



Metaleptea

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Society News



On the website for the 10TH ORTHOPTERISTS' MEETING IN ANTALYA, TURKEY IN 2009

I have the pleasure to announce that – thanks to the work of our colleague Battal Ciplak, from Akdeniz University in Antalya - the web site for our next congress in Turkey is now opened.

The url is:

<http://www.ico2009.org>

***An invitation to :
The 10th Orthopterists' Meeting in
Antalya, Turkey.***

**Dear colleagues,
Dear Orthopterists**

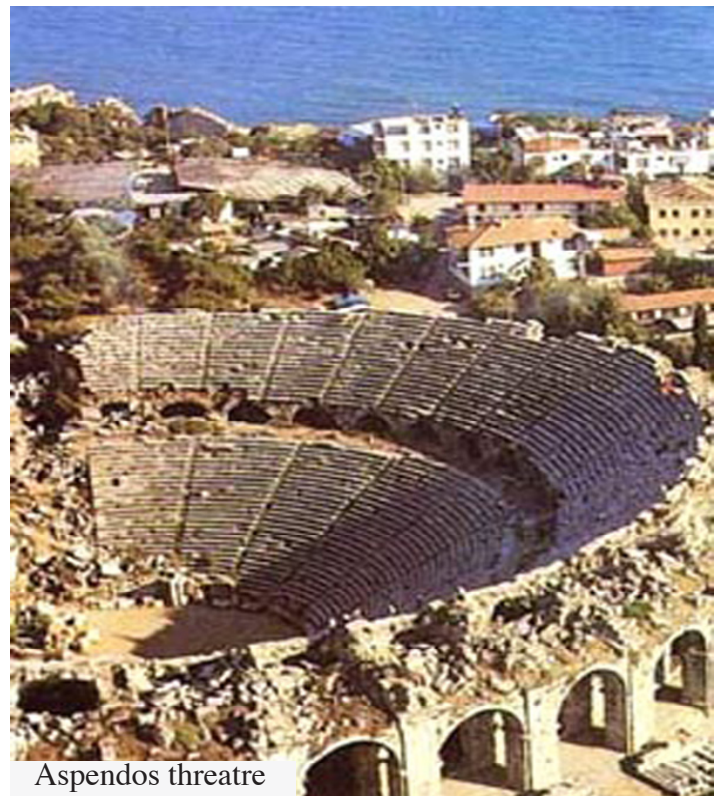
It is a great pleasure for us to welcome you all to Antalya and to the 10th International Congress of Orthopterology in Antalya, Turkey, 21-25 June 2009. At this congress we expect delegates from all over the world to meet and exchange experiences and ideas with other colleagues working in different fields of orthopterology. All delegates are invited to register and to submit abstracts for poster and/or oral presentations and to give talks and present posters.

We aim to have a very exciting scientific programme and to attract young research workers and scientists-in-training as well as established research orthopterists . A wide range of subjects will be covered and the plenary lecture and symposia/workshops are aimed at giving overviews and updates on recent researchs.

Antalya is one of Turkey's most exciting and beautiful destinations, which brings millions of tourists from all over the world. Antalya has a facinating history through Roman, Greek and Ottoman time, diverse fauna and flora on the coast of South-west Mediterranean Anatolia and in the Taurus Mountains surrounding it.

We cordially invite you all to join us in Antalya for a most exciting and memorable meeting!

Professor Battal CIPLAK, Turkey



Aspendos theatre



Schedule of events

Sunday 21 June 2009 – Arrival and registration

Monday 22 June 2009 – Registration and sessions

Tuesday 23 June 2009 – Registration and sessions

Wednesday 24 June 2009 – Registration and sessions

Thursday 25 June 2009 – Registration and sessions

26 June - 1 July 2009 – Post meeting tour

Scientific Programme

Plenary Symposia

1. Phylogeography and speciation:
Organizer – L. Lacey Knowles (USA)

2. Communication and Orthoptera:
Co-organizers- Klaus-Gerhard Heller (Germany) and
Zhang Long (China)

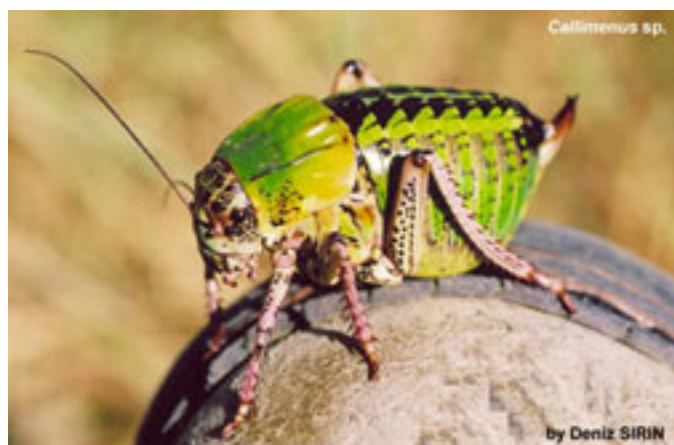
3. Orthoptera and global changes:
Co-organizers - M. Samways (South Africa) and Dan
Johnson (Canada)

4. Integrated Pest Management for Locusts and Grass-
hoppers: are alternatives to chemical pesticides cred-
ible:
Organizer - Michel Lecoq (France)

5. Orthopteromics: Unravelling the link between Or-
thopteran genomes and phenotypes:
Organizer - Greg Sword (Australia)

Workshops

Orthoptera in education : Charles Bomar (USA) (De-
tails will be announced later)



