dragonfly, all silver in a blue field. I believe this is only the third official nobility coat of arms with a dragonfly motif!



DR. KLAUS STERNBERG AWARDED "KARLSON-PREIS"

Martin Schorr

Waldfrieden 25, D-5504 Zerf, GERMANY

On 23 September 1992, Dr. Klaus Sternberg was awarded the "Karlson-Preis" of the Association of German Biologists in Aachen. The prize includes 2500,-DM. This award is named after the marburgian biochemist and hormone physiologist Prof. Dr. Dr. h.e. Peter Karlson. It is awarded for extraordinary academic degrees in the field of experimental ecology. Dr. K. Sternberg (University of Freiburg/Br.) was honored for his Ph.D. thesis, "Autecology of six dragonfly species of moorland pools and bogs in the Black Forest region, and reasons for their relationship to bogs." This thesis is "a monumental monograph on autecology of *Aeshnacaerulea*, *A. juncea*, *A. subarctica elisabethae*, *Somatochlora alpestris*, *S. arctica* and *Leucorrhinia dubia*" (OA 7688).

"Dr. Sternberg succeeded in a special way to ascertain experimentally the relationship of six endangered dragonfly species to their habitat under the point of view of ethology, ecology and developmental physiology. So, first the relationships between dragonflies and their habitats and secondly the vulnerability of this species were made transparent. In this way Dr. Sternberg contributes in a high degree to insight in ecology."

OUR TRIP TO THAILAND WITH BROTHER AMNUAY PINRATANA; OR GUESS WAT?

John Michalski

90 Western Ave., Morristown, NJ 07960, USA

Caroline and I visited Thailand this spring from June 26 to July 13. For a large part of that time we were guided by the Thai naturalist, Brother Amnuay Pinratana. We had a smashing time in every measurable way, and frankly the insect collecting was only a small part of it. After reading the report which follows, the odonatist may take as an index of the fun we had, the fact that we collected insects for only about six of our nineteen days, and the other thirteen days were at least as rewarding in their various ways.

We were so taken with all aspects of Thailand that the only way to keep this article to a feasible length was to leave out everything except the dragonfly stuff (the first draft was more than nine pages long — and that was just the bugs). Suffice it to say that the people, temples, countryside, food and general ambience were nothing short of extraordinary. Staying in Thailand is incredibly inexpensive by American standards — we roomed in air-conditioned comfort for \$14 per night (though it can be done for \$3 to \$5 a night for a double), and ample meals for four people routinely cost less than four dollars. To learn anything anyone would find useful about visiting this country, get your hands on a copy of Lonely Planet's "Travel Survival Kit" to Thailand. Caroline and I were extremely well-prepared for Thailand having read that book through.

Our first two days in Thailand were spent sightseeing around Bangkok, after which Brother Amnuay had a friend drive us (the total party numbering four) to the northern city of Chiang Mai, a trip which took twelve hours on excellent highways, including a few detours. For \$100 round trip you could fly there in 20 minutes, but we needed the car in any case. One of our detours was to the famous ruins of Sukkothai, which were not only awe-inspiring on a religious and artistic level, but the place was absolutely *swarming* with seas of butterflies, attracted by miles of low lantana hedges planted all over the grounds. Despite the conspicuous presence of park personnel, Caroline and I decided to play "village idiot" (Oh! is there a rule against this here?) and swing our nets for just five minutes. The resulting catch was 28 butterflies in 14 species!

One of the peculiarly Thai aspects of our trip was that Brother Amnuay had distinctly told me the night we arrived that it would not be possible for us to collect inside the National Parks that I had read so much about. There was simply no way to obtain a permit these days, I was told, and the park police would never tolerate our net-swinging. Not to worry, he added, there were many excellent and less-well-known places to collect outside the park system, and we would certainly have no trouble keeping busy. For the following five days we proceeded to collect almost exclusively in the National Parks! I am certain that I missed something during that first conversation. But these sorts of contradictions came up all the time. Coming to a fork in a trail, I would point to the fork on the right and ask, "Is this the way to the collecting spot?" and Brother Amnuay would answer, "Yes, that's the way," and then, going up the left fork, he would add, "We go this way."

When I tell you that collecting was excellent, you must keep in mind that the weather was overcast for almost the entire time, with only one or two half-hour breaks of sunlight. On at least two days we collected in pouring rain. And yet in six days of that kind of weather Caroline and I collected more than 620 specimens in more than 80 species! (Slightly less than one-third of the fauna.) And that's not counting butterflies, moths, beetles, etc., etc. Though the time of year we chose is usually considered the onset of monsoon, we actually fared rather well, with very little actual rainfall.

