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Come to Montpellier 19-22 August 2001

Eighth International Meeting of the Orthopterists Society

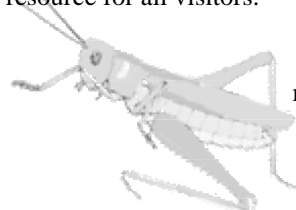
Come join us in Montpellier for an exciting meeting to be concluded with a gala in Carmague (see insert). A full schedule of events is available online at the conference website. <http://os2001.cirad.fr/> A full schedule was also published in the the last issue of Metaleptea, available online at the society's website. Registration forms (PDF files) may be downloaded from either site.

Please note submission deadline for all abstracts is JUNE 1. See page 2 for submission details.

Please consider authoring a feature article for this newsletter. Send us your current interests, the reasons you became an Orthopterist, or maybe a photo of your favorite species to be featured.

To date, with student help, I have added citations for about 150 of the articles published in 2000 on Orthoptera to the searchable reference base on the society's website. Please do add papers you come across to this base. It fosters the society's image by making our website an important and valuable resource for all visitors.

M. Niedzlek-Feaver
mnfeaver@unity.ncsu.edu



Montpellier Meeting Notices

19-21 August 2001

REGISTRATION and ACCOMMODATIONS

Members (and guests) planning to attend the Montpellier meeting are urged to make early arrangements for accommodations, as this is the tourist "high" season in France.

Early registration would also be appreciated so arrangements based on numbers of attendees can be arranged in adequate time.

Registration and accommodation forms can be downloaded from the meeting Website, <http://os2001.cirad.fr/> A paper copy of those forms were printed in the last Metaleptea and copies can be obtained from editor, Dr. Niedzlek-Feaver.

FIELD TRIP. There are still a few spaces available for the field trip, which will be allocated on a first-come first-served basis. Reservations can be made via /os2001@cirad.fr/ or fax: 33 (0) 4 67 59 38 73.

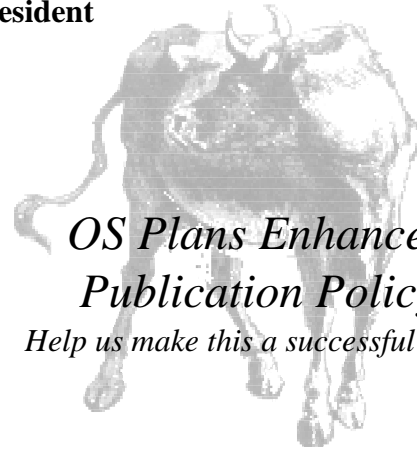
Abstract Deadline is 1 June 2001

The deadline for ALL ABSTRACTS is 1 June. This is an absolute necessity for those wishing to give an oral presentation, because of the limited time already allocated to such. The selection committee needs time to review abstracts and make their decision, based on scientific merit, on who will present oral papers. Those persons denied a time for an oral presentation will be urged to submit a poster. Please be sure that you request time for an oral presentation when you send in your abstract, and indicate whether this is required for the support of your institution. Because not everyone desiring to give an oral presentation can be granted time to do so, please submit to your institution our arguments that posters are far more effective. These arguments were summarized in the last Metaleptea and are also available at the Conference Website.

Abstracts must be submitted in the body of an E-mail message to tcohn@sunstroke.sdsu.edu ---NOT AS AN ATTACHMENT.

This will make formatting much easier for me, in order for me to put in proper accents, and other formatting details.

Please also send a paper copy to Dr. T. J. Cohn, Insect Division, Museum of Zoology, University of Michigan, Ann Arbor, MI 48109-1079, USA to arrive at the same time as your E-mail. T. J. Cohn, President



OS Plans Enhanced Publication Policy

Help us make this a successful effort

Building on Daniel Otte's magnificent "Crickets of Hawaii," his seven volume "Orthoptera Species File" catalog, as well as Otte and Naskrecki's CDROM, Illustrated Catalog of the Orthoptera, Vol.1 Tettigonioidea, your Society obtained last year special funding from generous members to extend and expand this series, Publications in Orthopteran Diversity. Piotr Naskrecki's wonderfully illustrated "Katydid of Costa Rica" and the Vol. 8 of the Orthoptera Species File which completes the coverage of the jumping Orthoptera (volumes on roaches, mantids, and walking sticks are now being prepared) were published last year.

This year special funds have been obtained to publish Carlos Carbonell's great revision of the South American phaeopariine grasshoppers (see review on page 7).

We have also raised funds for the preparation of avid Rentz' "Handbook of Australian Grasshoppers," and for Nicholas Jago's "Handbook of East African Grasshoppers." Although the former will be published commercially, the Society will be duly acknowledged.

The Society thus is fulfilling its mission to enhance communication of research in the Orthoptera. But also important, because of special funding we are able to publish books and large papers that would be

difficult to do via other scholarly journals, or if done by a commercial publisher, would sell for a very high price because of limited demand. These publications will provide the Society with a small stream of additional income which can be used as a revolving fund to publish more books and papers or to fund other Orthopterists' Society projects.

