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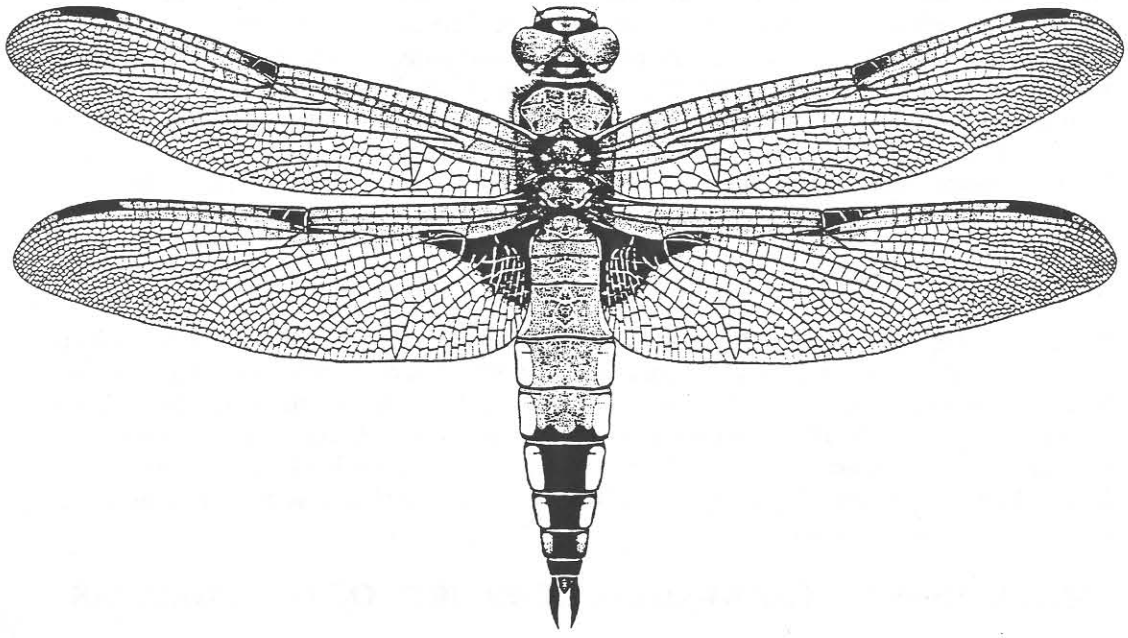

Libellula quadrimaculata: the Millenium Bug

PUBLISHED BY THE DRAGONFLY SOCIETY OF THE AMERICAS

THE DRAGONFLY SOCIETY OF THE AMERICAS

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JOURNALS PUBLISHED BY THE SOCIETY

ARGIA, the quarterly news journal of the **DSA**, is devoted to non-technical papers and news items relating to nearly every aspect of the study of Odonata and the people who are interested in them. The editor especially welcomes reports of studies in progress, news of forthcoming meetings, commentaries on species, habitat conservation, noteworthy occurrences, personal news items, accounts of meetings and collecting trips, and reviews of technical and non-technical publications. Articles for publication in **ARGIA** should preferably be submitted 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: ***Libellula quadrimaculata***, selected as the **Millenium Bug**. It was the first species od odonate described by Linnaeus (1758) and is the subject of an article on DNA phylogeny in this issue. Drawing by Paul-Michael Brunelle

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

IN THIS ISSUE

Writing the date on the cover of this issue conjures up a wide range of feelings. I wonder how long it will be before I can write "2000" on checks and letters? My method of assigning locality numbers for my notebook has been to start with the two final digits of the year, thus: "99x043". "00x001" will somehow seem faintly silly.

Right now "00x001" seems far in the distance. It is very cold now, after a mild Fall (with numerous reports of late-occurring ***Sympetrum vicinum***, etc.). Spring will come, and with it our next season. We should all start planning to attend the Vancouver Island DSA meeting in July. This trip will involve a lot of travel for most of our members, but they will be rewarded with a gorgeous venue with interesting Northwestern species, and a post-meeting field trip to southeastern British Columbia.

The recent passing of Juanda Bick brings a remarkable era to a close. Each of us will dwell on our personal memories of this remarkable woman.

Jerrell Daigle and his friends describe a most successful dragonfly trip to Arizona. Those who have not visited this beautiful and remarkable state should plan to do so – probably in the monsoon season in Arizona. Most of our recent new US records for odonate species have come from this state.

José Ramos fills us in with several more provincial records for odonates in the Dominican Republic. Steve Krotzer and his associates describe the recent record for ***Erythemis vesiculosa*** in Alabama. So-called "tropical" odonates are being captured more and more frequently in the United States.

Our main feature in this issue is Thomas Artiss' account of his DNA studies of the ***Libellula*** complex. Many of us have heard of Kambhampati and Charlton's results (1998) in this complex; Artiss provides a clear picture of the present state of our knowledge in this group of species. This article provides a perfect segue to my next account of the history of Odonata study in North America. Clarence Kennedy is famous for many things, but among these were his many attempts to unravel the phylogeny of various Odonata groups. I could not resist reproducing his diagram of proposed relationships among ***Libellula*** species, so that readers can compare for themselves the modern DNA results and his old-fashioned techniques.

Our most important short news item is the award to Carl Cook from the StaTe of Kentucky, recognizing his many years of vigorous efforts to protect wetland habitats in that state. Well deserved, Carl!

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VANCOUVER ISLAND DSA ANNUAL MEETING (WITH POSSIBLE OKANAGAN SIDE TRIP)

Gordon Hutchings , sea-trek@islandnet.com
250-995-1413

The first Annual DSA meeting of the Y2K will be held in British Columbia, the furthest western province of Canada. We will meet in Nanaimo which is a strategically located large town on Vancouver Island with adequate access via ferries and flights from the mainland, as well as an easy 1 1/2 hour drive north from Victoria, the provincial capital of tourist fame. International flights can arrive into Seattle, Vancouver as well as Victoria. Rental cars are available in these cities as well as in Nanaimo itself. We will check in Thursday evening, July 27 at 6:00 pm at the Malaspina College housing facilities and make sure most people have arrived and distribute maps. At that time, we will arrange to meet the following morning at 10:00 in a central parking lot on campus, to get out and collect. Some of the species to be found locally for the next 3 days will be ***Somatochlora semicircularis, S. walshi, S. albicincta, Ophiogomphus occidentis, Cordulegaster dorsalis, Aeshna canadensis, A. multicolor, A. palmata, A. sitchensis, A. tuberculifera, Leucorrhinia glacialis, L. hudsonica, L. intacta, L. proxima, Libellula forensis, L. julia, L. lydia, Sympetrum illotum, S. madidum, S. obtrusum,*** and ***Ischnura erratica.*** Chris Carson, Syd Cannings, Rob Cannings and myself will be available to lead one or more of the groups. Please bring appropriate clothing, liquids and packed lunch for all trips.

Friday, July 28: We will visit the Nanaimo Lakes district which is rich in wetland diversity ranging

from bogs, streams, a large river, lakes and ponds, all of which are within a half hour drive. We will have a meeting at 7:00 to 10:30 pm at the lecture theatre on campus after finding meals in Nanaimo which has a great variety of places ranging from sit-down restaurants to several of the well known fast-food chains.

Saturday, July 29: Driving north about 45 minutes to an hour, we visit Summit Lake, and Great Central lake area along Highway 4, passing through Cathedral Grove/MacMillan Park and the town of Port Alberni. Those who are fast, may want to collect at Sunday's scheduled sites on the way back. We will have our last meeting, same place and same time, at which we can conduct DSA business and include some talks and slide shows.

Sunday, July 30: Driving north along Highway 19, we will visit Hamilton Marsh near Coombs and Bowser Bog in the town of Bowser. Some may switch around the previous days sites for this day. For those continuing east, there are regular ferries departing from Nanaimo, going over to the B.C. mainland where we can drive to the Okanagan, approximately 4 to 5 hours away.

Dennis Paulson will be taking over for the Okanagan portion of the trip.