One thing that surprised me was that Zygoptera, for the most part, did not disappear when rain started. In Trinidad, also a tropical country, there's not much that will fly if the sun's not out, and once it starts raining, forget it. Not so in Thailand. On one occasion we were collecting a river when it began absolutely *teeming* down on us for about an hour, but the odonates kept on like nothing was happening.

Chiang Mai is and should be the Number One destination for the bug collector, and we used this, Thailand's second city, as our base of operations. Chiang Mai is in the far north of Thailand, and its mountains are still extensively forested.

I don't have enough space to describe each of our collecting spots during this leg of the trip, but take my word for it that Brother Amnuay was a most gracious and well-traveled guide. Because of the weather, this became mostly a zygop trip. I decided to busy myself upstream in the densely shaded undergrowth along little trickles, a strategy that produced hundreds of zygopterans in I don't know how many species. Included were four species of the lovely *Rhinocypha* (in clearings) and several shade-loving species which I took to be *Coeliccia*. At one point we visited an irrigation pond, where in one half-hour of sunshine we took 44 specimens in 14 species, including 3 species of *Orthetrum*, *Brachydiplax*, *Palpopleura*, and several nicely-colored species of Zygoptera, including species of *Copera* and *Aciagrion*. At various streams and waterfalls we came across such species as *Neurobasis chinensis*, *Vestalis gracilis*, *Euphaea masoni*, and so on. Most outstanding (and surprising) was the splendid assemblage of butterflies along one of the dirt roads, and we often saw Birdwings of the genus *Troides* whizzing overhead. Were those ever spectacular! Also nice was a brief detour to visit a commercial butterfly farm (mostly a tourist trap) which afforded me the opportunity to photograph many butterfly species in natural-looking situations, and also to collect some vacated Birdwing pupae. At one point Caroline and I pressed for a quick stop at a river that looked promising. In fact, I am not being smug when I say that it turned out to be a real highlight for all of us. Caroline and I took 102 specimens of 11 species here; this is one place we collected in pouring rain. Apart from species we were becoming familiar with from elsewhere, we found *Dysphaea gloriosa* and *Libellago lineata*, both of which were of great interest to Brother Amnuay and to us.

Our typical catch consisted of about 12 or 14 species per locale, which is not bad in the rain. Aiding our cause was the very small extent of species overlap from place to place.

In Chiang Mai itself we visited the University, where the curator of the insect collection received us and told me, "If there are any specimens you want, please help yourself." Well, after much persuasion I finally gave in. You know me. Just trying to be nice. (In fact, we coded the specimens and I will be sending identifications in due course.) I was able to add such genera as *Orolestes*, *Macrogomphus*, *Davidius*, *Gynacantha*, *Chlorogomphus*, and *Epophthalmia*, and that's a pretty good day's collecting for anyone. Seriously, it did enable me to obtain several anisops that we were not finding in the field due to weather.

When we had returned to Bangkok, Caroline and I still had a week and a half left to spend as we liked. We decided to break up our remaining time with one more day of net-swinging, and headed west from Bangkok toward Kanchanaburi and the famous "Bridge Over the River Kwai," which we indeed stopped at (and collected 3 specimens, almost just for the unusual data point). I would love to tell you all how to get to our primary stop that day, the Pu Ye stream and waterfall, but I'm not sure I know how. The great habitat combined, for almost the only time, with magnificent weather, and we collected 64 specimens in 17 species. The lower number of individuals is indicative of time spent per specimen, as we finally came across good numbers of gomphids (3 species here

this day) as well as *Zygonyx* again, and fantastic zygops of unusual nature, such as *Rhinagrion mima*, *Dysphaea dimidiata*, and *Echo modesta*.

The *Dysphaea*, incidentally, may be one of the most hard-fought-for specimens in my career, especially for a zygop: not only is the species extremely cagey and very strong on the wing; we saw only one on this stream, and it was perched on some fallen bamboo in — do you hear me? — the very deepest part of the entire stream, where there was no way to cover your approach and nothing for it but to take off your watch, leather belt, remove your wallet, camera and collecting box, and just wade over to its preferred perch and wait for it to decide to land there again. This, of course, it never did. Except once. Hah! It was, for me, one of those experiences where a single specimen is all that stands between you and what you'd consider a great day of collecting. Miss it and go back to camp frustrated. Catch it and you can take a deep breath and go back to all those other interesting species that are lollygaggin' over every shrub and creeper on the trail.