There is, however, one very serious problem. The Society has no way of advertising, except through its website, and we doubt if many libraries scan this to find out what we have to offer. We would welcome any suggestions from members for enhancing the sale of these important publications.

In the meantime, if every member would recommend this series (as well as JOR) to their library, then we should be reasonably successful in making it available to biologists.

For a full list and prices visit the society's website.

T. J. Cohn



I am adding a postscript emphasis to Ted's plea for involvement by society members in requesting libraries to purchase the journal and other society publications. Our NCSU librarians have placed an ad for the journal on several listservs, however, we received no positive responses. Apparently, in these fiscal trying times, libraries are trying to cut any cost, however small, to extend dwindling funds. Unless an employee of an institute or school requests that their library obtain a certain journal, they simply will not purchase it. So please, request your institution's library to subscribe to the journal.

M. Niedzlek-Feaver

To Acknowledge DAVID EADES' Contribution

I am delighted to report the contribution of \$25,000 by member David C. Eades to establish an endow-

ment for the Orthoptera Taxonomic Database Project under the auspices of the Society. Dr. Eades has been working for several years to develop a powerful program to enhance the functionality of the Internet version of the Orthoptera Species File, especially with regard to entering new data, correcting errors, and tracking the changes. This program will be further developed under the supervision of an Orthopterists' Society standing committee, jointly selected by Dr. Eades and myself. This committee consists of Dr. Daniel Otte, the author of the Orthoptera Species file which forms the basis of the Project, Dr. Piotr Naskrecki, who developed the on-line version of the OSF, Dr. Eades and myself. The Endowment will be kept as a separate, dedicated fund, administered by this committee, and will be restricted to the support of the project. Ownership of the newly developed database will be contributed to the Society. In the event that the Society decides to discontinue managing the fund for this purpose, then the entire fund will be offered to the Academy of Natural Sciences of Philadelphia.

Dr. Eades hopes to increase the funding of the Endowment so that the income from it will be sufficient to hire a database administrator, thus ensuring its operation in perpetuity.

The new program would duplicate, but enhance, many of the features of the current program in displaying taxon names with their synonyms and bibliographic (and possibly biogeographic data), as well as displaying levels of higher taxa to which the designated one belongs. The program would also facilitate entry of common changes in status such as new synonymy, cancellation of previous synonymy, the transfer of taxa to different superior taxa, and extensive cross-checking for internal consistency of the data.

Tentative plans are to have specialists in different groups to be appointed editors to modify the database in those groups, to establish database bulletin boards, and to encourage cooperation and cross-links with sponsors of other databases.

We expect that this database (as well as the previous one) will be of considerable value, not only to taxonomists, but also to biogeographers, ecologists, conservationists and those working on biodiversity projects.

Further information will be available at the Montpellier meeting in August.

T. J. Cohn

Demographic analysis of scientific studies of Orthoptera in 2000: A pattern of remarkable geographic and intellectual diversity

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Biodiversity, as measured by both richness and evenness, has long been associated with ecosystem health, vitality, and resilience. Although overly simplistic, there is substantial validity to the notion that in many systems, diversity enhances stability and permits more robust responses to perturbations. I have often argued that orthopterology is a remarkably healthy scientific field — and that The Orthopterists' Society is a particularly vital intellectual community — because the Orthoptera include important ecological actors, intriguing systematic puzzles, ideal physiological models, fascinating behavioral subjects, and compelling pest challenges. However convincing such qualitative arguments might be, there is surely significant value in attempting to measure and document the claim that orthopterists represent an extremely broad range of intellectual pursuits.

As a means of assessing the diversity of orthopterology, I have summarized the scientific literature for the year 2000. Through my subscription to an automated version of the Science Citation Index (from January through December) and the BIOSIS database (from June through December), I assembled a rich collection of the world's scientific literature pertaining to the Orthoptera over the course of last year. My search terms included (asterisks refer to "wildcard" characters, allowing the search to include any combination of letters): orthop*, acridid*, gryllid* tettigoniid*, grasshopper*, locust*, cricket*, and katydid*. This approach was strongly biased to the Orthoptera *sensu stricto* (Caelifera and Ensifera), so my summary and

analysis does not include related orders (with due apologies to my colleagues who study mantids, cockroaches, walking sticks, and rock crawlers). The search is also limited to publications that meet the requirements of the database services, so contributions to non-English, governmental, and limited circulation outlets may be largely overlooked.

