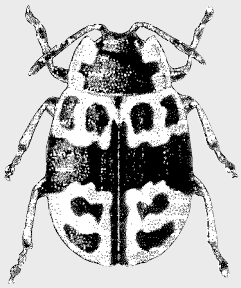


CHRYSOMELA newsletter

Dedicated to information about the Chrysomelidae

Report No. 38/39 April 2000

INSIDE THIS ISSUE

Bandar Lampung, SOUTH SUMATRA,
Chrysomelidist Marries UN Worker

Chris Reid and Evi Thristiawati were married on February 2, 2000 at the Bandar Lampung temple in South Sumatra. Chris and Evi are one of three marriages of chrysomelid colleagues that we know of married in the first three months of this year.

Research Activities and Interests

J. Gordon Edwards (San Jose, USA) continues general interest in leaf beetles; would like his specimens identified, especially Central and South American.

Luca Fornasari (Montpellier, France) is working on the biology, host specificity, and biological control of weeds using flea beetles.

Hugh D. C. Heron (Escombe, South Africa) continues research into the biology of South African cassids, particularly life cycles, host plants and feeding patterns. Also, mimetic relationships between coccinellids and cassids (*Chiridopsis*).

Michihiro Ishihara (Sakai, Osaka, Japan) currently doing research on the process of evolution of *Plagiodera versicolora* life cycle and host use patterns. Because *P. versicolora* is common worldwide, study of geographic variations is a good method to clarify the evolutionary pattern. Currently investigating the voltinism, host species and predators at several locations through various latitudes in Japan. Additionally, studying the diapause characteristics, other life history traits, and preference performance linkage to host plant selection (with a focus on phenotypic plasticity).

Juan G. Hurtado (San Juan, Puerto Rico) starting work on a Doctoral degree under Catherine Duckett. Plans for thesis work includes molecular and morphological phylogenetics of Galerucinae: Section Cerotomites in the Neotropics.

Frantisek Kantner (Dubné, Czech Republic) continues work in the Clytrinae.

Yuri E. Mikhailov (Yekaterinburg, Russia) doing research on the polymorphism of natural populations of Chrysomelidae, faunistics and systematics of Chrysomelidae (mostly Cryptocephalinae) of the Palearctic region. Continues work on doctoral thesis "*Hierarchical*

(continued page 10)

THE EDITOR'S CORNER

Terry N. Seeno, Sacramento

Twenty Years of CHRYSOMELA

CHRYSOMELA first appeared in August 1979. The idea for such a newsletter is not at all original; some of the old timers (i.e. Ross Arnett) really paved the way, especially in a time when desktop publishing, as we know it, didn't exist.

Judging by the numerous requests and correspondences that I receive from the readers during the year, it seems to be growing in popularity. I try to keep publication on schedule but, from time to time, I miss an issue when there's not enough information to fill the pages.

The original intent of the publication is much the same today as it was then; to provide interesting and timely information to chrysomelid colleagues around the world and (hopefully) bring harmony to our discipline. It seemed like a good idea then and, for the most part, it still seems like a good idea.

It serves not only as a forum for debate and an outlet for observations but, hopefully, one of the more useful features is that it provides an avenue for newcomers to our discipline. Looking back through some of the old issues are names of people just starting out in the field who now are mentors of those just entering. I hope the direction of this newsletter will continue to emphasize that direction for another twenty years.

Book Review

Guide to the identification of leaf-beetles (Coleoptera, Chrysomelidae) of the Eastern Europe by A. O. Bienkowski. Moscow, 1999. 204 pages with 565 figures (in Russian). 210 x 149, paperbound. ISBN 5-900095-12-6. Price: $20.00 (US) + shipping.