Also collected this day were some interesting libellulids; one species I think is *Onychothemis*, while the other looks and behaves like South America's *Elasmothemis canmacrioides*, though of course it can't be that. There were also swarms of butterflies at mud puddles.

It was a great trip all around. Apart from dozens of exciting experiences we had unrelated to entomology, Caroline and I collected so many specimens of so many species in only six days, I can't imagine what collecting is like when the sun shines! If anyone would like further information, for recommended places to stay, collect, sight-see or just shop, feel free to write us. There's a lot more to the country than its bugs, and we're more than happy to give any details about pros and cons of the trip that we can. Till then, sarong and good luck!

Oh! did we have a good time!

The Fourth South Asian Symposium of Odonatology was held at Chaudhary Mahadev Prasad (CMP) College in Allahabad, India, 10-12 October 1992. An article in *Northern India Patrika* (11 October 1992) reports that the symposium was organized despite a Government ban on financing academic meetings and was expected to attract about 30 delegates from outside Allahabad, including two from Bangladesh and one from Nepal. Dr. Vinod K. Srivastava [Dept. of Zoology, C.M.P. College, 318 Alopri Bagh, Allahabad 211006, India] was Organizing Secretary. He sent me *Abstracts of Papers, The Fourth South Asian Symposium of Odonatology* which lists 42 authors for 32 abstracts covering a wide variety of research topics. Most-frequent topics are anatomy and physiology (11 papers), with plenty of attention to larvae; larval ecology (6), with emphasis on potential for mosquito control; and karyotyping (6) for taxonomic purposes. Congratulations to South Asian colleagues; odonatology is thriving on the subcontinent!

The first issue of NAVASIA, a newsletter for Spanish odonatologists, was published by "Oficina Iberica de la S.I.O." in September 1992. The editor is Dr. Manuel Ferreras Romero [Departamento de Biología Animal (Zoología), Facultad de Ciencias, Universidad de Córdoba, Avda. San Alberto Magno s/n, ES-14004 Córdoba (ESPAÑA-SPAIN)].

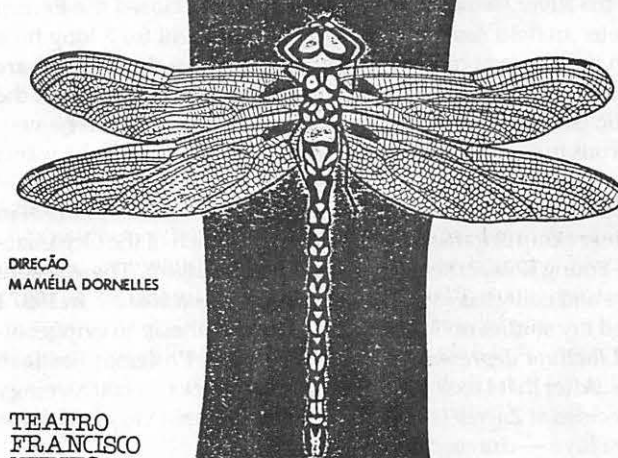
Thanks again to Lorraine E. Harr (tombo) for more haiku.

Above the trout's lair-
again the small dragonfly
dimples the water

tombo

O MENINO E O RIO

UMA PEÇA ECOLÓGICA
DE ANGELO MACHADO
CASA DE CULTURA
OSWALDO FRANCA JUNIOR



DIREÇÃO
MAMÉLIA DORNELLES

TEATRO
FRANCISCO
NUNES

DEZEMBRO 92
SAB. E DOM. 16:30

MBR
Midiocrições Brasileiras Reunidas S.A.
Entertainment e Comunicação Visual S.A.

The accompanying figure is from the program for a production of "O Menino e o Rio" ["The Boy and the River"], a play by S.I.O. member Angelo Machado based on his very successful children's book of the same title (now in its 11th edition) [see OA 7139 in *ODONATOLOGICA* 19(2):210-211]. In a letter dated 29 December 1992 to Bastiaan Kiauta, Dr. Machado says that last year he talked about environmental issues, including dragonfly biology, to around 2500 school children who had read his books. He has written a new book, *O Velho da Montanha: uma Aventura Amazônica* [The Old Man of the Mountain: an Amazonian adventure; ISBN 85-06-01597-9], that tells the story of a boy from Rio de Janeiro who spends his vacations in a Tirio indian village in the Amazon, where his father works for a mining company. The boy's adventures include encounters with odonates — *Mecistogaster* (p. 31), *Hetaerina* or *Neoneura* (p. 44), and *Meganeura* in a passage about the history of life (p. 69).