The search procedure returns to the subscriber a bi-weekly report of new literature that includes the search terms in the title, abstract, or keywords of a paper published in one of the journals monitored by the database service. The report includes the title, author(s), affiliations, and citation for each of the articles. Based on this information, I categorized each article with respect to the number of authors (1, 2, 3, 4, 5, or >5), country (based on the affiliation of the first author), taxon (grasshopper, locust [if this term was used in the title], cricket, katydid, and other [e.g., tetrigrids, gryllacridids, and gryllotalpids], and field of study (physiology, behavior, ecology, morphology [including histology and developmental biology], genetics, taxonomy, control, and evolution [including phylogeny]). The number of authors, country affiliation, and taxon were each assigned to a single category, but the field of study often included two or more disciplines (e.g., investigations of behavioral ecology). Articles that were erroneously identified as being related to orthopterology (e.g., studies of the sport of cricket) were kept in a separate file and not included in the summary and analysis.

A total of 224 scientific papers were published in the year 2000 on studies pertaining to Orthoptera. Of these, nearly 80% had three or fewer authors, with the mode being two authors (Table 1). Only 12% had five or more authors, with a maximum of 12 authors. Thus, while the vast majority of orthopteran research is col-

Table 1. Number of authors of scientific papers on Orthoptera.

Number of authors	Number of papers	Percent of papers
1	36	16
2	89	40
3	52	23
4	20	9
5	14	6
>5	13	6

Table 2. Geographic origins of first authors of scientific papers on Orthoptera

Number of papers	Percent of papers	Country or countries
39	17	United States
29	13	England, Germany
23	10	Canada
18	8	France
17	8	Japan
7	3	Argentina, India
6	3	Australia
5	2	Brazil, Russia
4	2	New Zealand, Spain
3	1	Austria, Belgium, Netherlands, Scotland, Switzerland, Turkey
2	1	China, Nigeria
1	<1	Chile, Czech Republic, Denmark, Israel, Italy, Pakistan, South Africa, Slovenia, Sudan

laborative (84% of the papers had at least two authors), orthopterology does not appear to be suffering from the trend toward gratuitous authorship.

Table 3. Taxonomic groups of Orthoptera sensu stricto investigated in scientific papers.

Taxon	Number of papers	Percent of papers
Acridoidea		
grasshoppers	78	35
locusts	73	32
Gryllidae		
crickets	42	19
Tettigoniidae		
katydids, etc.	18	8
Other orthopterans	13	6

The diversity of countries conducting research on Orthoptera is quite impressive, with first authors coming from 30 nations (Table 2). No country accounted for more than 17% of the published papers, and 21 nations contributed two or more papers. Europe accounted for 43% of the literature, followed by North America (27%), Asia (16%), South America (6%), Australia and New Zealand (5%), and Africa (2%). Thus, the geographic richness and evenness of research pertaining to the Orthoptera suggests a balanced, global community of scientists. The Orthopterists' Society includes members from 62 countries, reflecting the worldwide interest in these insects.

Research on the Acridoidea accounted for two-thirds of the papers published on Orthoptera, with nearly equal numbers relating to locusts and grasshoppers (Table 3). Studies of crickets constituted about one-fifth of the scientific literature on orthopterans, with investigations of katydids accounting for about a tenth. Thus, the study of Orthoptera is rather skewed towards acridology, although the proportion of published studies is roughly equivalent to the species richness of acridoids within the Orthoptera. It also should be noted that much of this research was not directly related to the role of these insects as

pests (see below). Perhaps reflecting this pattern, the development of The Orthopterists' Society from its original formation as the Pan-American Acridological Society suggests both the importance of the grasshoppers as ecological and economic agents and the value of broadening the scientific community to include vitally important work on non-acridid orthopterans

Table 4. Disciplines of investigation reported in scientific studies of Orthoptera.

Field of study	Number of papers	Percent of papers
Physiology	95	42
Behavior	48	21
Ecology	45	20
Morphology	34	15
Genetics	30	13

Physiology was the most frequent subject of study in orthopteran research, being a significant element in 42% of the published papers (Table 4). Studies of behavior and ecology each comprised about 20% of the studies in 2000. Morphology, genetics, taxonomy, and control each accounted for 10 to 15% of the studies. The total of the percentages (135%) suggests that a substantial proportion of the published studies involved more than a single field of investigation. Thus, there was a very broad and reasonably equitable distribution of disciplines investigating orthopterans.

In summary, the study of Orthoptera appears to be vital, healthy, and robust in terms of its geographic, taxonomic, and disciplinary diversity, evenness, and richness. Perhaps the "typical" paper published in 2000 could be described as an article published by two European authors, pertaining to some aspect of the physiology of a locust species, which served as a useful model for the study.

In reviewing the literature published over the last year, one is tempted to nominate a paper as the most interesting or intriguing. Although I can not claim to have read the majority of the published works, my nominee for the most provocative title is, "Venereal worms: Sexually transmitted nematodes in the

decorated cricket", by Luong et al. in the *Journal of Parasitology* (86:471-477). I am not sure of the mating habits of these orthopterans, but such a biological phenomenon would seem to have significant potential for limiting sexual promiscuity in humans!