Orthopterists' Society 2006 Financial Report (p. 1)

(In US Dollars)

Income

Membership Dues	5,925.00
Publications (subscriptions, publications, page charges).....	13,755.90
Non-Designated Contributions	11,186.55
Sponsored Membership Contributions	310.00
Research Grant Contributions (match by anonym. donor is included in Non-Design. Contr.)	1,595.00
Credit Card Fees	216.00
Checking Account Interest	48.40
Investment Income (about 2/3 reinvested in Vang. Tot. St. Mkt. Index Funds)	2,505.45
Transfer from AAAI Acct. to repay OS loan for first Uvarov Award in 2005	580.00
Total	36,131.30

Expenditures

Officer's Remuneration.....	7,750.00
Editorial Assistant	6,875.00
Assistance for Executive Director	828.29
Printing (JOR 14 (1 & 2) 15 (1), Metaleptea, CD Tucuras)	12,032.70
Research Grants	6,547.00
Miscellaneous (returned checks and fees, wire transfer fees, refund, mailing for CD Tucuras).....	246.10
Canmore Conference Expenses	1,146.02
Credit Card Company fees.....	469.75
Total	35,894.86
Surplus	236.44

Orthoptera Species File

In 2005 the OSF2 Database Endowment was transferred from the Orthopterists' Society to the University of Illinois Foundation and was combined there with a larger OSF2 Endowment. The Society receives a large portion of the annual income from this combined endowment by the terms of the endowment. This annual income is received by the Treasurer's office and is disbursed by the OSF Officer (David C. Eades) and the OSF Committee also through the Treasurer's office. A detailed accounting of the income and disbursements from this endowment is submitted each year by Dr. Eades to the Executive Committee. The following is a summary of this account.

Income.....	26,251.00
Expenditures (Grants).....	26,286.00

Orthopterists' Society 2006 Financial Report (p. 2)(In US dollars)

Fund and Checking Account Balances

31 Dec. 2005 31 Dec. 2006

OPERATING FUND

Vanguard (Total Stock Market Index Fund*) (income reinvested).....	31,352.49	36,215.58
Morgan Stanley Dean Witter (Pfd. Stock, Money Mkt. Fund).....	6,018.13	-0-
A.G.Edwards (Pfd. Stock, Money Mkt. Fund)	-0-	6,394.04
Interest Checking Account**	10,985.29**	8,841.94**
Total Operating Funds.....	48,355.91	51,451.56

ENDOWMENT and RESTRICTED ACCOUNTS

Morgan Stanley Dean Witter (Founders' Endowment (Preferred Stock, Index Fund*, Money Mkt. Fund)	16,429.93	-0-
A.G.Edwards (Founder's Endowment (Preferred Stock, Index Fund*, Money Mkt. Fund)	-0-	19,100.04
Morgan Stanley DW (AAAI Uvarov Award Fund)	8,379.46	-0-
A.G.Edwards (AAAI Uvarov Award Fund).....	-0-	8,449.46
Vanguard (Total Stock Market Index Fund*)	14,183.82	16,383.86
(Restricted to Research Grants Program)(income reinv.)		
Total Endowment and Restricted Accounts.....	38,993.21	43,933.36

TOTAL NET WORTH OF THE SOCIETY..... 87,349.12 95,384.92

*Our investments in the Vanguard Total Stock Market Index Fund are still below the level at which we can extract profits under the policies adopted at Cairns in 1997 (half of each 10% increase over the last 10% increase so as to keep our investments growing). All dividends and capital gains distributions from these funds are reinvested

** The large amounts in the checking account at the end of 2005 and 2006 were held for checks for officer remuneration and grants which were cashed in the following year.



Contribute to an Insect Wing Collection

Dear colleagues,
I have been developing an Insect Wing Collection for a few years now. This collection is currently restricted to polyneopteran orders. It is composed of wings mounted on glass slides in Euparal medium.

This project is twofold. First, it is expected that a better documentation on intra-specific variability in wing venation will improve the 'taxonomic reliability' of fossil species known after wings only. The second aim of the project is to determine diagnostic characters of wing venation for recent orders so that stem representatives could be readily identified. A publication resulting from the early step of this project regards the order Plecoptera and can be found on the webpage of the free-access journal *Illiesia*.

I am appealing to you for donating specimens belonging to the orders Orthoptera and Phasmida. I am interested in species for which individuals are fully winged, and for which a sample of about 5-10 specimens (for each sex, if both are winged) could be provided. However, if you have only a single specimen of any rarity relevant to the project, such as *Prophalangopsis obscura*, I am interested! Ideally the specimens would be determined at the species level. It is important that the body, after dissection of the wings, could be kept in my collection so that any problem in determination could be fixed later. Regarding the species I am interested in, I have virtually no samples for Orthoptera, so feel free to send me any species. Regarding Phasmia, I have sufficient data on the following species: *Heteropteryx dilatata*, *Anchiale maculate*, *Phasma reinwardtii*, and *Eurycnema versirubra*.

Specimens could be send to the following address:
Olivier Béthoux
State Natural History Collections of Dresden
Museum of Zoology
Königsbrücker Landstraße 159
D-01109 Dresden
Germany

Feel free to contact me on obethoux@yahoo.fr for any aspect regarding this request.