At the time of this writing, I am still nailing down a list of optional motels, hotels and campgrounds but for now, Malaspina College has offered co-sponsorship for this event giving us single bedrooms at $19.95 Canadian per person/per night with a shared bathroom per two rooms. The lecture theatre, which holds about 100 people, will be rented to us at no cost. At this time of the year, the campus has no food service but there are literally hundreds of choices in Nanaimo itself. For anyone arriving early or staying longer and wanting any ideas of further collecting sites, tourist attractions or any other activities, please don't hesitate to contact me so that I may help out in any way. More details will be worked out for the next **ARGIA** issue. I look forward to seeing everyone again and hope the weather will come through for us all.

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CARL COOK RECEIVES KENTUCKY AWARD

From an e-mail from **Ellis Laudermilk**

Carl Cook has been selected as the fourth recipient of the annual Biodiversity Protection Award given by the Kentucky State Nature Preserves Commission. For those of you unfamiliar with our agency (most of you), its mission is to protect Kentucky's natural heritage by: (1) identifying, acquiring, and managing natural areas that represent the best known occurrences of rare native species, natural communities, and significant natural features in a statewide nature preserves system; (2) work with others to protect biological diversity; and (3) educate Kentuckians as to the value and purpose of nature preserves and biodiversity.

The Biodiversity Protection Award, given to a Kentuckian who has contributed significantly to the protection of Kentucky's biological diversity, was presented to Carl during the Commission's quarterly meeting in Frankfort, KY, on December 9, 1999. As most of you know, Carl has dedicated his entire life to increasing our knowledge about the Odonata, and is very deserving of this award. The commissioners and staff of the Kentucky State Nature Preserves Commission extend their sincere appreciation to Carl for his lifelong contribution to the identification and protection of a part of Kentucky's (and the world's) biological diversity.

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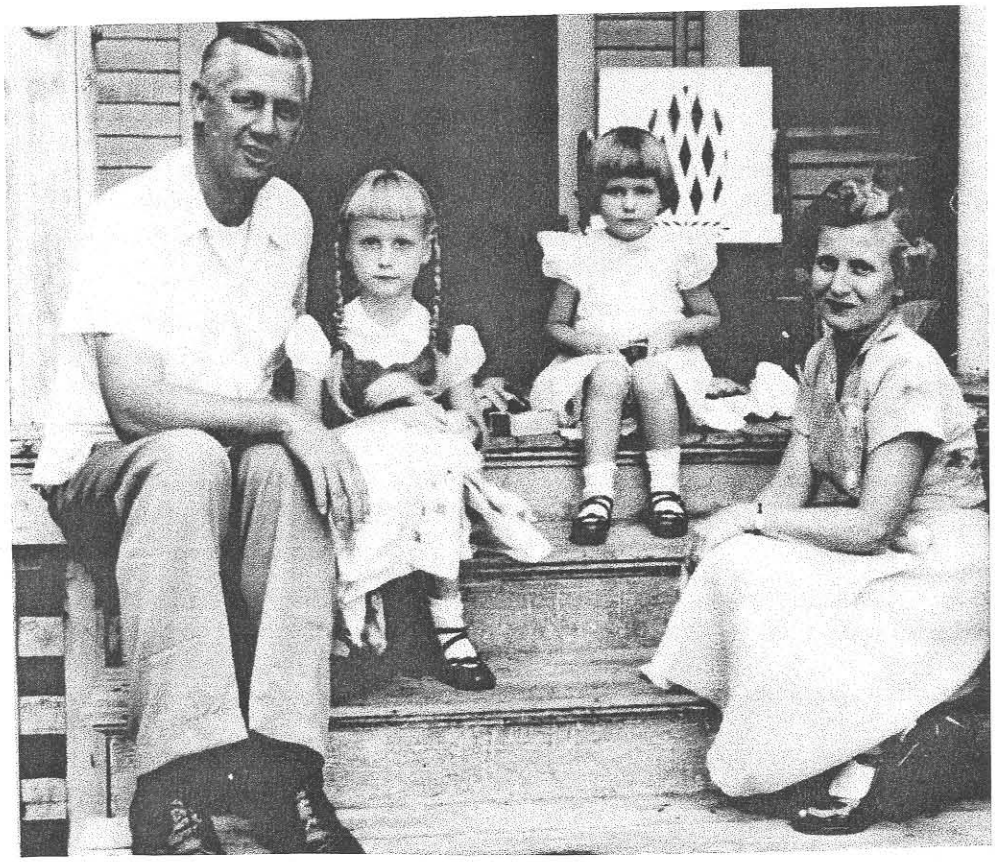
JUANDA BICK: 1919-1999

We were all saddened by the news that Juanda Bick, a very good friend of many of our members, passed away on 30 October following a long bout of illness.

Juanda (the daughter of John and Rhea Bonck) was born in New Orleans in 1919. She received a Masters degree in biology at Tulane in 1942, and later taught biology at several colleges, the longest being St. Mary's College, Notre Dame, Indiana. In 1945 she married George Bick, had two daughters, Patricia and Susan, and collaborated with her husband for many years on their studies of the behavior of Odonata (mainly damselflies). The Bicks traveled widely to Indiana, to the Dakotas, to Oklahoma, to Montana, and to many other places, mainly in the summers, and often with their good friend Lothar Hornuff. They produced together a long list of publications – constituting the main body of U.S. Odonata behavioral studies.

Anyone who might have thought that Juanda's name on these papers was perhaps an honorific, would have been completely disabused of this notion when she discussed this work. Many of us remember the spirited presentation she made at the



George and Juanda Bick and their daughters Susan and Patty, Put-in-Bay, Ohio, 1952

Juanda showing a dragonfly to granddaughter Molly, Gainesville, Florida, June 1990

Gainesville meeting in 1997, when she and George dug out some of their early cinematic efforts and showed some wonderful vintage footage of damselfly territorial and mating behavior. Jerrell Daigle recently told me of having dinner with Juanda and George, and of continually being corrected in taxonomic details by Juanda, when they were discussing some of the damselfly genera that she and George monographed in recent years.

Most of us met Juanda and George for the first time at Monty's wonderful 1963 symposium at Purdue, where she and George discussed their early work on ***Argia apicalis*** and ***Enallagma civile***. Juanda and George attended most of the subsequent meetings – at Binghamton in 1982, Florence in 1984, etc. They also attended many of the SIO and other international meetings which were so important in bringing Odonata workers together.

Although we will remember and admire her discussions on odonate behavior, what we will really treasure and carry with us is the memory of her spirit and marvelous good humor. We all send George and their daughters our deepest condolences.

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ARIZONA ADVENTURES!

Jerrell J. Daigle, Bob Behrstock, Steve Krotzer, and Bill Mauffray

A summer of Florida rain, rain, and more rain had me yearning to go someplace really dry! But where could I go? As I was driving home from work, the Mark Lindsay song, "Arizona" starting blaring! At once, the lights, all of them, flashed on in my head!

After several quick calls to Bob Behrstock (Texas), Steve Krotzer (Alabama), and Bill Mauffray (Florida), the Rat Patrol II team was organized and ready to roll! On August 28, we met in Sierra Vista, Arizona where we got our motel rooms and did our shopping for supplies.

The next day, we went to the San Pedro River in the vicinity of the Riparian Natural Conservation Area at Hereford. To our utter surprise, the normally placid trickling river was deep, muddy, and flooding because of recent rains. Jeepers! Was Nick Donnelly here last week?

Despite slipping and sliding in the mud, we did get a few ***Erpetogomphus compositus***, ***E. natrix***, and ***Progomphus borealis***. We did not see any ***Erpetogomphus crotalinus***. ***Enallagma praevarum*** was the common, dominant damselfly species but we did get a few ***Argia pallens***, ***A. translata***, and some weird-looking blue and purple-tipped ***A. fumipennis***.

This area is known for the yellow Couch's spadefoot toad and its diverse wildlife. I saw some tortoises and a butterfly new to me called the Bordered Patch (*Chlosyne lacinia*) which I would see again in the Huachuca Mountains. Bob photographed the Western Pygmy-Blue (*Brephidium exile*), at 15-19 mm, probably the country's smallest butterfly, and got some nice portraits of a cooperative ***E. natrix***. Birds were plentiful, including the Black-chinned Hummingbird, Summer Tanager, Black-headed Grosbeak, Lazuli Bunting, Lark Sparrow and Vermilion Flycatcher.