This book provides the most complete guide for the identification of the leaf-beetles of the European Russia (including Ural), Ukraine (including the Crimea), Moldova, Byelarus, Lithuania, Latvia, and Estonia. A key to 637 species is given together with distributional and host plant information. Several species are recorded from this territory for the first time. Some invalid names, frequently occurring in recent literature, are put in brackets after the valid names. As a rule, illustrations are paired for the two alternatives of each couplet to facilitate determination. The book is provided with taxonomic index and list of literature cited. The guide is designed for entomologists (including amateurs), all biologists which deal with Chrysomelidae, specialists in plant protection, and students.

Contact: A.O. Bienkowski, Institute of Ecology and Evolution, Russian Academy of Sciences, Leninsky pr. 33, Moscow, 117071 Russia, or email bienkow@access.orgland.ru

—L. N. Medvedev, Reviewer

Book Notices

Interrelationship Between Insects and Plants, edited by Pierre Jolivet, Paris, 1999. 336 pages; ISBN:1-57444-052-7. Price $59.95 (US) + shipping. Offered by St. Lucie Press: <http://www.crcpress.com or email: <orders@crcpress.com>.

A World Catalogue of the Cassidinae (Coleoptera: Chrysomelidae). Wroclaw, 1999. 476 pages: ISBN 83-909804-4-4. Price $80.00 (US) + shipping. Send orders to: Polski Towarzystwo Taksonomiczne (Polish Taxonomical Society), Sienkiewicza 21, 50-335 Wroclaw, Poland.

Website Information

Updated information regarding the International Congress of Entomology **<htpp://www.embrapa.br/ice>.**

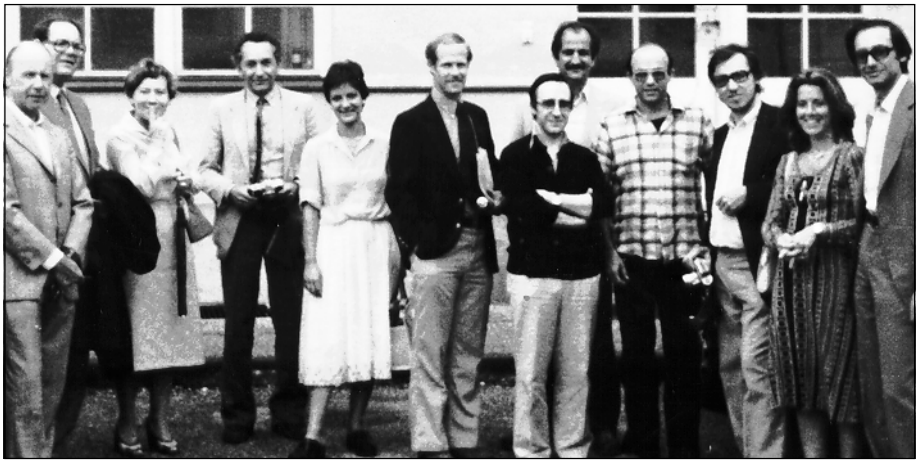
Drawings by **Juan Guillermos Hurtado** and, soon, larval photos of Oedionychina and other chrysomelids at: **<http://www.cnnet.clu.edu/biol/new/faculty/duckett>.**

Last Item:**<http://myweb.ns.net/tseeno>.**

First Chrysomela Photo

The first newsletter photograph appeared in CHRYSOMELA, no. 4, January 1981, featuring "The First International Alticinae Workers' Symposium."

From the left: Walter Steinhausen, Manfred Doeberl, Bohumila Bechyné, Gerhard Scherer, Carmen Segarra, Eric Smith, David Furth, Carlo Leonardi, Terry Seeno, Mauro Daccordi, Serge Doguet, Carmelèn Petitpierre, Eduard Petitpierre. Who would believe we were ever that young?