Finally, any computerized literature search will inevitably reveal studies that don't quite reflect the intentions of the investigator – in my case, studies of Orthoptera. Perhaps as further evidence of the remarkable diversity, importance, and pervasiveness of orthopterans in human culture, I offer the following "errors". Reflecting the presence of these insects in the arts, we have J. Merry's publication of "The 'Cricket and the Frogs' - A Piano Solo Suite With Story, by N.J. Tan" in *Clavier* (39:37) and M. Stasio's review of "'Grasshopper', by R. Rendell" in the *New York Times Book Review* (Oct 22:32). Orthopterans also have been appropriated as adjectival names for various animals, including cricket frogs (*Behavioral Ecology* 11:102-109), grasshopper mice (*Aggressive Behavior* 26:319-334), and grasshopper sparrows (*Journal of Wildlife Management* 64:631-636). Of course, a considerable amount of work has been conducted on plants bearing the name "locust", with locust beans being a topic of considerable research interest (e.g., *Food Additives and Contaminants* 17:3-15). Anthropology also provides some interesting uses of orthopteran terms, such as AE Rautmen's account of "Grasshopper Pueblo: A story of archaeology and ancient life" in the *Journal of Anthropological Research* (56:415-416).

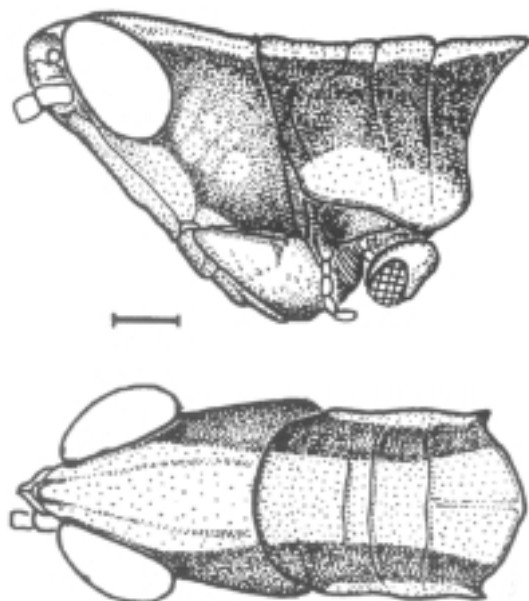
Finally, no search of the published scientific literature pertaining to the Orthoptera would be complete without various references to the sport of cricket. As amazed as the general public is that some people spend their lives studying crickets (the insects), orthopterists might be just as surprised with the scope of studies related to cricket (the sport), including: "Effects of cricket ball colour and illuminance levels on catching behaviour in professional cricketers" (perhaps orthopterists attempting to catch crickets might consider the effects of the insects' color on sampling success), "The sliding stop: a technique of fielding in cricket with a potential for serious knee injury" (I know of more than one orthopterist who has been injured while chasing an elusive cricket or grasshopper), and "Cardiac arrest outcomes at the Melbourne Cricket Ground and Shrine of Remembrance using a tiered response strategy - a forerunner to public access defibrillation" (fortunately, it seems that few of our colleagues have expired in the course of

Hot off the Press-

Another Carbonell Masterpiece

The Society is pleased to announce the publication of "The Grasshopper Tribe Phaeoparini (Acridioidea, Romaleidae)" by Carlos S. Carbonell, in the Publications on Orthopteran Diversity series. This subfamily comprises 11 genera and 37 species, many of them common and some widespread. It is a group mainly of the Amazon Basin, but extending from Costa Rica to southern Brazil, but absent from Chile. In his usual thorough manner, Carbonell has examined and authoritatively identified all types, and has described four new genera and 15 new species. Noteworthy are the magnificent stipple and line drawings. For each species there is a large side view of the whole grasshoppers rendered in Carbonell's usual fine detail, as well as enlarged views of the head and thorax, the fastigium, tegmina, terminalia, and, of course, details of the concealed genitalia.

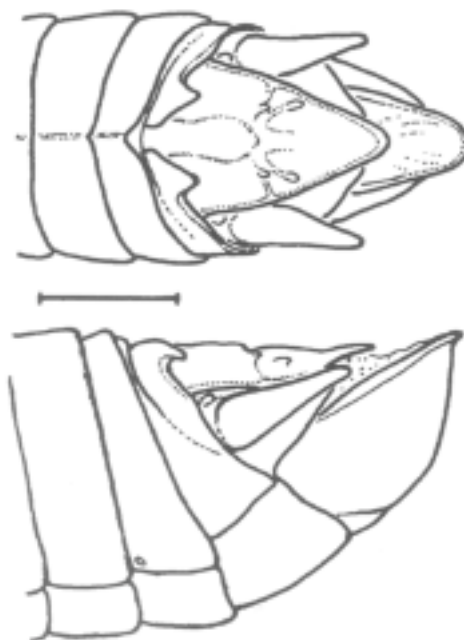
(Examples reproduced below but at lower resolution than in publication.)