The next couple of days, we explored the eastern perennial streams of the Huachuca Mountains just west of Sierra Vista. There wasn't much at the upper Garden Canyon picnic area but we did get ***Hesperagrion heterodoxum***, ***Hetaerina vulnerata***, the big blue ***Argia lacrimans***, ***A. plana***, ***A. tonto***, and a couple of old, tattered ***Oplonaeschna armata***. I think this is the only spot (discovered by Jeff Cole) in the United States for ***Argia lacrimans***, a Mexican adventive. Bob and Steve took many photos of mated pairs of them ovipositing in stems of a large emergent *Scirpus* species. Butterflies were abundant, even flying during the light rain showers.

In nearby Miller Canyon, we took ***Cordulegaster diadema***, ***Aeshna dugesi***, ***A. multicolor***, ***Oplonaeschna armata***, and ***Argia tonto*** while Black-chinned hummingbirds buzzed by. We saw the rare Red-Bordered Satyr (*Gyrocheilus patrobas*) butterfly flitting in the shaded grasses along the creek. Hummingbirds were plentiful, including the Blue-throated, Magnificent, and Violet-crowned. We missed a photo-op with Boyd Mattson of the National Geographic (he and his camera crew didn't show up) and the Arizona Fish and Wildlife Service. Several groups were involved in establishing colonies of the endangered Ramsey Canyon Leopard Frog (*Rana subaquavocalis*) in other locations such as Beatty's B & B pond here in Miller Canyon. Oh, well! I guess Hollywood isn't ready for the Rat Patrol II!

The next area we visited was Douglas, Arizona. We looked for ***Argia alberta*** at Mulberry Draw and the San Bernardino NWR, two places where DSA

members collected it during the 1995 National DSA meeting. No such luck this time! We didn't even see ***Argia tezpi*** at Roy Beckemeyer's Cottonwood Draw site which was practically dried up and pretty well trampled by cattle and javelinas, but ***Argia extranea*** was common here.

Continuing eastward on the Geronimo Trail, we ascended the ocotillo covered hills and crossed the state line into Hidalgo County, New Mexico. Around the Black Dam area, we got new county records for ***Argia lugens***, ***A. moesta***, and ***Libellula pulchella***. ***Sympetrum corruptum*** and ***Enallagma praevarum*** were common in the washed-out streams and a few ***Archilestes grandis*** gave Bob's photographic patience a work out. I saw several colorful endemic dytiscids called the Sunburst Diving Beetle (*Thermonectes marmoratus*) swimming away from hungry ***Pantala*** larvae! On the way back to town, we stopped at a nearby cattle pond off Guadalupe Canyon Road. There, we got new Cochise County records for ***Pantala hymenaea*** and the spooky ***Tramea onusta***. ***Lestes alacer*** was very common among the dried shrubs. At one little puddle, I saw several diminutive red-spotted toads (*Bufo punctatus*), a species I had never seen before.

The next day, we went to the Slaughter Ranch and the San Bernardino NWR. Bob and Steve looked for ***Argia*** "***carlcooki***?" and ***Enallagma semicirculare*** which Bob had photographed here last year. Unfortunately, as Bob put it, "We didn't even see a vapor trail of either species!" A conversation with Nina King, the Refuge Manager, confirmed that odonate and other invertebrate populations were down this summer. Meanwhile, Bill and I had better luck at the famous Slaughter Ranch Pond. Swarming dragonflies and damselflies were teeming over the water! Such highlight species as ***Aeshna dugesi***, ***Coryphaeschna luteipennis florida***, and ***Perithemis domitia*** were flying among the hordes of ***Aeshna multicolor***, ***Libellula saturata***, ***Pachydiplax longipennis***, and ***Enallagma praevarum***! I got about 25 species altogether but I would have given them all up for one specimen of a giant ***Aphylla***-like gomphid that cruised along the west bank of the pond that morning. I saw it 3 different times but it never landed. The club was red and yellow striped. I don't know what it could be. Does anyone have any ideas? I remember getting a glimpse of one in 1995 but I wasn't sure. Since nobody caught one, a return trip is in order for next year!

The next day, at Bob's urging, we visited the famous Muleshoe Ranch located west of Willcox. This beautiful place is mostly managed by the Nature Conservancy. Having contacted the ranch well in advance, we were able to collect at Hot Springs Canyon, one of six perennial flowing streams there in the Galiuro Mountains.

This place is a desert Paradise with a high diversity of odonates, butterflies, birds, reptiles and other native wildlife! We collected close to 30 species of odonates, including such highlights as: ***Apanisagrion lais***, ***Argia oenea***, ***A. pima***, ***A. tarascana***, ***Palaemnema domina***, and ***Erpetogomphus natrix***.

The slender, green-eyed ***Apanisagrion lais*** was in shady, seepage trickles and they behaved much like the tropical ***Aeolagrion*** or ***Acanthagrion***. The red-eyed, metallic ***Argia oenea*** and ***Erpetogomphus natrix*** were very common at gravel bars and riffles. ***Argia pima***, ***A. tarascana***, and ***Palaemnema domina*** inhabited the tangled, streamside root masses of the giant cottonwoods. It was not uncommon to see 3 or 4 ***A. tarascana*** and ***A. pima*** perching on the sunny roots. After a brief noontime shower, a few ***P. domina*** appeared in the openings at the bases of the trees. While ***Argia oenea*** and ***A. tarascana*** were common, ***A. pima*** and ***P. domina*** were not. Hopefully, sizeable populations will be found on the other five nearby streams.

Wildlife was in abundance there at Muleshoe. A herd of javelina greeted us as we stepped down in the first dry streambed. I don't know who was more scared, us or them! We saw several pronghorn antelope on the beautiful desert prairie outside the ranch entrance; truly magnificent animals and the highlight of the trip for me! Rattlesnakes are common here and I did not know that there are at least 4 species present! Butterflies swarmed at the flowering shrubs and birds were common and included: Roadrunner, Zone-tailed (a good one to see), Red-tailed, and Gray hawks (another good one), Black Phoebe, Wilson's and Nashville warblers, both Western and Summer tanagers, and Lesser Goldfinch.

The last couple of days were spent at Tucson. On our first day we ascended the beautiful Catalina Highway into the Santa Catalina Mountains, entering through a dramatic and alien forest of spectacular giant and ancient Saguaro cactus. At Molino Prison Campground, we had to mosey through a Hell's Angels biker campout. Harley-Davidson and Kawasaki motorcycles plus their

bearded, imposing owners were everywhere! Biker women were particularly interested in what we were doing with our nets and cameras!

There was a lot more water present than last year, and ***Archilestes grandis***, ***Argia munda***, and ***A. sabino*** were common. Bob and Steve got excellent photos of ***A. munda***, a desert species rarely seen in the United States.

At noon, we went drove further up the Santa Catalina Mountains to Summerhaven at about 9,000 feet. At Marshall Gulch Creek, we got several giant, pale ***Oplonaeschna armata***. All the specimens were young but in good shape and this may be due to the cold water delaying their summertime emergence.

After the next morning's breakfast, Bob left us to visit friends in Silver City as he drove back to Houston. The rest of us worked Lower Sabino Canyon because Upper Sabino Canyon and several of the tram bridges were wiped out by torrential July storm flooding! The storm filled all the deep ***Argia sabino*** pools with sand and knocked down all the riparian trees and vegetation! It looked liked a defoliated war zone! Steve and I saw one, maybe two, ***A. sabino*** but my dependable ***A. pima*** site was totally gone! It will be several years before Sabino Canyon is back to normal. Recolonization by ***A. sabino*** is possible since we'd seen several adults the previous day upstream at Soldier Canyon near the Molino Prison Campground. However, I think ***A. pima*** may be extirpated from Sabino Canyon.

Lower Sabino Canyon was a different story! Swarming dragonflies were everywhere! All that flooding created several flowing streams, deep pools, and desert marshes. ***Erythrodiplax connata*** [Dennis Paulson is currently preparing an article proposing a return to the Calvert name ***basifusca*** for this species. Ed.], ***Anax walsinghami***, ***Argia pallens***, and various libellulids were very common. We even went back the next day to catch the elusive ***Dythemis nigrescens*** (?) that was giving Steve and me fits before getting away!