The Newsletter CHRYSOMELA–*Founded 1979*– is published semiannually in April and October by the California Department of Food & Agriculture, Plant Pest Diagnostics Center, 3294 Meadowview Road, Sacramento, CA 95832-1448. E-mail: tseeno@ns.net; telephone (916) 262-1160; FAX (916) 262-1190. This newsletter is sent to students of the Chrysomelidae to encourage the exchange of ideas and to disseminate information on these insects. **Editor:** Terry N. Seeno, Sacramento. **Advisors**: Catherine Duckett, San Juan; Brian D. Farrell, Cambridge; R. Wills Flowers, Tallahassee; Elizabeth Grobbelaar, Pretoria; Pierre Jolivet, Paris and Gainesville; Chris Reid, Townsville; Ed Riley, College Station; G. Al Samuelson, Honolulu; Eric H. Smith, Lynchburg; Charlie L. Staines, Edgewater; and Kunio Suzuki, Toyama.

THE FORVM

Responsibilities and Etiquette in Museum Research for the Visitor & Host

A recent trip to a prominent museum in Paris has led me to contemplate some issues of responsibilities and etiquette for both the visitor and the host. For most of us, particularly if we do systematic and taxonomic research, museums are a necessity and are often unique archives and caretakers of specimens. A successful visit to a museum to see needed specimens and borrow material for further study is often crucial to the full success of a research project. The museum often benefits because specimens are often identified and curated as a result. But what are the responsibilities of the visitor and what are the responsibilities of the museum host to make these research trips successful and fully realize the benefits to both sides?

The visiting researcher should first correspond with the appropriate caretaker of the institution. Information should be conveyed regarding the nature of the research project, anticipated time of visit, equipment or space needed, specific material that would need to be seen, and what material would probably need to be borrowed. A dialogue should be made to clarify any potential conflicts on either side prior to a visit.

The museum acts as a repository for material and must make reasonable efforts to avail material to visiting researchers in a responsible way. However, the museum also has a responsibility to protect its material in perpetuity. When evaluating a potential visit, these are the two areas which must be weighed by the host. First, the museum host may make an evaluation of the historical conduct of the visitor. An obvious example: has the visitor been charged with stealing specimens from other institutions? Of course, the museum host would be in a reasonable position to strongly control access in that case. Has the visitor previously kept specimens well beyond the agreed upon date of return? Again, if the host feels that tardiness in a loan return has jeopardized the safety of the specimens, that host may impose some restrictions to access.

Sometimes, the caretaker of the museum will use other factors to evaluate a potential visitor that seem to be of more subjective or personal nature than the above examples. One factor may be territoriality. We cannot deny that this is an element of our psyche, and it occasionally rears its head in this situation. There is only legitimacy, however, when the caretaker and visitor both are working on the same specific project and both need access to the same specimens, but not when they are merely working in the same field. Another factor used to evaluate a proposed visitor may be simple personal animosity. There may be no demonstrable historical misconduct on the part of the visitor, but nevertheless, animosity on the part of the host exists, and is used to deny access.

It is unfortunate that because of the diversity of museums, personalities, policies, and cultures, a museum visitation can be unrewarding for both sides. This is a shame since a successful visit can strongly benefit the museum through identification and curation of specimens by the visiting researcher, and can benefit the researcher by expediting research through study of critical material. As a person who relies on museums for research and also acts as a host and caretaker for a prominent collection, I hope I have clarified some of the issues involved in museum visitation. It is my hope that the unrewarding museum visit becomes only a fading memory.

—Anonymous

Timarcha lives (in Montana)!

Shawn M. Clark, Charleston
Pierre Jolivet, Paris

Much has been written concerning the genus *Timarcha* and the endangered status of many of its members. Two species are recognized from North America, *T. cerdo* Stål and *T. intricata* Haldeman. Both are classified in the endemic subgenus *Americanotimarcha*. However, minor differences occur among various populations, and there are unresolved questions regarding taxonomy. Perhaps, this is an instance where modern molecular techniques could demonstrate the presence of species that are hardly separable based on morphology. Although habitat for both of the recognized species has been reduced by development, the beetles survive in various areas.