Olivier Béthoux

The Gordon Alexander Grasshopper Collection: Newly Curated and Available On-Line

M. Deane Bowers and Cesar Nufio
University of Colorado Museum of Natural History
and Department of Ecology and Evolutionary Biology
UCB 334, Boulder, Colorado 80309

Orthoptera are ideal for the study of ecological principles and human impacts on natural communities. They are widely distributed, conspicuous, easily observed and collected, and relatively well-known taxonomically. We at the Entomology Section of the University of Colorado Museum of Natural History are currently utilizing the newly curated and databased Gordon Alexander Orthoptera collection to examine the effects of recent climatic warming on the distribution, phenology and life history of grasshoppers near Boulder, Colorado, and the adjacent Rocky Mountains.



Dr. Alexander and wife Marion at Guanella Pass, Colorado, in 1959. Photo by D Van Horn.

Gordon Alexander (1901-1971) was a professor at the University of Colorado from 1939 to 1966, where he served as the chair of the Biology Department for nearly 20 years. Alexander was a distinguished ornithologist and orthopterist, whose research resulted in publications that ranged from keys to the grasshoppers of Colorado, to descriptions of the general adaptations by organisms living along elevational gradients, to articles on the biogeography of birds and grasshoppers of the Front Range and Rocky Mountain regions of Colorado.



Dr Alexander, Dr Hilliard and a student collecting grasshoppers south of Boulder, CO, in 1958. Photo by D Van Horn.

The Alexander collection is largely composed of 24,000 vouchered and curated grasshoppers collected during the 1930's to the 1960's by Gordon Alexander and his students. During the 1958 to the 1960 field seasons, Gordon Alexander and his colleague, John Hilliard Jr., led a National Science Foundation funded project to examine the distribution and phenology of grasshoppers found along an elevational gradient from the Front Range of Boulder, Colorado, up to the alpine environments of the Rocky Mountains. By rearing juveniles, Alexander and Hilliard Jr. were also able to determine which species were residents at particular elevations and which were not. During the 1958-1960 survey they vouchered 13,500 specimens from over 200 unique localities. Still, their survey focused primarily on 14 main sites that they resampled roughly every two weeks, with five of these sites being adjacent to weather stations that are still actively recording weather data.

What makes Alexander's 1958-1960 voucher collection particularly valuable is that while only a

portion of the surveyed specimens were included in the physical collection, data from an additional 51,500 processed specimens were accounted for in field notebooks. These notebooks also contain detailed locality data, collecting information (collectors and collecting effort) and information on species present and their abundances, sex ratios and developmental stages. Overall, the collection data include phenological and distributional data for approximately 65,000 individuals of 94 different species! This three year survey resulted in a publication that documented the distribution, diversity, phenology and community structure grasshopper species across different elevational belts and explored the factors that might determine the observed patterns (Alexander and Hilliard, 1969).



Brachstola magna, one of over 90 species represented in the Alexander Orthoptera Collection.

With support from the NSF Biological Research Collections program, we identified, curated and databased the 24,000 grasshoppers that make up the Alexander Collection. The data from the Alexander specimens are currently available on-line in two ways: through the Gordon Alexander Project website (<http://alexander.colorado.edu/>), or through the Global Biodiversity Information Facility (GBIF) portal (<http://data.gbif.org/datasets/resource/1667/>). The Gordon Alexander Project website also provides a detailed biography of Gordon Alexander, project related information and other associated metadata. We also will soon provide climate data and interviews with past participants of the original 1958-1960 survey. In the future, we hope to utilize the project's specimens and associated metadata to construct laboratory exercises to introduce students to climate change and

its effects on organisms.

With support from the NSF Ecology program, we are currently using the Alexander's 1958-1960 survey to understand how climate change is affecting regional insects. We are working to transcribe and add the 51,500 specimen records in the Alexander notebooks to a relational database, resurveying Alexander's main collecting sites and compiling weather data from the weather stations associated with the main collecting sites. With Alexander's data coupled with the new resurvey program we can address questions such as: 1) Have phenological patterns of grasshopper species changed over time and do any changes correlate with changes in climatic variables? 2) Have community compositions and populations changed over time and have some species been impacted more than others? 3) Have species ranges changed and how does this relate to changes in climate along this elevational gradient?

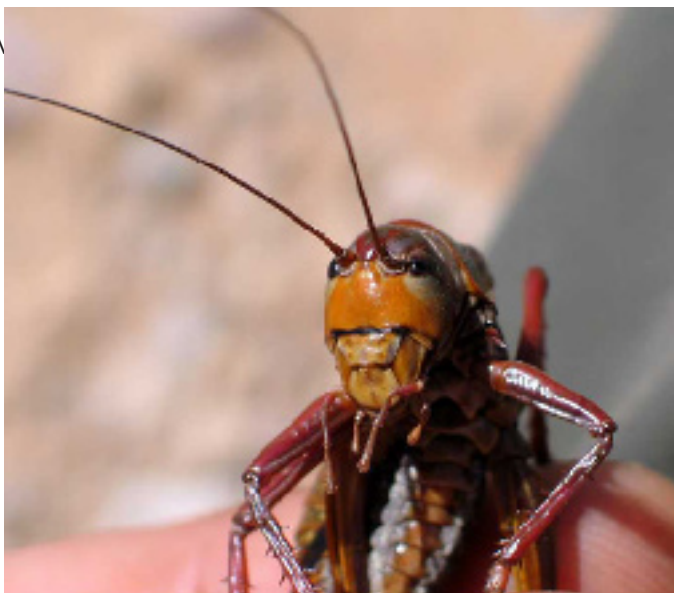
Reference:

Alexander G and Hilliard JR, Jr. 1969. Altitudinal and seasonal distribution of Orthoptera in the Rocky Mountains of Northern Colorado. *Ecological Monographs* 39: 385-431.