All good things must come to an end. The next day, the Rat Patrol parted company and headed home. It was a blast and we are ready to do it again! I had a couple of days left, so I headed north to Pine Flat Campground in Oak Creek Canyon near Flagstaff, Arizona.

Although most of the deep pools were filled with gravel and sand from past storms, I did find two being visited by the aptly and beautifully named ***Aeshna persephone***, my favorite aeshnid! I was able to observe females ovipositing in mosses on boulders in the middle of the creek. The wary males began patrolling in the afternoon around 4:00pm but I did manage, after many wild swings, to successfully net a few of these magnificent dragons! Aside from a few ***Archilestes grandis*** and ***Argia tonto***, there were no other odonates on the creek.

All in all, it was a great trip! Everyone had a blast and we are looking forward to exploring new desert country next year! Adios, muchachos!

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NEW RECORDS OF ODONATA FOR SOME PROVINCES OF THE DOMINICAN REPUBLIC

José M. Ramos Hernandez, Apartado Postal 2204, Sancti-Spíritus, CUBA, CP 60100
[Translated by Nick Donnelly]

Between February and March 1999, Dr. Luis F. de Armas of the Instituto de Ecología y Sistemática of La Habana made a trip to the Dominican Republic. In addition to collecting scorpions, he also spent part of his time collecting butterflies, spiders, insects, etc. In this last group the odonates were well represented, with 77 specimens of 15 species, whose list we present, including new provincial records for the Dominican Republic.

RESULTS – Zygoptera, Coenagrionidae

Enallagma coecum (Hagen): New record for Monte Plata Province; also collected in the Distrito Nacional.

Telebasis vulnerata Hagen: New records for Monte Plata and Monseñor Nouel Provinces.

Megapodagrionidae

Hypolestes trinitatis Gundlach: Collected in the Distrito Nacional.

Anisoptera, Aeshnidae

Triacanthagyna trifida (Rambur): Collected in La Vega Province.

Libellulidae

Dythemis rufinervis (Burmeister): New record for Monte Plata Province; also collected in the Distrito Nacional, and Santiago.

Erythrodiplax umbrata (Linn.): New record for Puerto Plata Province; also collected in Monseñor Nouel, Pedernales and Distrito Nacional.

Erythemis vesiculosa (Fabr.): New record for Monte Plata Province.

Macrothemis celeno (Selys): New record for Monte Plata and Puerto Plata Provinces; also collected in Monseñor Nouel and Distrito Nacional.

Micrathyria aequalis (Hagen): New records from Pedernales and Monte Plata Provinces.

Micrathyria dissocians Calvert: New record for Monte Plata Province.

Micrathyria hagenii Kirby: New record for Monte Plata Province.

Orthemis [***ferruginea*** (Fabr.)]: Collected in Puerto Plata Province. [Note: Antillean Orthemis assigned to this species represent an undescribed species currently being studied. Ed.]

Pantala flavescens (Fabr.): Collected in Puerto Plata Province.

Perithemis domitia (Drury): Collected in the Distrito Nacional.

Scapanea frontalis (Burmeister): Collected in La Vega Province and the Distrito Nacional.

Acknowledgments: I am sincerely grateful to Dr. Luis F. de Armas of the Instituto de Ecología y Sistemática for having furnished me with the odonate material collected by himself in the Dominican Republic for this study; tp Dr. Oliver S. Flint, Jr. of the National Museum of Natural History in Washington for having sent to Dr. de Armas part of the bibliography used in this study; to Dr. Thomas Donnelly, Dragonfly Society of the Americas, New York, and to Bill Mauffray, of the International Odonata Research Institute, Gainesville, Florida, for having sent part of the literature utilized here.

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ERYTHEMIS VESICULOSA (FABRICIUS), GREAT PONDHAWK, NEW FOR ALABAMA

R. Stephen Krotzer, 6010 Woodvale Drive, Helena, AL 35080, smjkrotzer@aol.com

During 1999, I was contracted by the Alabama Department of Conservation and Natural Resources Natural Heritage Section to conduct an odonate survey of the Grand Bay Savanna Nature Preserve, a part of the state's Forever Wild Program's land holdings in Mobile County, Alabama. On 14 August between 1000 and 1230 hours, while conducting this survey, I collected one mature male ***Erythemis vesiculosa*** and sighted at least one other male. These individuals were located along a transmission line right-of-way in the immediate vicinity of a number of small depressional pools and wet ditches, which appeared to be permanent or semi-permanent in nature. Although the site was visited at least monthly between April and September, no additional individuals of the Great Pondhawk were encountered.

Erythemis vesiculosa is a fairly common tropical species that has been reported from a number of states. Dunkle (1989) lists it as common in south Florida, occurring along the Gulf Coast north to Fort Myers; he also includes Oklahoma and Arizona as historical collection localities for the species. The Great Pondhawk has also been collected in Kansas, New Mexico, and Texas (Bick & Mauffray, 1997-1999). This new record for ***E. vesiculosa***, then, appears to be the first documented occurrence of the species in the area along the Gulf Coast between the Texas/Louisiana border and Fort Myers, Florida. Whether these individuals are simply vagrants, or whether the species is slowly colonizing suitable habitat along the Gulf Coast, is anybody's guess at this point.

The habitat and conditions where the Great Pondhawk specimen was found are not what I normally associate with "primo" dragonfly collecting – low habitat diversity with mostly shallow, hot water; daytime temperatures over 100 degrees with nearly 100% humidity; odonate abundance and diversity low; deerfly and mosquito abundance extraordinarily high!! If I hadn't been working under contract, I would not been out there collecting at high noon in August, and I almost certainly would not have gotten this noteworthy record. For that reason, I'd like to extend a special thanks to Greg Lein, Natural Heritage Section Chief; the funding he provided helped ease the sting of all those insect bites (not to mention the speeding ticket)!!

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MOLECULAR PHYLOGENETIC ANALYSES OF THE ODONATE GENERA *LIBELLULA, LADONA* AND *PLATHEMIS*

THOMAS ARTISS

The odonate genus ***Libellula*** Linnæus 1758, has been the focus of considerable taxonomic controversy. The central issue of debate revolves around whether ***Plathemis*** Hagen, 1861 and ***Ladona*** Needham, 1897 should be accorded generic status, be considered subgenera within ***Libellula*** s.l., or be synonymized with ***Libellula*** s.s. These groups were assigned full generic rank by Needham (1897), and this interpretation has been widely adopted (Needham and Westfall 1955; Carle 1978; May 1992, Schmidt 1987; Westfall and Tennennsen 1996). Several other authors, however, have suggested that these two groups be considered subgenera within ***Libellula*** s.l. (Kennedy 1922a,b; Borror 1945; Bennefield 1965; Walker and Corbet 1975; Allen et al. 1985; Tsuda 1986). Still others have concluded that ***Ladona*** and ***Plathemis*** are not subgenera, and have synonymized them with ***Libellula*** s.l. (Ris 1910; Garman 1927; Byers 1930). The situation is further complicated by the uncertain assignment of two European ***Libellula*** species, ***L. depressa*** and ***L. fulva***, that have been assigned to ***Plathemis*** and ***Ladona*** respectively by some authors (Needham 1897; Needham and Westfall 1955; Schmidt 1987), included within ***Libellula*** s.s. by others (Tsuda 1986), or even given their own subgeneric ranks (Kennedy 1922 a,b).

One of the principle objectives of my dissertation research is to examine taxonomic questions regarding relationships among taxa within the genus ***Libellula***, and to determine whether members of this genus formed a natural, or monophyletic clade (monophyletic clades are all organisms that share a unique, common ancestry). Only one other study has examined these taxa using robust phylogenetic techniques (Kambhampati and Charlton 1999). This study concluded that ***Plathemis*** and ***Ladona*** were distinct, monophyletic lineages that were basal within ***Libellula*** s.l.. However, this study was unable to find strong resolution within ***Libellula*** s.s., and did not survey several species in the genus, including L. fulva and depressa.