ODONATOLOGY IN CROATIA

Matija Franković

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Odonatology in Croatia, a newly formed European state, has to be observed in light of recent history of that part of Europe. The dragonfly fauna of Croatia, formerly a part of the Austro-Hungarian Empire, then of the first and second (communist) Yugoslavia, is barely known, mostly because very few local odonatologists were active and because of a lack of basic faunistic research in the region over the last five decades. Thus Croatia never published a national fauna series! The last Croatian odonatologists (Ervin Rossler and Gjuro Koca) were active in the first quarter of the 20th century. Since that time articles dealing with Odonata of Croatia were published mainly by foreign workers who collected dragonflies during their summer holiday trips to the Adriatic coast, Greece and Turkey, etc.

After the proclamation of independence from the former Yugoslavia, war operations caused destruction of many cultural monuments and the economy of the country suffered greatly. But also large parts of nature reserves and national parks were damaged. In particular, dragonflies were threatened by pollution after destruction of oil refineries in Sisak and Bosanski Brod, by drying out of the River Cetina when occupying forces closed the Peruca Dam, etc. In field research the main problem will for a long time remain the myriads of land mines and explosive devices that are spread all over Croatia. Except in a few regions like Istria, the Adriatic Islands, and the surroundings of Zagreb, it will be very dangerous to conduct field research for a long time after the war is over.

I became interested and began to collect dragonflies in 1984 in a summer camp organized by the Biology branch of the Organization of Young Researchers of the *University of Zagreb*. There I spent 15 days and collected my first *Calopteryx*, *Libellula*, ... In 1987 I finished my studies of Biology with a Masters thesis on cytogenetics of *Libellula depressa*, inspired by work of Professor Bastiaan Kiauta. After that I took the opportunity to work on ecotoxicology of pesticides at *Zagreb University*, but still I remain very faithful to my first love — dragonflies.

At present I have a few students of biology with whom I have tried to establish a nucleus of Croatian odonatology, but we meet with a lot of problems. Because of a very difficult economic situation caused by war in Croatia, the main problem is, of course, lack of money for books, journals, equipment, etc. Second, there is a lack of experienced persons who can provide training and transfer of knowledge. Everything I know (and it is not much) I have had to learn by myself, from books, journal articles, and personal experience. Third, many articles dealing with Croatian dragonflies were published in a large number of very often local journals which are very hard to trace. Many foreign workers also have unpublished data on Croatian dragonflies, but it is hard to trace them as well.

We try to conduct several projects: 1) inventory of Croatian dragonfly fauna; 2) establishing a dragonfly collection in the *Croatian Museum of Natural History*; 3) limited field research, especially of rare and endangered species and habitats; 4) publishing of small identification booklets for larval and adult stages.

Any kind of help will be appreciated, especially used books, articles dealing with Croatian dragonfly fauna, unpublished data as well as training in odonatology for us.

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Carl Cook, first President of *The Dragonfly Society of America*, is fighting a continuing battle with cancer from a Lexington, Kentucky, hospital bed. His friends in the dragonfly family wish him well. Personal greetings should be addressed to his home [426 Crailhope Road, Center, KY 42214, USA].
.....

Above the still pond-
hovering of the dragonfly
adds to the silence

tombo

RESEARCH HIGHLIGHTS, AND SUMMARIES OF RESEARCH PLANS

Editors note: In my summary of a recent Readers' Survey [SELYSIA 21(2):12-13] I identified "research highlights" and "summary of research plans" as two categories of major interest to readers that were under-represented in our newsletter. To encourage more contributions of that sort, I wrote to 20 people who had indicated a willingness to be a "reporter" if needed and asked for items in these categories. The following articles were submitted in response to that request. Thanks to those who have responded so generously; I hope their willingness to share such ideas will encourage others to write similar summaries. Don't make me write to solicit such contributions! Just send them.