Articles

When good crickets go bad

Nathan Bailey (nathanb@ucr.edu)



When Mormon pioneers settled in Utah's Salt Lake Valley in 1847, they encountered another migratory species to which they gave their own name: the Mormon cricket. Since then, these plump, flightless tettigoniids have become well-known in the western US. Ravenous crickets can move up to 2 km per day and consume any edible morsels in their path—including each other—and severe Mormon cricket outbreaks cause significant crop and rangeland damage. In the last several years, particularly high Mormon cricket densities have given myself and a number of other researchers a fantastic opportunity to study them.



Migratory bands look like something out of a 'B' horror flick and tend to send the citizenry into a state of wild agitation. What many people don't know, though, is that in the eastern portion of their range, Mormon crickets also occur in sedentary, low-density populations that barely resemble their mayhem-inducing western counterparts. The forms had been likened to the better-known phase polyphenisms in migratory locusts, but surprisingly, no genetic work had been done on Mormon crickets previously. The expression of the high-density versus the low-density phenotype was assumed to be facultative, that is, a phase polyphenism induced by environmental differences as opposed to genetic differences.

I was curious about this, because few people had documented clear-cut transitions from one form of Mormon cricket to the other, and after all, maybe they were just subspecies. I figured I could rule out the subspecies hypothesis by doing a population genetic

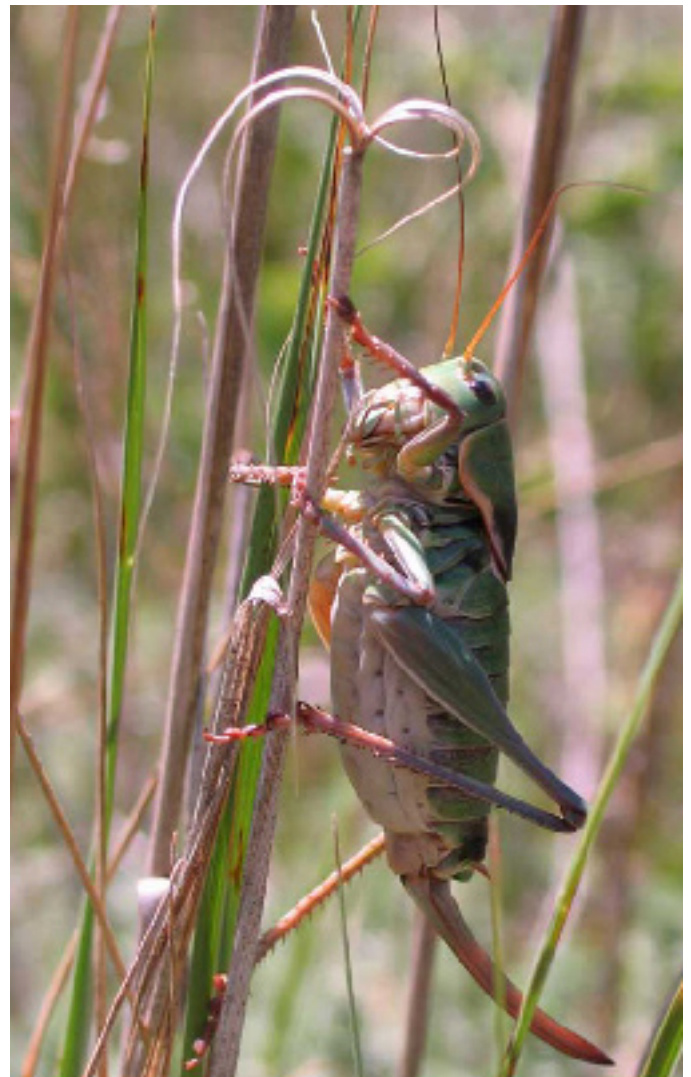
study, so I sequenced a few mitochondrial genes from populations of each form with my collaborator Darryl Gwynne and supervisor Mike Ritchie. As with most scientific endeavors, though, the study stimulated more questions than it answered: it revealed a deep phylogenetic split within Mormon crickets that was about 2 million years old, but the split corresponded—imperfectly—to the two cricket forms. The depth of the genetic division was consistent with subspecies that had been initiated during Pleistocene glaciations and had experienced separate evolutionary histories, but there was one outcast among the populations we sampled. Mormon crickets from Little Brush Creek, Utah, were behaviorally and morphologically similar to the low-density form from the eastern Rockies, but genetically similar to the migratory western form.

We set aside the genetics and turned our attention to male calling song and the morphology of sound producing structures on the tegmina. We thought perhaps we could clarify the subspecies question by testing whether the two forms were distinguishable across a broad suite of morphological and behavioral characters. They were. Males from low-density populations differed in the temporal parameters of their songs, as well as the sound-producing structures on their tegmina. I was still bothered by the outlying Little Brush Creek population, though, and my own observation that the two forms would readily mate with one another if given the chance.