DNA from 26 species of ***Libellula*** and 4 outgroup taxa was isolated, amplified and used to collect sequence data from two mitochondrial genes (cytochrome oxidase I and 16S rRNA). Mitochondrial DNA has the distinct advantage that it is inherited only from the maternal parent and without recombination in most organisms, unlike nuclear genes that experience recombination each generation. Thus mitochodria provide a direct chain of ancestry across generations. Moreover, because the selective pressures that act on nucleotides seem to be of a different nature than those which act on morphological characters, DNA sequences provide a very valuable additional data set which can aid in resolving situations where morphological characters sets are simply unsuitable due to the nature of selection acting on them. These particular mitochondrial genes were selected because they have been widely used for invertebrate molecular systematics, and the rate of evolution of these genes is suitable for species-level phylogenetic studies.

These data were analyzed using three principle methods of phylogenetic analysis; minimum evolution, parsimony and maximum likelihood. Each of these methods are philosophically different approaches to phylogenetic reconstruction, however it is generally agreed that confidence in a tree topology is enhanced if each method independently produces trees that are generally similar. Briefly,

minimum evolution analyses evaluate numbers of changes in sequences between taxa, and fit them to a tree incorporating a model of evolution, maximum parsimony methods create trees that requires the smallest number of changes to explain observed differences in taxa, and maximum likelihood analyses produce the most probable tree under a specific model of evolution. Details of specific analyses and protocols will be available in a forthcoming manuscript.

The results of a combined data set analysis are presented in Figure 1. There are three important conclusions from this study.

(1) The genus ***Orthemis*** is traditionally distinguished from ***Libellula*** on wing venation characters. However, my results indicate that the monophyly of ***Libellula*** was not supported, and ***Orthemis ferruginea*** was found to be part of ***Libellula*** s.l. I employed statistical tests to determine whether this tree was significantly different from trees where ***Orthemis*** was constrained to be an outgroup to ***Libellula*** s.l.. There were no significant differences in these trees. Given the indecisiveness of the molecular data on this point, I suggest that, because it is conventionally favored by morphological data, we should continue to accept the current hypothesis of ***Libellula*** monophyly and a corresponding outgroup position for ***O. ferruginea***. However, I caution that traditional classification of these taxa may be based on potentially homoplastic (similarities not due to common ancestry) characters, and suggest that further research is needed to assess the natural delineations of taxa in these groups.

(2) The results of my study indicate that ***Plathemis*** and ***Ladona*** are distinct monophyletic lineages within ***Libellula*** s.l. My results indicate that ***Plathemis*** forms the basal sister group to the remainder of ***Libellula*** s.l., and that ***Ladona*** is the next most basal clade within the ***Libellula*** lineage. All three analytical approaches supported the monophyly of ***Plathemis*** and ***Ladona,*** and there was strong quantitative support (bootstrap values >90%) for these groups. Bootstrap values indicate the percent support for clades based on the randomization tests (a bootstrap value of 100 indicates that clade was supported in 100% of randomization tests). These results therefore support the original classification proposed by Needham (1897) in regard to the delineation of natural groups, with the exception that ***Libellula*** depressa and ***Libellula*** fulva would both need to be included within ***Ladona*** s.l. were it accorded generic or subgeneric status. Based on my results, I propose that the separate generic or subgeneric ranks be adopted for ***Plathemis*** and ***Ladona*** within Libellulidae; a conclusion that was supported by a previous molecular phylogenetic study on these groups (Kambhampati and Charlton 1999).

(3) Phylogenetic relationships within ***Libellula*** s.s. generally supported the subgeneric classifications of Kennedy (1922 a,b). While Kennedy proposed that ***L. angelina, semifasciata*** and ***quadrimaculata*** were separate sub-genera, I found strong support for these species forming a monophyletic clade. I also found support for the subgenera ***Neotetrum*** (***forensis, pulchella, nodistica***), ***Belonia*** (***foliata, saturata, croceipennis***), and ***Holotania*** (***axilena, composita, jesseana, flavida, auripennis, luctuosa, cyanea, comanche, incesta, vibrans***). The only exception to Kennedy's classification was L. ***composita*** which he assigned to ***Holotania***, but I found to be part of, or sister taxon to ***Belonia***.

The research from this study will assist in our understanding of the diverse morphology, ecology, behavior and distribution of ***Libellula*** species, and future studies on the evolution of traits in this genus should be conducted with reference to phylogenetic framework. This study represents a critical step in determining the historical relationships among members of the genus, and establishes a framework for subsequent comparative studies of behavior and evolution within the group.

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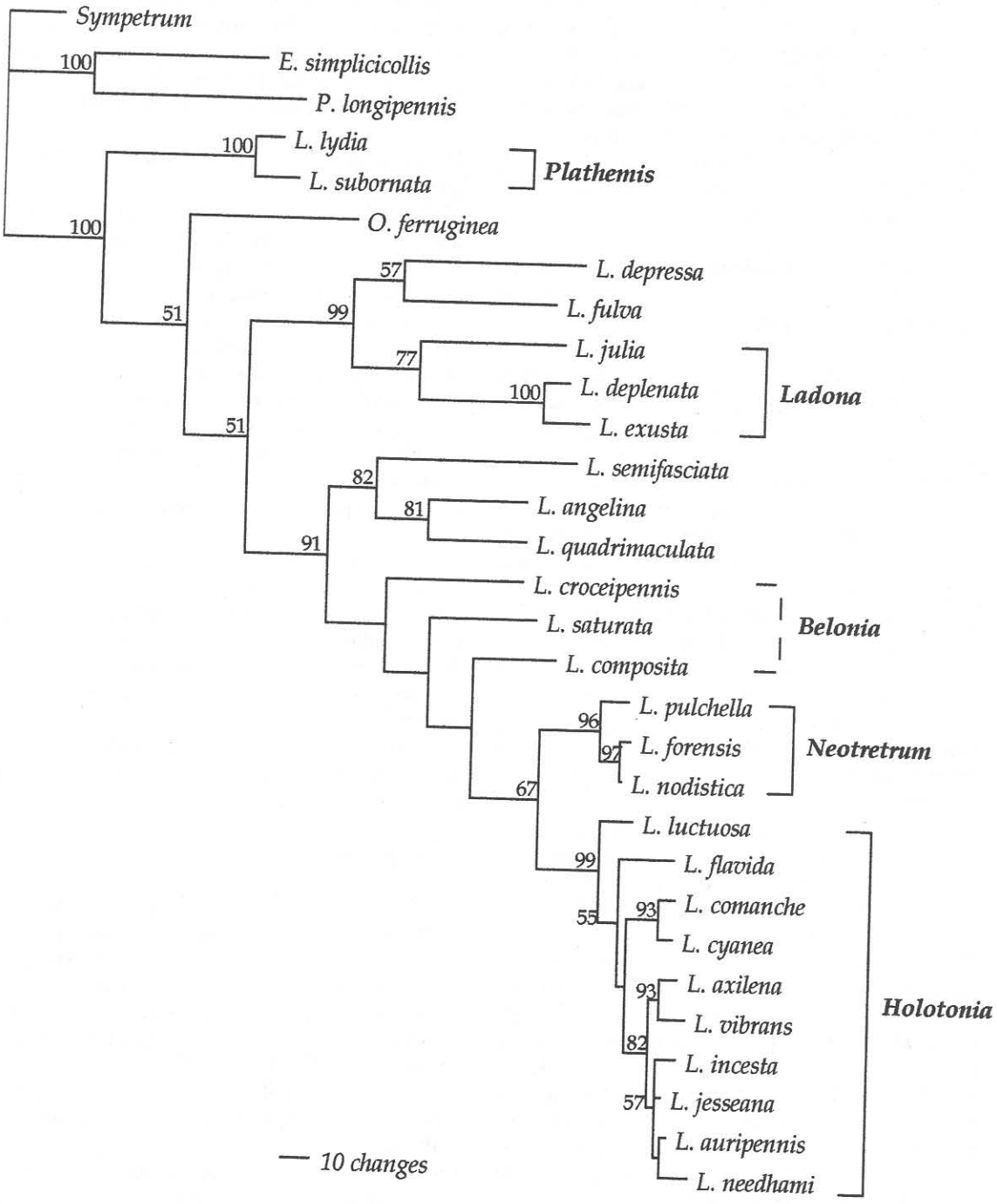
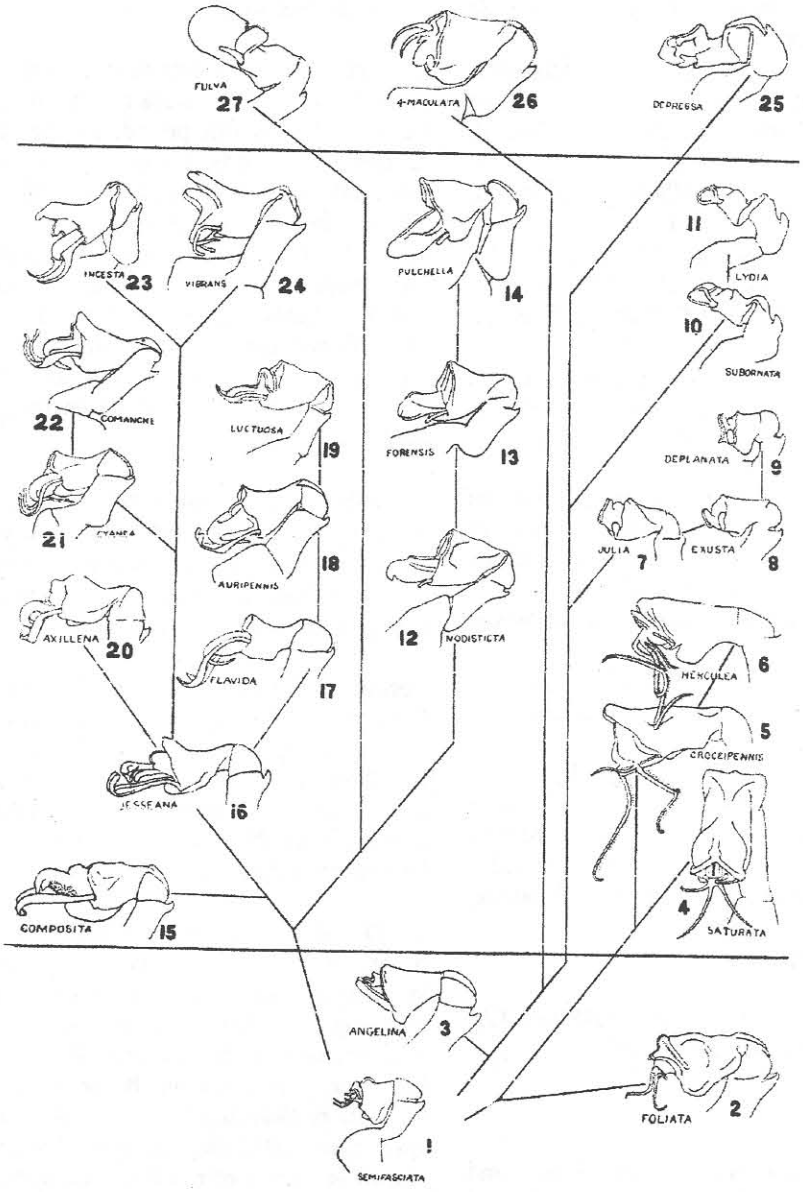