STUDYING SPERM COMPETITION IN ZYGOTERA

Adolfo Cordero

Ecoloxia, Universidade de Vigo

E.U. Enxeñeria Técnica de Industrias Forestais

Avda Buenos Aires s/n, 36002 Pontevedra, SPAIN

During recent years I have been very interested in the occurrence of sperm displacement in the Zygoptera. I have studied reproductive behaviour of *Ischnura graellsii*, and I was very interested in the long copulations of that species. In autumn 1990 I had the opportunity to visit Peter Miller's laboratory at *Oxford University*, where I learned very much about sperm competition in Zygoptera and methods used to measure sperm volumes.

In 1991 I started a collaboration with Carlo Utzeri (*Univ. of Rome*), to study reproductive behaviour of *Coenagrion scitulum*. This species is unusual in that the male makes up to 7 sperm transfers during the same copulation. After studying reproductive behaviour of a more "classic" species like *I. graellsii*, I was very interested in reasons that would explain why *C. scitulum* repeats intra-male sperm transfer. This research project is the M.Sc. Thesis of Serena Santolamazza Carbone. During summers of 1991 and 1992, we studied reproductive behaviour of this species, at Castel Porziano (Rome). We have studied morphology of male genitalia in this species, and found out that horns of the penis have no spines at all. This suggests a low sperm-displacement ability in male *C. scitulum*.

We think that this species repeats sperm transfer and insemination as a way to overcome dilution with rivals' sperm. Measurements of sperm volumes in virgin females mated in the laboratory also suggest a low sperm-displacement ability in this species. To my knowledge, only in copulation of *Megaloprepus coerulatus* (Fincke, O.M., 1984, *Advances in Odonatology* 2:13-27) has been described the repetition of intra-male sperm transfer. I would be very grateful for information concerning similar behaviour in any other species.

DRAGONFLIES IN UNEXPECTED PLACES: POEMS; AND OUR OWN BACKYARD

Diane M. Calabrese, Ph.D.

PAPILLONS: diversified endeavors

22 Anderson Avenue, Columbia, MO 65203-2673, USA

The entomologist in the poet William Butler Yeats — Mention insects and Yeats to anyone familiar with the Irish poet, and the question is, "Aren't there a lot more birds?" Yes. But insects made their ways into 48 of the 510 published poems of Yeats.

Born in Ireland in 1865, Yeats spent most of his youth in London. When he returned to Ireland, however, his destinations — Sligo and Howth — put him by the sea and freshwater. (If in the sum of his poems, Yeats too much uses 'ebb and flow' and 'to and fro,' we can attribute it to those times.) By his own accounts, the young Yeats collected insects, admired Alfred Russel Wallace, and even thought about pursuing studies in natural history.

When I read about the entomological stirrings in Yeats, I began to consider his poems differently *and* to tally insects — manually. Ultimately, I cross-checked the concordance prepared by Stephan Maxwell Parrish and James Allan Painter. Parrish and Painter comment on the abundance of 'winged things' in Yeats, and note that one would have 'to look beyond the inventory' for images and associated words to figure out what Yeats was up to.

In Yeats' poems, representatives of eight orders of insects make unequivocal appearances, while *images* of other insects are evoked by the poet. Bees make the most frequent named entries: 39. There are 24 references to insect products: hives, honey, etc.

Some of the references — tortoiseshell butterflies (*Nymphalis*) — take us down to the contestable species level. At least one — peacock butterfly (*Inachis io*) — takes us to species. And other arthropods and their products — spiders, webs, and cobwebs — get 15 mentions.

Among the poems that create images reminiscent of insects, at least one includes a dragonfly. Consider this scene from a medieval fairy land in *The Island of Statues*:

....
*To prove his love a knight with lance in rest
Will circle round the world upon a quest,
Until afar appear the gleaming dragon-scales:
From morn the twain until the evening pales...."*

Encouraging (and measuring) diversity in an urban habitat —

How many kinds of insects can one-quarter acre of land support? Mix two pools (diameters: 5m and 2m), and herbaceous plants endemic to mid-Missouri, with 480 square feet of preestablished woody vegetation; and start a quantitative study. The sampling regimen begins February 1, 1993, and ends with the first hard frost of autumn.

Although there have been transient libellulids in this area, no nymphs were recorded in preliminary sampling in the pools in 1992. Pools were dug in 1991. "Interest" dragonflies showed in pools in 1992 suggests some nymphs will be resident in 1993.

Comments on either bit of "research in progress" are welcome. (A map of the one-quarter acre and description of the sampling plan are available on request.)