This called for a larger genetic study, one that would have the resolution to distinguish between different hypotheses about the ultimate origin of the genetic division and remarkable distinction between forms. In the final analysis, whether a Mormon cricket population was one form or the other turned out to be a pretty lousy predictor of population genetic structure. Instead, the genetic subdivision appears to have arisen when populations were driven into separate refugia on either side of the Rockies during Pleistocene glaciations, and is correlated with—but not explained by—phenotypic differences between the two forms. This suggests an interesting scenario where differing thresholds of phenotypic plasticity might be superimposed on a deep genetic division resulting from Pleistocene vicariance. In a sense, our result isn't as much of a surprise as it seemed at first: while the two forms of crickets might differ genetically because of isolation during the Pleistocene,

the genetic differences are neutral mutations in the mitochondrial DNA and microsatellites that we studied, not necessarily in genes known to affect color polymorphisms or behavioral traits.

The Mormon cricket system has provided valuable insights into the way behavior and geography interact to shape population genetic structure. There are plenty of unanswered questions that can be examined using Mormon crickets, and future work might focus on better understanding the behavioral and geographical influences on diversification within this species. On a more personal note, I also think Mormon crickets are charming creatures—when they are not regurgitating the contents of their crop on you or removing a chunk of bloody flesh (although I have to admire their tenacity). I am grateful to have received financial support from the Orthopterists' Society to pursue research and contribute to the growing body of knowledge on these remarkable Orthopterans.



The Sacred “Chapulin”

Alba Bentos-Pereira

In the north of the State of Jalisco, very close to the city of Aguascalientes, there is a small town called Teocaltiche. The name means “at the side of the sacred place” or “at the side of the place of worship”. The records of human habitation in the area are lost in the darkness of time. They were already ancient when the Mayas and the pre-Hispanic Aztecs developed their striking civilizations. Today it is a sleepy town that lives to relate its past glories, for during the first half of the 20th century, it was a place of thriving industries which exported blankets (“sarapes”) to Saltillo and wooden goods to Michoacan.

So what is special about this place for entomologists? And even more, for orthopterists?

There they venerate a “chapulin”, the name for grasshopper in Spanish (a dialect word, derived from the Nahuatl “Chapul”). It is related that there was once an enormous swarm of locusts, that caused ruin and misery and hunger in the whole town. This swarm persisted for at least two seasons and then disappeared as usual. In the following year, when they saw that the scourge was gone, the grateful inhabitants organized a procession, as is traditional in Mexico, in which all their religious images were carried on platforms in the streets. The most venerated is a beautiful image of Our Lady of the Sorrows, dating from the colonial period, which has a crown of gold and precious stones and a cloak of black velvet bordered with silver. To the horror of the faithful, one of the hated locusts, which were still flying around in the town, dared to settle on the Virgin’s cloak. No power, divine or human, succeeded in removing it from this place, until it died days later, surely of starvation, long after the Virgin had returned to her place in the corner of the great altar.

I asked to see it, to identify it, and to find out what species it was that had received such extraordinary treatment and was the object of such devotion; however I did not succeed in getting them to show it to me, although I pointed out to them that it came out for festivals. Some better informed persons advised me that it would be impossible to identify, as the insect had lost its characteristics in the bath of gold.

None+theless there are an infinite number of sculptures and carvings in the town which attempt to reproduce the singular object of devotion. The appearance and size of these effigies makes me think that it was a male of the genus *Schistocerca*. So if you go to Teocaltiche, let it be during one of the many processions and religious festivals, in order that you may be convinced of the truth of what I tell here.



FIFTY YEARS CHASING ORTHOPTERA

Stan Gangwere

Professor Emeritus, Wayne State University, Detroit,
MI 48202, USA–

Home mailing address: 1301 W. Madison St., Ann
Arbor, MI 48103

The elderly tend to reminisce and, though I still feel young, I'm admittedly "long in the tooth" so perhaps I've fallen victim to this common senior affliction. Anyway, my story begins following World War II military service in the U.S. Army Air Corps, southwest Pacific, whereupon I registered as an incoming freshman at Ohio University, Athens, Ohio. The next year I transferred to the University of Michigan, Ann Arbor, Michigan, and spent my remaining undergraduate and graduate years there. It was at Michigan where my interest in, and enthusiasm for, the natural sciences led to my life-time study of insects.

Among my professors in Michigan's Department of Zoology were Paul Welch, a venerable limnologist/aquatic entomologist of the old school who, in lecture, laboratory, and even the field, dressed impeccably in formal attire (dress suit, necktie, gold watch chain, ect.) and Urless Lanham, a quiet, scholarly man best known for his general entomology textbook. I profited greatly from their pedagogy but yearned for more information. When apprized of the fact that advanced studies in entomology were possibly at the university's Museum of Zoology, I transferred there. My mentors there were the museum director, T. H. Hubbell, a renowned orthopterist / camel cricket specialist who served as my major advisor, and the insect curator, Irving Cantrall, another well known orthopterist. In view of their research orientation and in as much as the museum's Insect Division housed one of the largest, more complete collections of the Orthoptera in the world, I was exposed daily to these insects.

At the outset, I should clarify what I mean when I talk about Orthoptera. As this audience knows, our current scheme of classification includes within Order Orthoptera grasshoppers, plague locusts, katydids, crickets, camel crickets, and their close relatives, but not cockroaches, mantises, walkingsticks, leaf insects, and their allies which, at the inception of

my studies in the early 1950's, were still included within the order but now are better designated within Superorder Orthopteroidea. Whatever terminology one accepts, my interests embraced them all, and over the years I studied representatives of all. Therefore, my comments are to be taken in this wider sense though I'll continue calling them, however incorrectly, Orthoptera.