Figure 1. Strict consensus tree of two trees inferred from a maximum likelihood analysis based on COI and16S data. Bootstrap values (based on 100 replicates) >50% shown above branches. Putative sub-genera assigned by Kennedy (1922 a,b) indicated to the right. Dashed line around ***Belonia*** indicates that ***Libellula composita*** was not assigned to this sub-genus by Kennedy.



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HISTORY OF AMERICAN ODONATA: CLARENCE KENNEDY (1879-1952)

Nick Donnelly

Clarence H. Kennedy was a remarkable and productive student of the Odonata from the turn of the century to the late 40's. He was born in Rockport, Indiana, in 1879. Little has been recorded of his boyhood years, but he met E.B. Williamson around the turn of the century and the older Williamson (by two years) undoubtedly had a great influence on Kennedy. Kennedy graduated from Indiana State University in 1903, having already written two papers: one on the use of the mesostigmal lamina for identifying females of the difficult damselfly genus ***Argia***, and the second on the Odonata of Winona Lake, Indiana (where he evidently taught at a bible camp). In these papers he makes it obvious that he was heavily influenced by Williamson, who had visited him at Winona Lake. He worked briefly during this period for the U.S. Fisheries Commission, where he illustrated several papers on eel taxonomy.

After receiving a masters degree from Indiana State in 1903, his activities were not recorded. Evidently he fell ill during that period, and during his illness he met a Dr. Davis, a combination opthamalogist, osteopath, and homeopath. In 1908, he went to Texas, where Davis was located, and then followed him to Oregon. Kennedy was seriously handicapped by illness during his earlier years, which probably explained his somewhat disjointed early life and also the completion of his doctorate at the age of forty. It seems that illness brought him to the venue of his greatest odonatological success: the Pacific Northwest.

Kennedy was an all-round naturalist, and his bibliography contains numerous early papers on birds ("Some robin's and mourning dove's nests in the lower Yakima valley. . .", "Notes on the fruit-eating habits of the sage thrasher. . .")

Between 1909 and 1914 he collected dragonflies in Oregon and Washington. During part of this period he was employed by the U.S. Bureau of Fisheries. In a three-year period (1911 to 1914) he burst forth with a trilogy of papers on the western Odonata fauna that established him as one of the foremost Odonatists in America.

On 11 and 12 July 1911, while engaged in a Mussel survey at Bumping Lake in Yakima County, Washington, he collected four species of Odonata, including a long series of the Emerald, ***Somatochlora semicircularis***. Because this species had been poorly known, he wrote a paper ("The Odonata of Bumping Lake", 1913) redescribing the species, and producing the first of what came to be known as some of the finest Odonata illustrations ever produced. The paper contains no less that 57 figures illustrating the variation he observed in his collection. The remainder of the Washington and Oregon work was published as "Notes on the life history and ecology of the dragonflies of Washington and Oregon (1915)". In this profusely illuatrated paper (200 figures) he described ***Argia emma*** (named for his mother) and figured and

discussed adults and larvae of many hitherto little known northwestern species.

During the summer of 1914 he made several trips through central California and Nevada. Kennedy paid for his trips with a railroad pass provided by the director of the California Academy of Sciences, money earned illustrating birds, insects, and fish, and a subvention from his old friend Williamson, "who later received his pay in a series of the specimens collected." The trip, as we can partially reconstruct it from the serial account, must have been one of the all-time Odonata adventures in the United States. Fortunately the editor of the Proceedings of the National Museum did not red-pencil his frequent comments about the habits of the insects. I quoted his remarks about Pyramid Lake, Nevada, in a previous ARGIA. Another comment concerns ***Aeshna multicolor***, observed in Sacramento: "This species was observed catching insects on the market street of the city at twilight. They flew among the wagons and buggies entirely indifferent to the numerous passers-by. This habit of familiarity with man's haunts is very noticeable in ***multicolor***. It is the most domestic of all the western Odonata."

The paper that resulted from this trip ("Notes on the life history and ecology of the dragonflies of central California and Nevada:, 1917) is still regarded as a landmark paper in North American Odonata. In this magnificently illustrated paper (more than 400 of his now famous figures), he named three new species and erected several new genera. His descriptions and illustrations for several little-known species are still consulted by workers in the far West. He also described many larvae, especially of gomphines.

His manuscript for the earlier Washington and Oregon work was with him when he went to Stanford University in the Fall of 1915 to apply for graduate study. Professor Vernon Kellogg, the Chair of the department, was so impressed by his manuscript that he awarded a masters degree on the spot to Kennedy and advised to keep on studying Odonata. He described several western ***Argia*** species in later papers and wrote a fine summary (well illustrated, as always) of the Odonata of Kansas (1917).