But what makes this revision particularly useful is the fact that all the drawings are tabulated which greatly facilitates comparison, the heart and sole of taxonomy. Particularly innovative are the greatly reduced figures of the side views of the whole insect all placed on two facing pages which makes it easy even for a non-specialist to arrive at a tentative identification based on the whole grasshopper; in this, Carbonell does even better than the bird field guides.

For US\$ 10 you can obtain your own personal copy to grace your bookshelves. Copies can be obtained from Dr. Jeffrey A. Lockwood, Department of Renewable Resources (Entomology), University of Wyoming, Laramie, WY 82071, or by E-mail, lockwood@uwyo.edu

Payment may be made by check, made out to the Orthopterists' Society or by credit card (Visa, Mastercard, Discover, Eurocard or America Express). In addition to your card number, we must have the expiration date and specific authorization of the payment. Please add US\$ 2 to cover the cost of the transaction (this is what the credit card companies charge the Society).



Phaeoparia bicolor

IMPORTANT ANNOUNCEMENTS FROM THE SOCIETY'S PRESIDENT

T. Cohn

Orthopterists' Society's Financial Position in a Declining US Stock Market

With the steep decline in the US stock market, it is appropriate that your Treasurer review the financial position of the Society. The value of our major stock market investments (two mutual funds) has been reduced by about half at the time of this report from their high point in the middle of 2000. In assessing the affect of this remarkable decline on the financial health of the Society, three considerations of primary importance should be kept in mind. First, at its high point the US stock market was grossly overvalued in terms of the earnings of the companies composing the stock market indices. Even at their current reduced value, we are probably still way above the initial value of our investments. Second, we have invested for the long-run, and history indicates the market has always recovered in time so our losses are not real until we need access to the funds. We do not "play" the market, that is, we do not buy and sell frequently. I have faith in the management of our mutual funds, which are relatively conservative growth funds. It is Board policy to merely take advantage of each 10% rise in our investments over the previous 10% increase, and sell 5% of that rise. We were able to do this in 1999 and early 2000, but obviously not since then. Third, we do not include the income from these funds in the budget for our operations, so we are not "at risk" from the vagaries of the market.

For our immediate expenses we depend on membership dues and contributions, and on subscriptions and page charges. Thus the financial health of the Society in terms of its daily operations, services and projects is almost completely dependent on the cash flow provided by payments of our members. We avoid having to rely on our investments and savings for general operations. Therefore it is imperative that every member

support the work of the Society through prompt payment of dues, subscriptions and page charges (the latter to the best of their abilities). We have in our operating account at the present time (before receipt of this year's dues and subscriptions) \$5,000 in a money market fund (the managers of this kind of fund keep principal constant, but vary the interest paid) and a \$5,000 US Government Agency Bond. These funds, plus incoming page charges and contributions are sufficient for all of our anticipated expenses (including the next issue of the Journal of Orthoptera Research) until mid-year when dues and subscription income starts rolling in.

Finally, our endowment, currently invested in a \$10,000 US Government Agency Bond and about \$6,000 in a stock index fund (which has lost about 25% of its value), is available for emergency use, and provides us with a small yearly income.

JOR Page Charge Policy

Because the page charge policy statement was inadvertently omitted from JOR 8, it might be useful to review the problem. At my urging, the Board by unanimous vote decided at the 1997 Cairns meeting to initiate a reduction or elimination of page charges for the JOR as a means of attracting more and better papers. The mode of such reductions was referred to the editors of JOR who were to examine the policies of other journals. At the same time, it was decided that the Society should subsidize variable support for page charges and dues to encourage membership and authorship by those who genuinely cannot cover such costs. However, it was emphasized that external grants received by members should normally include funds for publication.

To implement these decision, the Board established the policy as published in JOR 8, "Although there are no page charges for publishing in JOR, we ask that authors with institutional or grant support bear the cost of their papers at US\$ 20 per page; contributions from others will be appreciated. Each senior author will be provided with 50 separates free of charge. Color plates and half-tones will be charged to the author."

Each author is sent a letter requesting page charges, but is also given the opportunity to ask for a waiver

of those charges. Separates are provided whether page charges are paid or not.

I have been disappointed that so few authors have been paying page charges, either in whole or in part (and any contribution is appreciated). Each author is sent a letter asking for page charges, but also is given the opportunity, in that letter, to request a waiver. Separates are provided whether or not page charges are paid, but only after the return of this letter.

Because of Editor Morris' skill, we are pleased to announce that he is scanning in all half-tone plates himself. As a result, half-tones cost no more than a printed page, and extra charges for half-tones are herewith eliminated.

JOR Subscription Price Rises to \$25 per Year

After a careful review of the finances of the Society, the Board of the Society has reluctantly come to the unanimous conclusion that the subscription price of the Journal of Orthoptera Research be raised to US\$ 25 per year. The old subscription price has remained unchanged since the inception of the journal 10 years ago, despite slowly increasing paper and labor costs. Last year with the changing of Editors, the Board authorized the hiring of an editorial assistant who has greatly aided the Editor (who is paid almost nothing for his services) in his very time consuming and difficult work, and in so doing has probably been instrumental in keeping him sane. This year also Editor Morris will initiate publication of two issues a year.