We recently examined nine specimens collected from the McDonald Creek and North Fork Flathead areas, Glacier National Park, Flathead County, Montana. We have determined them as *T. intricata*. This species feed on Rosaceae, especially *Rubus parviflorus* Nutt.; however, all of the Glacier Park specimens were collected in pitfall traps. Most of the material is preserved in the Montana State University collection, but a single specimen is retained in the collection of each of the authors. Previously, this species was known to occur in Alberta, British Columbia, California, Idaho, Oregon, and Washington. It has also been reported from Colorado, but its occurrence there requires verification.

Historical Photo

from left: Charles Papp, Hans Kulzer, and Jan Bechyné, September 1949, at one of the side entrances of the Frey Museum

Southeast Asian Chrysomelid Collections and Taxonomists

Chris Reid, Sydney

In August and September 1999 I was employed by the Zoology Museum, Bogor, Java, to sort out the Coleoptera collection to family, sort select groups to species, and teach beetle systematics and methodology to museum staff and 6 lecturers from Indonesian universities. Among the museum staff, Woro Noerdjito has recently been awarded her PhD on population genetics of *Aspidomorpha* species. At the end of 2 months there were 806 drawers of 103 families of Coleoptera, including 126 drawers of Chrysomelidae. The collection was sorted according to the classification presented in the recent CD-ROM to adult Coleoptera by John Lawrence. Much recent material from Kalimantan and Papua Barat was incorporated and the genus *Aulacophora* sorted to species (46 of them) and databased. Species concepts and cladistics were taught using local species of *Aulacophora*.

Regina Teo, Chris Reid, Mohamed Mohamedsaid and Grace Barroga meet at the Universitas Kebangsaan in Malaysia

The collection is well housed in a modern airconditioned hall, with all drawers in metal cabinets—much better than the collection I currently work on in Sydney! There are excellent support staff to maintain the collections, and mount and database material. The organization of the collections is a tribute to the World Bank, the Global Environmental Foundation and the Japanese Institute for Co-operation in Asia.

Dewi Sartiami, Wiwien, Edwi Mahajoeno, and Srie Marhaeni examine chrysomelids in the new collection hall of the Zoology Museum in Bogor, Java

During September I visited the Centre for Insect Systematics, Universtas Kebangsaan Malaysia, for a week. The primary aims of the visit were to meet Professor Mohamed Mohamedsaid, with whom I had corresponded for several years, to meet his PhD student, Grace Barroga, from the Philippines, and to study the material held in the Centre's collection.

This is a university research collection, largely compiled by Prof. Mohamedsaid. It included 146 drawers of Chrysomelidae, dominated by Galerucini (70 drawers), which partly reflects Professor Mohamedsaid's interest in this group, and partly the enormous diversity of this group in southeast Asia. Other major groups were Alticini (24 drawers) and Eumolpinae (16). Mohamed discussed various issues regarding problems of generic attribution and species concepts. We concentrated on examination of the *Taumacera* genus group, *Cholaenus*, *Simaethea* and other oddities. The result is that I am even more convinced that the alticines are non-monophyletic! Grace and I spent some time discussing problems in *Aulacophora* taxonomy, the subject of her thesis, and we had an afternoon field trip to the local 'bush' which produced about 40 species of Chrysomelidae, without serious effort (collecting chrysomelids and eating ice-cream is difficult).

A highlight of the visit was a meeting of 4 of the chrysomelid taxonomists of southeast Asia and Australia: Professor Mohamedsaid, Grace Barroga, Regina Teo from the National University of Singapore and myself. Regina had just handed in her Masters thesis on Criocerinae at James Cook University (Townsville). We discussed long term projects and the future of chrysomelid systematics and taxonomy in the region. A feasible plan would seem to be a key to genera for the southeast Asian archipelago. The enthusiasm and expertise of the two students suggests that the future is healthy, although unfortunately Regina is only able to find employment on molluscs at present.

In sum, readers should be aware that two excellent collections of Chrysomelidae exist in southeast Asia - there is no excuse for ignoring these and no justification for describing new species based on old or piecemeal material in European collections. The state of chrysomelid taxonomy in southeast Asia is already a nightmare, so please, no more 'new species from Island x' but instead revisions of all material of certain taxonomic categories.