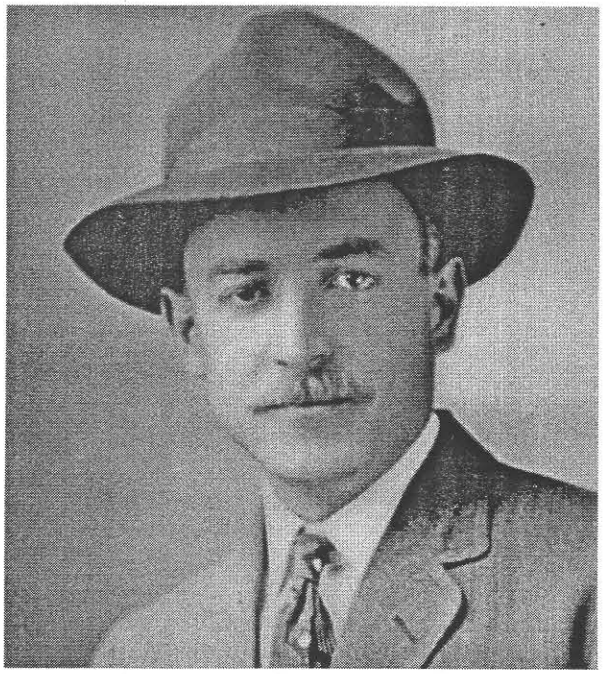
He later went to Cornell, where he obtained his doctorate in 1919 with a dissertation on the phylogeny of the Zygoptera. In this paper he made extensive use of the penile organ to help deduce phylogentic relationships among the damselflies. Phylogenetic deduction consumed a large part of his later life, and he later used studies of the penes to deduce relationships (and putative phylogenies) of the Neotropical damselfly genus ***Acanthagrion***, and of the North American genus ***Libellula***. Because this issue of **ARGIA** contains a more modern study of the same group using DNA (Artiss, this issue), I cannot resist including a reproduction of Kennedy's phylogenetic tree to compare with Artiss' results.

Kennedy was intensely interested in fossil Odonata and used paleontological examples to support his phylogenetic ideas. He firmly believed that the beginnings of phylogenetic stems were the most generalized forms, and also that simpler forms were more primitive than evolved. He was not alone in this line of belief, but the school of phylogeny that he represented has largely been supplanted by more modern approaches. However, it is instructive to see how many of his groupings still stand up well to modern analysis, and I wonder if a half century from now people will be referring disparagingly to the views of phylogeny that are being pursued now.

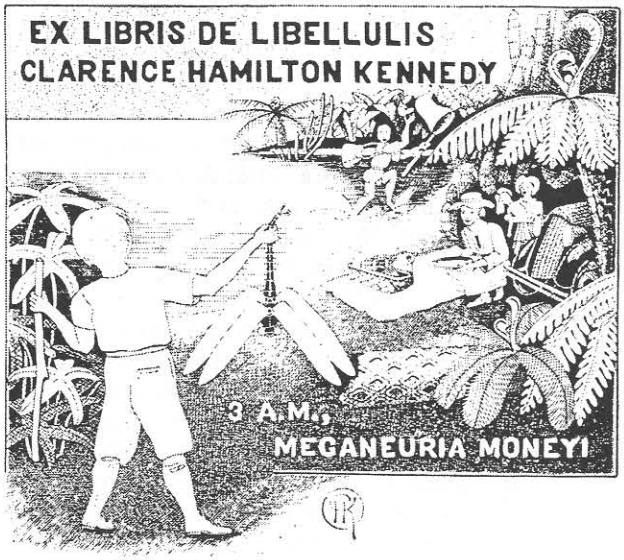
Kennedy joined the staff of the Department of Entomology of Ohio State University in 1919, becoming a full professor in 1933. His physical handicaps forced him to occupy a half-time position initially, but his health improved markedly later in life. He retired in 1949 and died in 1952.

Throughout his life Kennedy was noted as one of the finest illustrators of Odonata that has appeared. His first paper (1903) on ***Argia*** mesostigmal laminae has simple but elegant illustrations (nicely drawn but badly reproduced), and his 1913 Bumping Lake paper has no fewer than 57 excellent figures of one species – ***Somatochlora semicircularis***. During and after World War II he produced a series of papers on South American material (mainly damselflies) that had been collected by a professional collector. The excellence of the illustrations in these papers probably added considerably to his reputation as a taxonomist.

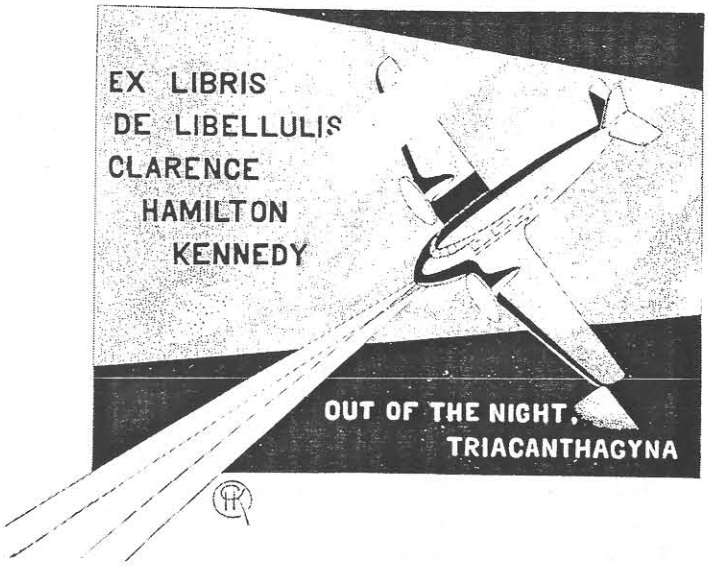
Throughout his career Kennedy was noted for his painstaking work, and he became one of the giants of American Odonata study. His reputation in the field of entomology was considerable. He was managing editor of the Annals of the Entomological Society of America for 16 years and was president of the Society in 1935. It is a little known and somewhat sad fact that towards the end of his



The younger Kennedy – Indiana Jones or what?



One of Kennedy's famous book plates. Perhaps he didn't sleep comfortably. . .



Another book plate. For those not familiar with tropical collecting, ***Triacanthagyna*** is one of the famous "night fliers": darners which appear at dusk and fly erratically, testing the skill of collectors.

The older Kennedy

career he tired of working with Odonata and switched to the study of ants.

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WHAT OTHERS THINK OF US. . .

It was a warm and sunny day with no wind. The route was straight across the water. It was possible, of course, to go around, but that meant flying about five times as far. The visibility was unlimited, the edges could be clearly seen, and by not flying too fast – or too low and close to the water – there was no real danger. It was a perfect day for flying. As the flyer looked down, the smooth surface of the water reflected the glorious blue dome of the sky above and the flight was smooth as silk. In this idyllic state, the trip proceeded. Later, an elongated shape was spotted, inert in the water into which it had flown; loss of depth perception was to blame. It was inexcusable: with just short of 200 million years (give or take a long weekend), ***Libellula***, a dragonfly, perished in the swimming pool. (From Aviation Safety Vortex 6/97 – Bill Loftus)[taken from General Aviation Safety Information Leaflet, Oct. 1998. The picture accompanying this note was of a ***Calopteryx***.]

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DRAGONFLIES IN THE NEWS

HINE'S EMERALD - There is a short article about Hine's emerald in the summer, 1999 issue of "Chicago Wilderness" on page 24. It was written by Patricia K. Armstrong and has a nice photo of a ***S. hineana*** in hand.

GREAT SMOKY MOUNTAINS N.P. – The 22 November issue of Newsweek contains an article about the biodiversity project in this park. [We previously mentioned that Ken Tennessen is heading up the Odonata portion of the project.] A photo shows park naturalist Keith Langdon carefully holding a ***Hagenius*** at a safe distance, apparently to avoid having his lips sewed up.

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REQUEST FOR RECORDS FOR ODONATA IN BC

Rex D. Kenner

As a volunteer working out of the Spencer Entomological Museum (SEM) at UBC, I maintain a database containing records for Odonata in BC and the Yukon. The database is mainly based on the specimens in the SEM but with additional records from a number of sources including private collections and photographic collections. To be included in the database a record should be backed by either a specimen or a clearly identifiable photograph. Records should consist of location (as specific as possible), date of collection, collector, and species with additional information such as sex, where the specimen or photograph is archived, how the specimen is prepared (pinned, in alcohol, in envelope), determiner and any additional observations. Anyone who has records they are willing to contribute to the database is requested to contact Rex Kenner via email at kenner@zoology.ubc.ca or care of the Spencer Entomological Museum, Department of Zoology, University of British Columbia, Vancouver, BC CANADA V6T 1Z4 or by phone at (604) 822-3379.