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Minter Westfall has acquired four copies of Needham & Westfall (1955), *A Manual of the Dragonflies of North America*, which he is able to sell at an author's discount price of \$59. If interested, contact him directly [IORI/DPI, 1911 SW 34 St., Gainesville, FL 32608, USA].
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For the odonatologist who thought s/he had everything — my wife Karol Lynn gave me a Christmas gift that you may want. It is a small battery-powered device called "MH500" [Environmental Concepts, 710 NW 57th Street, Ft. Lauderdale, FL 33309, USA] that purports to reproduce the tone and frequency of a dragonfly's wingbeat. It is supposed to be used as a mosquito repellent. I haven't had a chance to test that hypothesis yet!
.....

*Summer's last day—
one dragonfly still flitting
above fallen grasses*

tombo

REQUEST FOR POPULAR NAMES

Carlos Bonet Beteret

C. Linterna 28, Valencia (46001), SPAIN

I am a Spaniard odonatologist, member of S.I.O.; and I have made a Doctoral Thesis about Odonata of the province of Valencia (in eastern Spain). I have begun a collection of popular names of Odonata, in all different languages, which are actually spoken in the world. I am searching for all these names because I want to publish a book about them, with some commentaries on their origin and etymology. I hope that readers of *SELYSIA* will send me all information they know about names of Odonata in countries of Eurasia, Africa, North and South America, and Australia. I shall, of course, be very grateful for your help!

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I extend a special "Thank you!" to Vin Lawrence [Washington and Jefferson College, Washington, PA 15301-4801, USA] who has for more than 20 years prepared the Odonata section of *Current and Selected Bibliographies on Benthic Biology* published annually by the *North American Benthological Society*. Thanks also to S.I.O. member Ken Tennesen [E&D Building, Tennessee Valley Authority, Muscle Shoals, AL 35660, USA] who has agreed to assume that responsibility this year. I'm sure Ken would appreciate receiving relevant citations from cooperative 'bibliophiles'.
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RESEARCH PLANS

Sidney W. Dunkle

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I have discovered anew that teaching in a community college leaves precious little time indeed for research. Among my probably attainable goals are papers describing the female of *Heteragrion azulum* from Mexico, and the female of *Aphylla silvatica* from Peru. Before too long I hope to produce a reasonably complete list of the Odonata of Belize. My big project remains finishing the *Field Guide to North American Dragonflies (Anisoptera)*. I have also gathered quite a bit of data for a sequel *Field Guide to North American Damselflies*. This is not the time to tell of my more ridiculous goals, because some of you will ask me in the future, "Weren't you going to publish a study of ...?"!

*Net dangles empty—
dragonflies over the marsh
all out of reach*

tombo

ODONATOLOGICAL RESEARCH: HIGHLIGHTS AND PLANS

Rob Cannings

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As some of you know, I have been sidetracked from much of my usual odonatological activity during the last year and a half because I have returned to university to work on a doctorate in systematics of Asilidae (Diptera). My stint at the University of Guelph (Guelph is an hour's drive northwest of Toronto) is over in August and I'll be returning to my job at the Royal British Columbia Museum in Victoria, B.C. I'll have to complete my degree while on the job (I estimate it will take another three years); therefore, I doubt if I'll have much more time to work on dragonflies during that period than I've had recently. Nevertheless, I'll potter away and try to get some stuff published and will certainly do some collecting here and there.

During the last two years I've completed a few projects and several more have manuscripts in press. Rosser Garrison and I published a description of a new *Sympetrum* from Mexico and Arizona (reference 1); Dennis Paulson collected the original specimens in the highlands of Durango. *Sympetrum signiferum* is a beautiful species with a striking orange and brown patch at the base of the hindwing; its closest relative is *S. vicinum*. A look at the distribution and ecology of 33 dragonflies known in the Yukon Territory (2) was the culmination of a nine-year (off and on) study by me and my brothers, Syd and Dick. The Yukon is especially interesting zoogeographically because of its historical connections with Siberia (central and northern Yukon and Alaska were part of the ice-free Beringian Refugium that stretched across present-day Bering Strait).

The Biological Survey of Canada sponsored this and other studies of Yukon insects, and is publishing a book on the insect fauna of the Yukon. The book will have a strong zoogeographic flavour, and will emphasize the importance of the Beringian Refugium in the origin of a significant portion of the Nearctic fauna. The chapter on dragonflies in this book is written by Syd and me (3) and goes a little farther than the paper noted above in discussing zoogeographic patterns. The beauty of this treatment is that it is tied in with others dealing with many orders and families of insects.