I am extremely grateful to my hosts in the two countries, Yayuk Suhardjono (Zoology Museum, Bogor) and Mohamed Mohamedsaid (UKM) and to Grace, Regina, and the staff and students at the two institutions.

Rumble in the Jungle

(or, you don't have to try snake-handling to study chrysomelids, but it helps)

Wills Flowers, Tallahassee

The third meeting of the Coleoptera Working Group was held in Costa Rica last summer from June 28 to July 8, 1999 at the San Ramón Forest Reserve. This group is one of six (the others are for vertebrates, fungi, nematodes, mollusks, Hymenoptera and Coleoptera) that are conducting the National Biodiversity Inventory with the Costa Rica Biodiversity Institute (INBio). Our first meeting was in 1995 (see CHRYSOMELA no. 30), when we were known as the Coleoptera TWIG of the ATBI. In 1996 there was a far-reaching (and somewhat controversial) reorganization of the national inventory which caused some delay and redirected the main focus toward the Amistad area near the Panamá border. However, despite periodic reports in the U.S. scientific press, rumors of the "demise of the ATBI" are as exaggerated as Mark Twain's first obituary.

Front row, L-R: A. Mora, W. Porras, R. Roughley, A. Saenz, W. Arana, A. Azofeifa; middle row: E. Ulate, C. Rojas, M. Paniagua, J. Rodriguez; back row: S. Solís, W. Flowers, R. Tenorio, C. Víquez, P. Johnson, D. Kavanaugh, M. Ivie, R. Anderson. *—Photo by A. Solís*

Unlike our previous meetings, which were devoted to planning, this time we began the real work of the inventory. The six of us from North America were Bob Anderson, Mike Ivie, Paul Johnson, Dave Kavanaugh, Rob Roughly, and myself. On the Costa Rican side, we had Angel Solis and Carlos Viquez, INBio curators for Coleoptera, Elena Ulate and Angela Mora, technicians, and parataxonomists Wilfredo Arana, Alejandro Azofeifa, Wendy Porras, Johanna Rodriguez and Roger Tenorio. Also with us were Silvia Solis, a student at the University of Costa Rica, Cristina Rojas from the Autonomous National University, Maylin Paniagua, a chrysomelidologist from the ALAS project (see CHRYSOMELA no. 32), and Ana Saenz from the INBio "front office" who was along to do any necessary translating.

The San Ramón Forest Reserve is a protected area of Atlantic rainforest located northwest of San Jose and to the east of the better-known Monteverde Reserve. The University of Costa Rica maintains a field station there which gives visiting biologists easy access to a broad range terrestrial and aquatic rainforest habitats. During our workshop we took a advantage of the surrounding forests and streams to show the INBio Coleoptera team some specialized collecting techniques and to look for rare and obscure beetle families. Chrysomelidae is obviously not one of these; my part in the workshop was to work with the parataxonomists on methods of collecting data on host plant associations. While the Chrysomelidae holdings in INBio are now very extensive, they (like collections elsewhere) contain very little information about host associations. Accordingly, Angel Solís is now requiring that any future additions to the INBio collections of specimens from well-collected families (Chrysomelidae included here) be accompanied by natural history data.

Fortunately, San Ramón was very productive in opportunities to see Chrysomelidae interacting with their host plants. Some of the best hunting was by walking back along the access road to the station. Within sight of the building, we found several populations of *Platyphora spectabilis* feeding on a common roadside composite. Museums all over the world are full of large showy *Playtphoras* and other spectacular chrysomelids, but we have no idea what most of them eat, or anything else about their biology. It is always gratifying to fill in another little bit of this void. Although the *Platyphora* was the largest chrysomelid we found, the most extensive feeding damage was being caused by several species of flea beetles in the *Aphthona* complex which were doing quite a job skeletonizing some large composite shrubs. As I went around with different groups of parataxonomists it was evident that they know lots of details of chrysomelid feeding behavior which they have in field notebooks or in their heads. Angel, the parataxonomists, and I discussed ways of getting all these scraps of information into a single database, and ways to periodically publish this information.