FIRST CANADIAN BREEDING RECORD FOR *TANYPTERYX HAGENI*

Rex D. Kenner

Last summer (1999) was a good one for ***Tanypteryx hageni*** in the greater Vancouver area. Although breeding sites are known from each of the three Pacific coast states to the south of us, no breeding sites had previously been found in Canada. On 1 September 1999, Ian Lane discovered and photographed several T. hageni larvae in their burrows in a seep in Cypress Provincial Park in West Vancouver. Two days later he and I returned to the site and found at least ten occupied burrows and an exuvia. The site is on the uphill side of a wide trail which is cut into a shallow slope. A very small stream runs down the slope and through the site. All but one of the burrows we found were simply horizontal holes dug into vertical faces of the cut bank. One of the burrows was built near the bottom of a vertical face behind a "waterfall" in the streamlet itself and the rest were in the slower flowing seeps at the sides. In some cases, small balcony-like extensions had been built out from the vertical face at the entrance of the burrows. These extensions seemed to serve the double purpose of keeping water in the burrow and giving the larva a place to sit and observe the surroundings. The exuvia, although missing its head, is clearly identifiable as ***T. hageni***. Territorial behavior by males, mating and oviposition have all been observed at this site.

In view of the development planned for Cypress Provincial Park, the future of this, the only known breeding site for ***T. hageni*** in Canada, is uncertain.

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MINUTES, DSA MEETING, PAUL SMITHS, NEW YORK, 8 -10 July 1999

Sid Dunkle, DSA Secretary

Attendees included: John Abbott; Jeff Ballard; Bob Barber; Roy and Pat Beckemeyer; Ethan Bright; Everett Cashatt; Carolyn Cass; Duncan Cuyler; Dave Czaplak; Nick and Ailsa Donnelly; Sid Dunkle; Pam Guy; Bob and Jacob Harding; George and Phoebe Harp; Gord Hutchings; Dan and Karol Lynn Johnson; Jim Johnson; Gerhard Jurzitza; Ellis Laudermilk; Larry Master; Bill Mauffray; Mike and Leslie May; Don Miller; Blair Nikula; Paul Novak; Mark, Adrianne, and Marjorie O'Brien; Dennis Paulson; Eric Pilgrim; Werner and Misa Piper; Teresa Prather; Martha Reinhardt; Clark Shiffer; Fred and Peggy Sibley; Joe Smentowski; Ken Soltesz; Dan Spada; Jeremiah Trimble; Jeanette Tromblay; Jan Trybula; Tim Vogt; and Hal White.

President Michael May called the business meeting to order and read a statement from past president Rosser Garrison, who was unable to attend. Dr. May mentioned three things the **DSA** can do to advance odonatology: (1) Collate data on Dragonfly Migration. (2) Archive data on the Habitat Requirements of individual Odonata species; volunteers are needed to coordinate this, and the data will be placed on the IORI Website by Bill Mauffray. (3) Define the ranges of North American Odonata via Dot Maps, which is already being done by Nick Donnelly.

Some Bylaws of the DSA need to be changed, which will be done first by the DSA Council, then voted on by the membership, probably at the next meeting. The minutes of the 1998 DSA meeting were approved. The new President-Elect is Dennis Paulson. Dennis discussed possible meeting sites for the next DSA Meeting, and it was decided that the meeting will be in Vancouver, British Columbia, probably in July 2000, organized by Gordon Hutchings. It is likely that the Okanagon River Valley can also be visited as part of that meeting. Suggestions are needed for the 2001 and 2002 meetings, which can be discussed on ODONATA, Dennis Paulson's list-serve.

Nick Donnelly, editor of **ARGIA** and **Bulletin of American Odonatology**, stated that **ARGIA** can use colored photos for covers, while more manuscripts are needed for **BAO**. The state surveys presented as issues of **BAO** have gone well, and the North American Odonata Dot Maps will probably also be published in **BAO**. Treasurer Jerrell Daigle said that **DSA** began 1999 with $11190.06 in its treasury, and currently has $13412.55. The only current expenses for **DSA** are the production and and mailing of Argia (300 subscribers) and **BAO** (190 subscribers). After estimated expenses of $8000, **DSA** is expected to end 1999 with about $7000. Dan Johnson announced that recovery plans for the federally endangered species Hine's Emerald (***Somatochlora hineana***) are available for review by those who will return comments, pro or con, to him.

Evening presentations included: Nick Donnelly, tropical odonates from Brazil and SE Asia; Gerhard Jurzitza, ***Sympetrums*** in flight; Tim Vogt (with Tim Cashatt and James Purdue), Phylogeny of ***Somatochlora***; Hal White, catching ***Epiaeschna***; and Dennis Paulson, Odonata of Australia.

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1999 DSA FINANCIAL REPORT

Jerrell J. Daigle

At the request of Nick Donnelly, I have prepared a short summary of the **ARGIA** and **BAO** financial account for 1999. Dues for both journals are combined together in one savings account at the SunTrust Bank in Tallahassee, Florida. We began the 1999 year with a 1998 balance forward amount of $11,190.06.

Presently, our current account is $12,138.96. Our expenses were for **ARGIA** 10(4), 11(1), 11(2), and **BAO** 5(4). Annual expenses were estimated at $8,000.00 for all **ARGIA** and **BAO** mailings. After all expenses and without any incoming late dues for 1999, our projected surplus by the end of 1999 is estimated at $7,000.

A brief current financial report was presented at the July DSA meeting in Paul Smiths, New York and a few copies of the report were distributed to the media.

Also, **ARGIA** and **BAO** subscriptions have been increasing dramatically. According to Ailsa Donnelly, we have about 315 **ARGIA** and 105 **BAO** subscribers. Like soaring ***Aeshnas***, we can go only higher in the next milennium!

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CORRECTION - The Tennessee field meeting account regrettably omitted the name of one of the participants – Jerrell Daigle's father, Jerry, who helped in the finding of several of the interesting species, including the state record ***Ischnura kellicotti.***

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NEW OLD PUBLICATION ON SOUTH FLORIDA ANISOPTERA.

Dennis Paulson has just published his PhD dissertation from 1966 on The Dragonflies (Anisoptera) of South Florida. This 139-page publication (Slater Museum of Natural History Occasional Paper No. 57) contains much information on the status of South Florida dragonflies and their natural history. To receive a copy, send a check for $12.00 made out to the University of Puget Sound to Dennis Paulson, Slater Museum of Natural History, University of Puget Sound, Tacoma, WA 98416.

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TRAMEA

Some contributions from **Roy Beckemeyer**:

Robert Larsen, a cooperative research biologist at the Bitter Lake NWR near Roswell, New Mexico, has a site on the web that comprises an Odonata checklist for New Mexico. It is based on Mary Alice Evans' 1995 published checklist, supplemented by records from a little known and previously neglected work by Harold B. Freshley on the Upper Pecos Watershed (1945 University of New Mexico Thesis), and by records supplied by Mr. Larsen and by a number of members of this society. This very useful set of pages contain lists of counties for each species, and a map for keying out county locations, and is available at:
http://www.rt66.com/~kjherman/odonata/NMdrgnfly.html

Cathy Biggs, who is doing much hard work to document the dragonfly distribution in California, has a web page on which she describes a spiral bound color booklet called "Common Dragonflies of California" which she is planning to eventually publish located at:
http://www.sonic.net/~bigsnest/Pond/Lists/COVER.html

On the international scene, check out:
http://home9.swipnet.se/~w-90582/dragonfly/dragonfly.html
This is Martin Petersen's Swedish Dragonfly page. Quite remarkable and out of the ordinary are: Dragonfly games, Multilingual checklists, and a dragonfly calendar.

"Dragonflies and damselflies of Kuala Lumpur",
http://www.geocities.com/RainForest/Vines/8983/dragonflies/dragonfl.html
by Chin Fah Shin, has a number of color photos of colorful odonates from the Orient.

And, while we are thinking oriental, why not try:
http://www.dfw.net/~jazzman/knotter/dragon.htm
to see directions on how to tie a Chinese ornamental dragonfly knot? Directions are illustrated step-by-step, and include a photograph of examples tied by author Jack Keene and by Tzu-ni Yang and Ming Jyh-Chen of Taiwan. These little dragonflies could be neat additions to holiday gift packages.

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