Even with this increase, subscriptions will cover less than half the cost of publication, so we are still dependent upon page charges and contributions. Because we have relatively few subscribers (about 200 last year), the best way to maintain this subscription price is to seek more subscribers. I therefore appeal to every member to try to convince others and especially institutions to subscribe to the Journal of Orthoptera Research.

If anyone can suggest other ways of increasing the income from JOR or reducing costs, please

inform Metaleptea Editor, Dr. Marianne Niedzlek-Feaver (her postal and e-mail addresses can be found in this issue) who will forward the information to the other officers.

Members who are unable to afford the new price may submit requests for Sponsored Membership.

OS Now Accepts Additional Credit Cards

We are pleased to announce that the Society can now accept **American Express, Discover, and Eurocards** (Discover International), as well as Visa and MasterCard. We hope members will not mind paying an extra US\$2 for each transaction- this is the approximate amount that the Society is charged by our bank. Use of these new credit cards should make it convenient for all members to pay membership dues, subscriptions, page and plate charges, and for the several books that the Society publishes. We urge members outside the United States to use credit cards as we understand that the user gets the best exchange rates and both they and the Society avoid bank charges for regular checks. Indeed, as indicated on the annual Dues and Subscription statement, our bank would charge us US\$20-30 to cash a check from a bank that does not have a US subscriber bank; we therefore must return such checks as the charge often exceeds the payment

NEW MEMBERS

The Orthopterists' Society is pleased to welcome the following new members and hope that this association will be of mutual benefit.

Mr. Marcos G. Lhano
Rua Ipanema, 116- casa 6
Jardin Guanabara, CEP 78010-450
Cuiaba, MT, Brazil
(Federal University of Matto Grosso)
Ecology of Acrididae, taxonomy/systematics of
Acrididae and Tettigoniidae

Mr. Jorge R. Montero-Moreno
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Balakrishnan, Rohini
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rohini@ces.iisc.ernet.in
Song pattern recognition, mate
choice; Systematics and ecology,
esp. Effect of fire on grasshopper
communities, montaine grassland
communities.

Dr. Kim Tae-Woo
Zool. Tax. Lab of Biology
Sungshin Women's University
249-1, Dong-sun Dong 3ga, Sung-
buk Ku, Seoul, 136-742, Korea
Systematics of Tettigonioidea

John Spooner graciously responded to my relentless pestering to fill us in on his current interests. I would like a column detailing memberships interests or experiences to become a regular feature of this newsletter. We have so few chances to meet and exchange ideas. This is especially true for those of you who are non-academics or graduate students and may not be able to join us at meetings. Think of this column as a way for the rest of the membership to get to know you.

John D. Spooner

Surely none of what I say here will surprise anyone who has gone before me.

Before retiring in June 1999, I luxuriated in the thought of catching up on all those "wanna-do" projects that for years crept steadily behind because of spending so much time on "haf-ta-do" activities (the academic load as well as the ever increasing load of peripheral requirements associated with contemporary university academic positions).

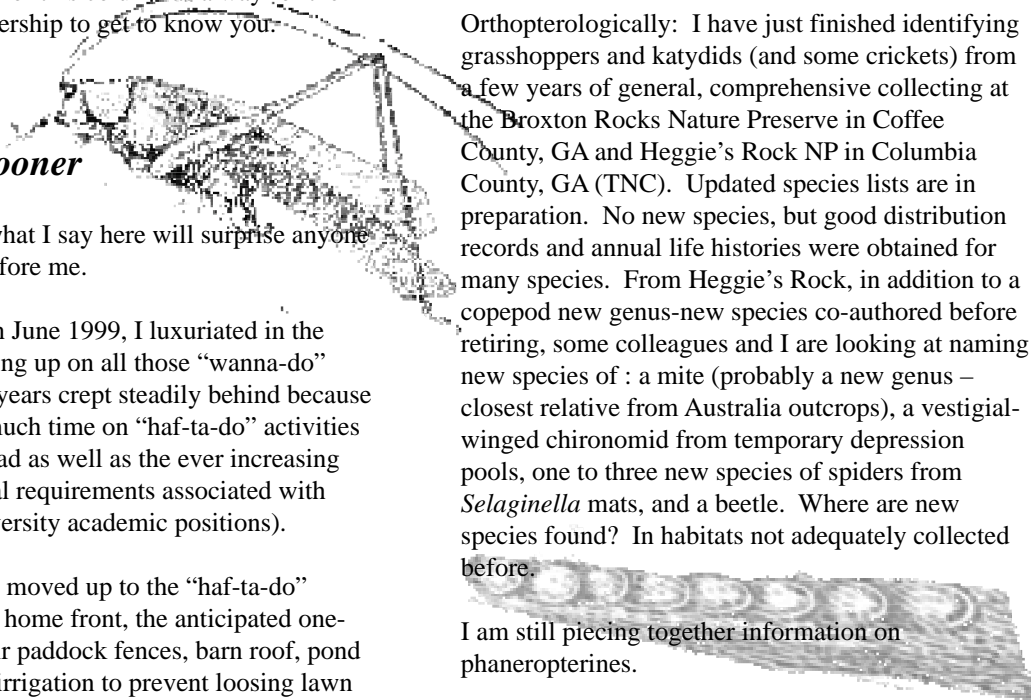
All "wanna-dos" moved up to the "haf-ta-do" position. On the home front, the anticipated one-half year to repair paddock fences, barn roof, pond dams, installing irrigation to prevent loosing lawn and shrubbery due to the drought, and bushhogging a small subdivision Pat and I are developing has stretched on to one and one-half years. Much finished, but much unfinished. Add to that the unexpected flooding of main floor and basement and subsequent hassling with the insurance company and contractors to repair warped and cracked hardwood floors is an experience to wish on no one. Things are moving ahead, however.