The main focus of the workshop was on the small, cryptic, and hard to collect beetle families that are still under-represented at INBio. Bob Anderson demonstrated a flight-intercept trap and his techniques extracting weevils from leaf litter by sifting and with portable Berlese funnels. Paul Johnson worked with the group on collecting and identifying Elateroidea, and distributed drafts of a key to the Costa Rican genera (now available on the Web at: <www.abs.sdstate.edu/sdnhcbs/SMIRCOL/Costa_Rica/Elaters/main.htm>). Mike Ivie demonstrated how to collect various wood-inhabiting families, Dave Kavanaugh showed us some of the more unusual places to find Carabidae and their allies, and Rob Roughley showed us some of the less obvious places to look for aquatic Coleoptera. One of his techniques to collect insects

Bob Anderson with Cristina Rojas, Angel Solís, Carlos Viquez and Maylin Paniagua.

from vertical slabs of moss in tiny waterfalls is to spray the moss with a little Raid or other household insecticide, and collect the beetles that come staggering out. One of the times he did this, he collected a small series of very unusual flea beetle (genus still undetermined). Unfortunately, the insecticide technique stuns not only the beetles in a particular patch of moss but also anything on plants above the moss; thus there is no way to be certain of the true habitat of this species.

As if the insects weren't exciting enough, a large terciopelo (fer de lance) paid us an early morning visit. Hugo, San Ramón's cook and caretaker captured the snake and posed with it for some rather unconventional mug shots, then released it and chased it into the forest near the station. We were impressed not only by Hugo's snake handling abilities, but also that the policy of biodiversity preservation in Costa Rica's protected areas includes one of the most feared and least loved animals of the Neotropics.

Our benevolent feelings towards poisonous snakes began to wear thin when the same tericopelo returned later in the afternoon. This time Hugo bagged it, closing it up in a sack which he put alongside one of the building entry-ways. Then we found ourselves in a bit of an impasse. No one particularly wanted to execute the snake, but apparently letting it go was also out of the question. As Mike Ivie pointed out, grizzly bears in Yellowstone only get two chances, and they're a lot more endangered than terciopelos. So we cast wary eyes at the bulging sack for two more days each time we entered or left the building. Fortunately, the snake did not seem to have any desire to stage a breakout. The standoff ended when two more UCR staff came by to check on the station, and carted off the bag-full of snake.

The local terciopelo mob was not quite finished with us. The same afternoon, I went up the access road with several of the parataxonomists looking for more leaf beetle activity. We were walking along the same roadside vegetation we had swept every day for the past three days, when Johanna almost bumped into an even larger pit viper. This one was (judging by the size of the head) about a quarter again as large as our earlier visitor. Fortunately, the snake was apparently as surprised as we were, and it opted for throwing itself in a defensive coil rather than taking a couldn't-miss strike at Johanna's leg. Fortunately also, the snake was on the side of the road that sloped down and away from us. On the opposite side of the road the it would have been cornered against a rising embankment, and when a large poisonous snake finds its retreat cut off, things can get ugly. As it was, we backed away until we were at our maximum throwing range, then lobbed large branches and dirt clods in the general direction of the serpent until it became bored with us and took off down into the river valley.

We returned to INBio on the sixth and spent the last two days of the scheduled workshop in the collections. The parataxonomists put their fresh experiences to work and quickly found more specimens of the families we collected in San Ramón, and together we substantially rearranged the Coleoptera part of the collection. Although the building housing the insect and botanical collections is only seven years old, the collections have already outgrown the available space. INBio is planning to build new facilities across the street from its present location, including an entomology building.

Although our group meetings have been both fun and productive, much of the work from here on will be through individual contracts to "clean up" groups within our areas of expertise. By the time we had to return to "el Norte", we were all enthusiastically planning to INBio another year.