I might add that I'm neither a systematist who specializes on a particular taxon nor one who studies a certain fauna. I'm a feeding specialist / ecologist / biogeographer who loves animals, particularly insects, and enjoys traveling about to study them in nature. I'm perhaps best thought of as an observer who walks through selected communities, day and night, scrutinizing landscape and vegetation in search of Orthoptera. Upon locating suitable individuals, I stand or preferably sit, absorbed by their activities, watching and recording sometimes for hours. I'm also not much of a collector. I capture only the minimal number of insects necessary for caging, experimentation, dissection, and recording data.

My fascination with Orthoptera was reinforced when Profs. Hubbell and Cantrall took me on a 10-day field excursion throughout a southeastern United States in search of orthopteran topotypes to supplement the museum's already extensive collection of types. This trip afforded me the opportunity both to know these veteran orthopterists better and to learn how entomologists work in the field. Of the two, Hubbell was the more reserved, scholarly, and driven and Cantrall was the more casual, relaxed, and easy going but equally knowledgeable. We collected specimens of, among other species, the uncommon walkingstick *Diapheromera carolina* Scudder (one individual of which actually fell from a tree atop Cantrall's head!), the supposedly "rare" *Hubbellia marginifera* Walker (guess for who the genus was named!), a katydid that proved to be relatively common high up in the tops of local conifers, and many individuals of the particular short-winged grasshoppers that were the main focus of our excursion. Moreover, in the course of these collections, we stopped at laboratories of a number of well known entomologists, among them B. B. Fuiton, of North Carolina State, an especially hero of mine for his studies on field cricket systematics. Fulton told me that he could not have separated his *Gryllus* entities from one another if someone were to discard the

locality labels, so close and structurally inseparable are these physiological species.

I might add that I returned from the trip to find that I was now sharing my office with an irrepressible, impossibly enthusiastic new student, the katydid specialist Ted Cohn, who replaced the newly graduated insect ecologist Ed Kormandy (whom I last saw at Hilo where he was serving as president of the University of Hawaii). Never were two people more unlike than Ted and me! I'm perhaps thought of as an over fastidious "neatwit" (hopefully not nitwit!), as opposed to Ted who operated in complete clutter and chaotic abandon but somehow manages to execute superbly the abstruse projects for which he is known. Despite it all, the two of us became friends and have continued to be friends ever since. Incidentally, Ted is the outgoing President of the Orthopterists' Society, an organization about which I'll speak later.

I originally decided to undertake doctoral research on systematics of the grasshopper genus *Melanoplus* Stal but I found myself drawn in a totally new direction, viz., toward feeding studies in the vein pioneered by F. B. Isely in Texas. I carried out this challenging new work with enthusiasm, and some years later it culminated in my monograph on food selection (Gangwere, 1961).

Following completion of the doctorate I joined the faculty of Wayne State University, Detroit, Michigan, where, until my retirement in 1998, I taught entomology, environmental ecology, biogeography, served as an administrator, and directed the departmental biological stations, first at Northwoods in the Upper Peninsula of Michigan and then at Fish Lake in the Lower Peninsula. My research at Wayne involved various new aspects of the Michigan orthopteran fauna and led to publications including, among others, several on feeding mechanisms that I shall not detail further as well as a major NSF-funded study of feeding in a southeastern Michigan old-field community. This long-term project resulted in a publication (Gangwere, Evens, & Nelson, 1976) co-authored with the late Francis-Evans, a nationally recognized ecologist, and M.L. Nelson, of one my graduate students.

I had long been attracted to the Iberian Peninsula because of its interesting culture, its exceptional

geological history, and its marked ecological zonation and stratification. It is in such "compartmentalized" places as these that endemic and other geographically restricted species tend to occur. I was hoping to find many endemics in Spain and was not disappointed when I carried out a detailed study on the subject wherein I identified as endemic over 36% of the Iberian Peninsula's total fauna of Orthoptera. This research on the peninsula's rare and endangered species was sponsored by ICONA, a branch of the Spanish government, and led to a "red book" (Gangwere, Viedma, & Llorente, 1985). My co-authors were the late Manuel Viedma, the well known Spanish coleopterist who had an especial interest in environmental conservation, and Vicente Llorente, the orthopterists / pamphagine specialist who replaced the late Eugenio Morales Agacino at the Instituto Espanol de Entomologia, Madrid upon the latter's retirement.

When I first became interested in the Iberian Peninsula, I contacted the aforementioned Eugenio Morales. Eugenio, a brilliant, highly enthusiastic, utterly charming extrovert, was, at the time, one of the world's premier orthopterists placing him in the company of such European greats as Lucien Chopard of France, Max Beier of Austria, B. P. Uvarov of England and G. J. Bei Bienko of Russia. Chopard and Beier were deceased by the time of my arrival in Europe, but I was able to meet and enjoy limited interaction with Sir Boris and Bei Bienko. I made arrangements to join Eugenio in Madrid and, from 1961 through 1998, was fortunate enough to receive relatively continuous funding from such sources as the Fulbright Program, the National Science Foundation, the American Philosophical Society, the National Academy of Sciences, and Wayne State University which allowed me to collaborate with Eugenio and other orthopterists in the study of the Instituto's extensive, superbly curated collection.