Luckily, USCAiken has provided a small research lab which is big enough to house my collections and literature, but with no room to work. My wife and I have made an office-lab out of the unused "living room" of our home (yes, she often accompanies me on collecting trips, has mostly mastered entomophobias, actually picks spiders, etc. from collecting bags).

Orthopterologically: I have just finished identifying grasshoppers and katydids (and some crickets) from a few years of general, comprehensive collecting at the Broxton Rocks Nature Preserve in Coffee County, GA and Heggie's Rock NP in Columbia County, GA (TNC). Updated species lists are in preparation. No new species, but good distribution records and annual life histories were obtained for many species. From Heggie's Rock, in addition to a copepod new genus-new species co-authored before retiring, some colleagues and I are looking at naming new species of : a mite (probably a new genus – closest relative from Australia outcrops), a vestigial-winged chironomid from temporary depression pools, one to three new species of spiders from *Selaginella* mats, and a beetle. Where are new species found? In habitats not adequately collected before.

I am still piecing together information on phaneropterines.

Inscudderia walkeri: Eggs collected from a specimen from Berkeley County, SC last fall have been successfully exposed to winter conditions (on our front stoop!) to break diapause. Embryonated eggs have rounded and turned green (thin and flat and ivory colored when laid). They should hatch in a few days, perfectly coinciding with the emergence of new growth of cypress on which *I. walkeri* feeds. Since orthopterists do not climb cypress trees, we have a



chance to learn a bit about *I. walkeri* life history in the “lab.”

Scudderia furcata: Currently, I am sweep-collecting first and second instars of the two generation, facultatively diapausing form whose distribution extends only a few miles from here onto the lower piedmont province. It hatches late March to mid April. Since the more inland, one generation, obligatorily diapausing (valid word?) form does not hatch until about the first of June, this may be a good way to establish a zone where the two forms come together geographically. From previous, random collecting, I have a feeling that there may be a narrow zone where neither is prevalent, but where *Scudderia cuneata* is more common. Sort of like the distributions Dick Alexander reported with field crickets having gaps between populations.

Scudderia furcata matures to a rusty brown with black markings in the Ozark and Quachita Mountains of Arkansas. I have been trying to determine where it intergrades with the normal green, a slow task, considering the distance and infrequent visits.

Microcentrum: A comparative morphological study and key to US species is in preparation.

Scudderia: Ditto.

Grasshoppers: I have been building a reference collection of regional species to help myself and others. Over the last year all the melanoplinae on hand have been identified, a quite gratifying feat.

Incidental professionalism is fun. I get the chance to continue teaching by supervising student research projects involving insects. PIN (Palmetto Insect Naturalists, a group of professionals and lay entomologists) meets informally somewhere in the state 3 to 4 times a year to collect and collaborate. It was an elderly lay orthopterist that retrieved, from a live light trap, the *Inscudderia walkeri* (above) that laid eggs for our current study.

What is the greatest disappointment in retirement? I am disappointed that I don't miss the classroom.



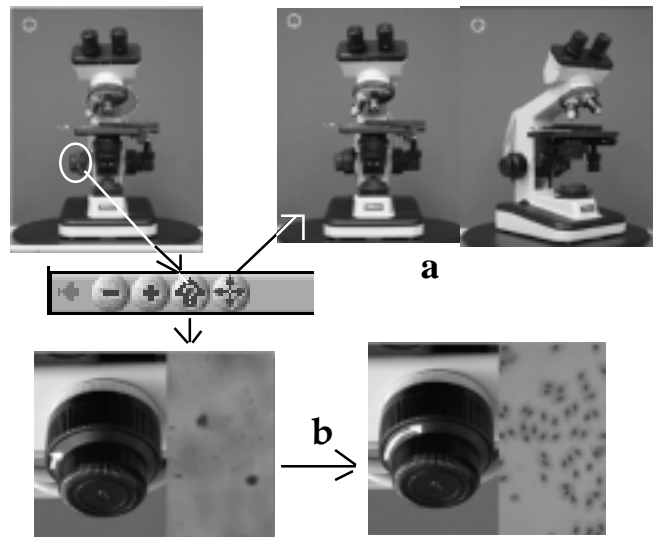
**Sam Dirani's
rotating stage**

Spinning Grasshoppers

M. Niedzlek-Feaver & S. Dirani

So John does not feel quite as alone, I have decided to share one of my interests with you.