Retirement of John Lawrence, Canberra

Chris Reid, Sydney

John Lawrence, who has been the prime systematist in Coleoptera for the last 15 years, retired from the Australian National Insect Collection, Canberra, where he worked for 20 years, in December 1999. John has mostly been concerned with superfamilial classification of the old 'clavicornia', nevertheless his work has had a significant impact on 'phytophaga' - especially through the dissemination of the modern classifications incorporated in the CD-ROM for Larval Coleoptera and the recently produced CD-ROM for Adult Coleoptera (launched in December, 1999, and available from CSIRO Publishing, Melbourne). I was the only student he supervised for a project on Chrysomelidae, a revision of the Australian genera of Cryptocephalinae. Almost invariably I found that my new 'discoveries' were already known to him. John was (and is) always impressively open-minded and by no means a fundamentalist cladist, simply concerned to find the best tools to do the job of clearing up classificatory problems.

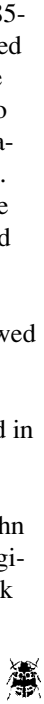
A special day of seminars was held on 16 December 1999 in Canberra, to celebrate the achievements and mark John's retirement. There were 21 speakers.

Presentations of interest to readers of CHRYSOMELA included: a review of the diversity of Coleoptera in rainforests, by **Simon Grove** and **Nigel Stork** (James Cook University, Cairns), who noted that the best current estimates are for 4.8-6 million species of organism, 20% of which are Coleoptera, with Curculionidae the largest family. **Rolf Oberpreiler**

(Australian National Insect Collection, Canberra) described the larva of *Aporhina* (Eurhynchinae). He noted the problem of larval characters in curculionoids - there aren't many and they tend to be lost (sounds familiar!). **Willi Kuschel** (New Zealand Arthropod Collection, Auckland) showed that platypodines are specialised scolytines (which are specialised curculionids), that is, recognition of the family Platypodidae renders Scolytinae and Curculionidae paraphyletic. **Vladimir Zherikhin** (St Petersburg) brought several critical fossils of important taxa with him, including *Protoscelis*, which certainly looked like an ancestral chrysomeloid to this viewer. It was generally felt by those who examined the fossils that the Upper Triassic Obrienidae, described as weevils, had nothing to do with Phytophaga. **Chris Reid** (Australian Museum, Sydney) presented results of the incorporation of recent discoveries of larvae of *Aulacoscelis*, *Megascelis* and *Stenomela* into his 1995 analysis of chrysomelid subfamilies. Basically no change to the proposed classification, except a case was made for elevation of Spilopyrinae to subfamilial rank**. Andrew Calder** (ANIC) presented a phylogeny of Australian strongylurine cerambycids. **Kendi Davis** (Australian National University, Canberra) talked about the Coleoptera of a large Island Biogeography experiment set up in southern New South Wales: from 1985-1991, 57,989 specimens were collected in pitfalls, of 669 species. They were able to show that fragmentation led to loss of three species categories: predators, rare species and isolated species. **Scholk Louw** (Pretoria) discussed the wingfolding structures of chrysomelid elytra and abdomens. To cap off an intensive and exciting day, **Mark Lonsdale** (CSIRO Entomology) showed the significance of Phytophaga as biological control agents of weeds.

This symposium will be published in a special issue of the journal *Invertebrate Taxonomy*, due out this year.

The day was a fitting tribute to John Lawrence, whose rigorous morphological work has stimulated so much work on the classification of Coleoptera in recent years.



The Parataxonomist Training Center Offers Assistance to Chrysomelid Research in Papua New Guinea

The Center has the staff of nine experienced parataxonomists who can provide assistance to a variety of research projects:

- *Field assistance in expedition-type biological research, including biodiversity surveys in any part of Papua New Guinea.*

This assistance includes collecting data and specimens, as well as logistic assistance and facilitation of contacts with local landowners and villagers. The parataxonomists can join any expedition as qualified field assistants with little need for additional training, and with excellent knowledge of local situation and organization of biological expeditions in difficult conditions and remote areas.