It was in Eugenio's laboratory where I was privileged to meet some of the world's most distinguished visiting orthopterists. Among those whom I met in his laboratory and in certain international congresses of the time were P. T. Haskell, V. M. Dirsh, and N. D. Jago of England, V. R. Vickery and D. K. McK. Kevan of Canada, M. P. Pener of Israel, C.S. Carbonell of Uruguay, and R. A. Ronderos of Argentina. It was with the latter, the late Ricardo Ronderos, the distinguished orthopterist best known for his studies

on the grasshopper family Ommexechidae, with whom developed particularly close ties leading me to undertake museum research at his Universidad Nacional de La Plata where I collected in Patagonia and the grasshopper-rich pampas where, on one occasion, I literally bumped into a startled rhea as the giant bird rested behind a shrub! Our collaboration led to a synopsis of food selection in Argentine acridoids (Gangwere & Ronderos 1975) and a review of the current status of New World acridology (Gangwere & Ronderos, 1978).

Ricardo, Eugenio, and I, as well as others who, at the time, met at the Instituto formed the nucleus of the Pan American Acridological Society, PAAS, as we called our nascent organization, was conceived over coffee breaks and eventually formalized at a December, 1976, binational conference held at San Martin de los Andes, Argentina, under auspices of the United States-Argentina Cooperative Science Program. This meeting, described some years ago in a coauthored paper (Gangwere & Vickery, 1987), was the precursor of many subsequent conferences held in various venues throughout the world as the organization metamorphosed into today's prestigious Orthopterists' Society (of which I have the honor of having served as Executive Director and President). I might add that Eugenio himself hosted one of its meetings, the memorable 5th International Meeting held at Valsain, Spain, in 1989.

I began traveling to Spain every summer and also spent several year-long sabbatical leaves there along with my wife and daughter. On different occasions I carried out research at the Instituto in Madrid and at its biological station in the Orthoptera-rich Guadarrama Mountains north of Madrid; I taught insect ecology for a semester (ineffectively, I'm sure, owing to my linguistic limitations in Spanish) at the hymenopterist Ignacio Docavo's Catedra de Biologia of the Universidad de Valencia along the eastern Mediterranean coast. I studied Orthoptera in the Javea area, also along the eastern coast. I worked in Granada, southern Spain, and in the adjacent Sierra Nevadas, and later I spent a summer at the forestry station in the Sierra de Cazorla, also in southern Spain. Eugenio and I collaborated during this time on a number of projects leading to publications such as our Iberian biogeographic study (Gangwere & Morales, 1970) and our monograph on food selection and



Fig. 1 *Top:* Eugenio Morales Agacino, *Middle:* Manuel Viedma at left & Eugenio Morales at right with author's wife & daughter, Granada, 1967. *Bottom:* Ignacio Docavo (far left) & his staff on a collecting trip, Valencia, 1961

feeding behavior in Iberian Orthoptera (Gangwere & Morales, 1973). Moreover, it was Eugenio who persuaded me to expand my studies to embrace certain Atlantic and Mediterranean island Orthoptera in need of attention.

Thus began my investigation into the Canary Islands. The Canaries are volcanic islands off the coast of Africa, swept by the trade winds, warmed by the Gulf Stream, and, hence, characterized by a mild subtropical climate. They are of interest because of their isolation and their exceptional geomorphologic, climatic, and biogeographic zonation (including even remnants of Tertiary Period rain forest), and consequently they have a relatively high incidence of indigenous Orthoptera. La Palma and Tenerife Islands, for example, have a rugged terrain that, in places, supports scrub, yet, in other places, grows luxuriant rain forest contrasting with the austere flora of flat, semidesertic Fueteventura and Lanzarote, each supporting its own kind of Orthoptera.

The Canary Island project resulted in several publications, the first two of which dealt only with Tenerife (Gangwere, Morales Martin, & Morales Agacino, 1972; and Gangwere, 1973). Manuel Morales Martin, I might note, was the leading authority on Canarian Orthoptera, and I've already discussed Eugenio Morales. The third paper, a collaborative one (Gangwere, McKinney, Ernemann, & Bland, 1998), dealt with all of the Canary Islands. Its co-authors included my good friend and fellow orthopterist Roger Bland, of Central Michigan University, and two of my graduate students, the late John McKinney and Madel Ernemann.

I then undertook studies on another, even more isolated Atlantic site, the Portuguese island of Madeira, a rugged volcanic mass of high peaks, semidesertic scrub, and lush subtropical gorges through which swift streams run to the ocean. Madeira is perhaps best known for its fortified dessert wine and its brilliant tropical flowers but not for its Orthoptera, though they too proved to be well worth attention. I expected to find fewer endemics here than in the Canaries, a prediction which held true. This research resulted in a single paper (Gangwere, 1987).

Following Madeira, I turned to the typical Mediterranean orthopteran assemblage of the Balearic