A symposium on peatland arthropods of Canada was held at the Entomological Society of Canada annual meeting in Montreal (October 1991), and I presented a paper there on dragonflies found in peatlands of western Canada. The manuscript, along with others presented at the symposium, is now in press (4); it stresses zoogeography of species in these special habitats.

Long before I came to Ontario last year, I had searched for the larva of *Williamsonia fletcheri* during a number of trips east. I had been intrigued by stories of this rare and local species and was determined to find a breeding spot and the elusive larva. Well, I was beaten to the punch by several people, including Ron Lyons (who gave me his sole exuviae), Ralph Charlton (who dredged up a larva in Massachusetts), and Ray Hutchinson and Benoit Ménard (who found several in Quebec). At least I was able to watch a female ovipositing last year just north of Guelph! Anyway, Ralph Charlton and I have recently described the larva and compared it to that of *W. lintneri*, the only other species in the genus (5).

Two other projects deserve mention. Syd and I are planning to describe the larva of *Leucorrhinia patricia* from specimens collected in northern B.C. and the Yukon. It's very similar to the larva of *L. hudsonica*. We've had the basic work done for several years but have managed to procrastinate nicely on its publication. Sound familiar? My colleague Paul Brunelle in Halifax collected

some larvae of *Libellula (Ladona) exusta*, a species rather rare in Canada. These collections, the article by Mike May recently published in the DSA BULLETIN (1:51-56), and a conversation I had with Mark Scoville at the ESA meeting in Baltimore in December, convinced the three of us to make a comparative study of larvae of closely related *L. julia*, *L. exusta*, and *L. deplanata*.

It's clear from the above activities that I have mainly concentrated on taxonomic, distributional, and faunistic studies in Odonata. Larval descriptions have been a particular interest. Once I complete my Ph.D. dissertation and have a better understanding of phylogenetic systematic (cladistic) techniques, I'd like to use these methods to revise various dragonfly groups. Few people, apparently, have attempted to reconstruct phylogenies of dragonflies using cladistics, so there is plenty of work to do. Rosser Garrison has just finished (I think) a treatment of *Erpetogomphus*, Ken Tennessen is beginning one on *Macromia*, and Mike May has been working on the Gomphomacromiinae and the Nearctic *Enallagma* (the latter with Jack Zloty doing isozyme work). H. Lohmann recently published a cladogram of the generic relationships in the Corduligastridae (*Opusc. zool. flumin.* 96:1-18). In Germany, Gunter Bechly is working on phylogenetics of extant families of Odonata, a project that is long overdue. I for one, will be excited to see his results. Gunter has also called for formation of a Specialist Group of Phylogenetic Odonatology within S.I.O. This is an idea whose time has come, and I certainly will participate in such a group. I am particularly interested in *Sympetrum*, *Leucorrhinia*, and *Somatochlora* in this context, and in relationships among genera of various families.

If anyone would like reprints of published papers mentioned herein and listed below, please write me. Before August 1993 write to the Guelph address above; after August write me at the Royal British Columbia Museum, 675 Belleville St., Victoria, B.C. V8V 1X4, CANADA.

References:

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2. Cannings, S.G., R.A. Cannings and R.J. Cannings. 1991. Distribution of the dragonflies (Insecta: Odonata) of the Yukon Territory, Canada with notes on ecology and behaviour. *Royal British Columbia Museum Contributions to Natural Science* 13:1-26.
3. Cannings, S.G. and R.A. Cannings. 1993. The Odonata. In J.A. Downes and G.G.E. Scudder (eds.). The insect fauna of the Yukon. *Biological Survey of Canada*, Ottawa. In prep.
4. Cannings, R.A. and S.G. Cannings. 1993. The Odonata of northern cordilleran peatlands. In A.T. Finnermore and S.A. Marshall (eds.). The arthropods of Canadian peatlands. *Memoirs of the Entomological Society of Canada*. In press.
5. Charlton, R.E. and R.A. Cannings. 1993. The larva of *Williamsonia fletcheri* Williamson (Anisoptera: Corduliidae). *Odonatologica*. In press.

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Stamp-collectors may want to find an article titled "Dragonflies" by Malcolm M. Ferguson that appeared in *Global Stamp News* (September 1992, p. 46).
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