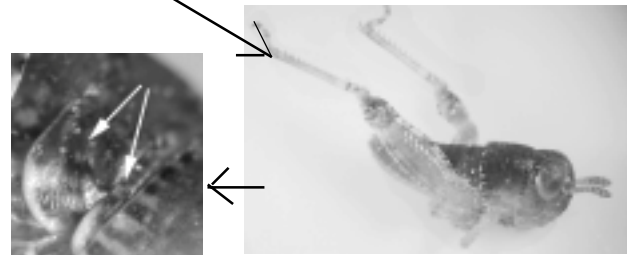
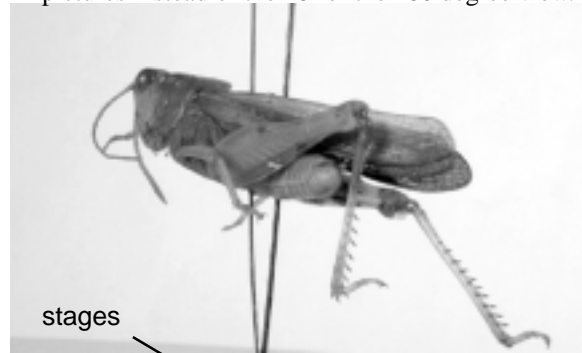
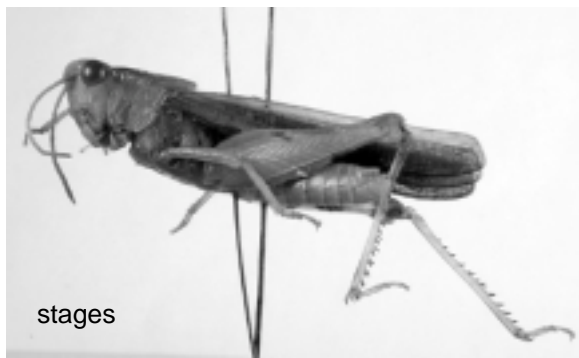
I have decided to try to make “object” (three-dimensional) movies of grasshoppers for teachers to use to identify common species for field study use. In these movies, the viewer can rotate the specimen (see **a below**). “Hotspots” (areas where the hand cursor turns into an arrow -see **b**) if clicked can link the viewer with other movies that can show related information. For example, hotspots could take a viewer to high magnification shots of body parts highlighting identifying characteristics. Students can move freely back and forth between all links or nodes as they are called. The movies are then somewhat interactive and can encourage exploration.



There are two reasons for making these movies.

1. I was contacted by several teachers who wanted me to identify specimens they were using for ecological field studies from photographs. Unfortunately, sometimes the photographs did not clearly show the specimen or the characteristics I needed to make a positive identification. Since these teachers were unfamiliar with insects in general, they were somewhat confused by the intraspecific variation in color, size and stage they encountered. I feel the interactivity of these movies will guide these instructors and their students through an examination of comparable specimens to those encountered in the field. At the same time (through links that show different stages or to web resources), students are encouraged to learn more about a particular species.

2. I am already committed to making movies for teachers that will explore useful introductory biology laboratory techniques as well as the behavior, ecology and natural history of as many animals as we can gather information on in the next three years (with B. Black and H. Heatwhole, Zoology, NCSU). Some of these movies will be object movies that will enable students to explore equipment and protocols before coming to the lab. Therefore I am familiar with the software needed. An independent study student of mine, Sam Dirani, has built a small rotating stage with 20 degree stops that fits under our Nikon stereoscope; this will allow us to rotate a specimen. The 18 pictures we will obtain can then be stitched together and



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hotspots (links to other movies) will be added with a software package available from Apple, (Quicktime VR Authoring Studio). The movies surprisingly take up little space and can be compressed for web use. Some might accuse us of greatly overplaying visual and web appeal in an attempt to motivate students. I suspect, however, the day will approach soon when museums who already provide virtual tours will “loan” virtual specimens to researchers.

I solicit your comments and advice. What information besides identifying guides should we provide? Should we provide a 360 degree view instead of 180 degree view? Sam, I’m sure, is hoping the vote is nay on this point. The 360 view will require 324 pictures instead of the 18 for the 180 degree view.

The number of nested links that students can move to and from is limited only by the movie maker’s motivation and patience. Each link or node can be a movie of stills, a panorama (for example of development or variation), another object movie or even a website.