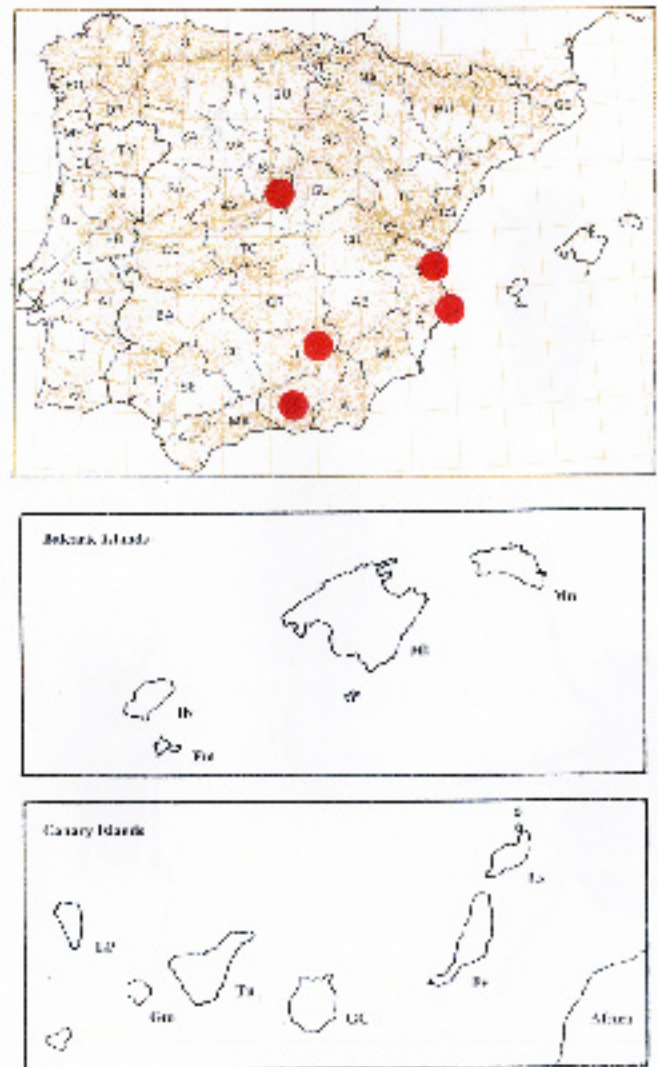


Fig. 2. Top: Topographic and provincial map of Iberian Peninsula showing the main research base in Spain, with Madrid at top center, Valencia and (below it) Javea along the eastern Mediterranean coast, and Cazorla and (below it) Granada in the south. (Note the Balearic Islands to the east of the peninsula).

Middle: outline map of the Balearic Islands, showing Ib=Ibiza, Fm= Formentera, Ml=Mallorca, and Mn=Menorca.

Bottom: outline map of the Canary Islands, with LP=La Palma, Gm=Gomera, Tn=Tenerife, GC=Gran Canaria, Fv= Fuerteventura and Lz=Lanzarote. (Note the African continent to the right of the Canaries).

Islands in hopes of providing a contrast to my Atlantic research. The Balearics enjoy an equable climate and have a diverse terrain, being typically flat in Formentera and Menorca, hilly in Ibiza, and

mountainous in Mallorca, each island supporting its own kind of Orthoptera. There my colleagues and I carried out two projects, each of which resulted in a publication (Gangwere & Llorente, 1992; and Gangwere & Spiller, 1995). The pamphagid specialist Vicente Llorente as mentioned earlier was Eugenio's successor at the Instituto, and Doug Spiller was one of my graduate students. Again, as with Madeira, we found fewer endemics than in the Canaries.

Finally, my preoccupation with Orthoptera led to, among other publications, two major review articles on orthopteran host finding and feeding behavior (Gangwere, 1972; and Gangwere, Muralirangan, &



Fig. 3. Selected rare and / or endangered Orthoptera of the Iberian Peninsula.

Top left shows the gomphocerine grasshopper *Omocestus bolivari* Chopard,

Top right: catantopine grasshopper *Podisma cantabricae* (Morales).

Center: the pamphagine grasshopper *Navasius sulcatus* (Bolivar).

Bottom left: the ephippigerine katydid *Steropleurus politus* (Bolivar).

Bottom right: pycnogastrine katydid *Pycnogaster cucullatus* (Charpentier).

Muralirangan, 1989) designed to update my Michigan monograph (Gangwere, 1961). My co-authors, M. C. Muralirangan and his wife Meera, are well known Indian entomologists with an especial interest in orthopteran feeding behavior. I later co-edited a book on orthopteran bionomics with them (Gangwere, Muralirangan, & Muralirangan, 1997). Following retirement, I have written a couple of invited review articles on aspects of feeding and also a textbook of entomology (Gangwere, 2005) in which, as always, Orthoptera play a prominent role.

Conclusions

In the preceding pages, I've mentioned some places where I've worked, entomologists with whom I've consulted, and selected results of these diverse activities. I've spent many fulfilling years preoccupied with Orthoptera. Why would one spend a lifetime on such, some would say trivial things? I don't know, but does it matter? All I can say is that I don't find Orthoptera trivial. I find them fascinating, and I enjoy working with them in hopes of gaining new insight into their lives in nature. That is, after all, the *raison d'être* underlying most scientific investigation.

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We are planning to publish the next edition of the Newsletter in June. Please consider submitting an article or news item of interest.

Only email submissions may be accepted in the future. Please submit text files as attachments with the extensions doc or rtf. Do not save with any other extension.

Text files with the extension docx **cannot** be read by the editor's Mactintosh computer and so members using Windows 2007 cannot save documents using the default setting which is docx. Please use the Save as command to ensure saving your text files with a doc or rtf extension.

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Please do not submit figures as html pages or simple as html (a default if you are not careful on some email services), Doing such causes conversion of the images into low resolution images that the editors must screenshot and redo.

Thank you for your understanding. We are grateful for any submission that may be of interest to the membership and will work with individuals who cannot submit using the above guidelines. Be aware that the new guidelines are the result of an effort to make this publication more timely. As you can imagine re-typing of text, or scanning and editing of photographs submitted as hardcopy require a rather large investment of time on the part of the editors. Although we are reluctant to reject any worthwhile article, we can no longer promise that articles submitted in this fashion will be published in the next edition of the newsletter.

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