- *Collection of biological data and material according to specific protocols.*

The parataxonomists can sample chrysomelids (and any other insect taxa) in any habitat and area of Papua New Guinea, following quantitative sampling protocols (such as pitfall, malaise, light, litter, sticky, intercept etc. traps, canopy fogging, hand-collecting from the foliage or seeds, etc.), as well as sampling qualitatively for faunistic surveys or to provide diverse material for taxonomic studies. They can also carry out long-term, continuous data collecting in the field, e.g. on the population dynamics of various species, on herbivory, host plant selection, etc.

- *Preparation and documentation of biological specimens for museum collections and databasing of research data.*

Parataxonomists can prepare museum-quality insect specimens, mount, label and database them, as well as pre-sort them to morphospecies. Further, the specimens can be photographically documented, especially the use of digital photography.

The Center can provide assistance to field biological research in any part of PNG, with parataxonomists either joining the collaborating research team in field or organizing the field trips themselves. This assistance can be particularly effective around Madang, where the Center is located. However, the Center cannot provide any accommodation or laboratory space to visiting scientists.

The Center will collaborate only with projects, which have all necessary national, provincial and landowner permits. Any biological material can be collected and exported only after the necessary permits have been obtained and voucher specimens deposited at appropriate PNG institutions. The Center does not supply any biological specimens intended for further commercial sale.

Visit our www site for more detailed information:

http://www.entu.cas.cz/png/index.html.

If you think the Center could be of any assistance to your project, do not hesitate to contact us.

Contact Address:
Dr Vojtech Novotny, Parataxonomist Training Center
P. O. Box 604, Madang, Papua New Guinea,
Ph/fax +675 852 1587, E-mail binatangi@datec.com.pg

Insect Collecting in South Africa

Catherine N. Duckett, San Juan

Just before South Africa and Mozambique were innundated by the current flooding, I had the privilege of collecting in the Provinces of Mapulanga and Kwa-Zulu Natal with my trichopterist colleagues Karl Kjer and Roger Blahnik of Rutgers University and my (now) husband, David Hunter. As expected, South Africa is a real eye opener biologically, with incredible chrysomelid diversity in a small area.

We collected in Kruger Park (the Northern most part of the country) and in the eastern most province of Kwa-Zulu

David, Catherine and Beth sample some Italian Cuisine in Pretoria

Natal, collecting basically in desert and dry forest conditions in the North, to cloud forest, wetlands, and grasslands in KZN. The objectives were to collect Oedionychina, specifically *Physodactyla* and *Philopona* for my current project, and to collect other Galerucinae *(sensu stricto)* for a planned project on the phylogeny of the Luperini. Karl and Roger were burning the candle at both ends collecting Chrysomelidae by day and Trichoptera by night.

Dave and I arrived in Pretoria before Christmas and visited the Transvaal Museum in Central Pretoria where the collection of undetermined Chrysomelidae is fairly substantial. Curator Chuck Bellamy, a Californian, and his staff were very friendly and helpful. Later at the institute of Plant Protection Institute we met Beth Grobbelaar, a most kind and cordial chrysomelid colleague. The chrysomelid collection at the PPI is also the National Insect Collection and, understandably, contains a larger sampling of South African Chrysomelidae and is beautifully curated. Beth and I felt an immediate rapport which we explored over italian food in a *chic* Pretoria restaurant which she suggested.

After Pretoria, our next stop was Kruger Park, one of the largest and best organized game parks in Africa (and possibly the world). As the animals are genuinely wild in Kruger, the administration only allows you to decend from your vehicle in designated areas or with an armed ranger/ guide present. As I had written ahead and received permission to collect and support from Kruger's scientific services, we were provided with the services of Justin Bowers. Justin, has a degree in conservation managment and is extremely knowlegeable in all aspects of Kruger park botany, geology, vertebrate biology and management. He was also interested in learning what he could from me about Entomology. He was extremely helpful in answering my questions about various trees and shrubs, identifying the plants, and explaining the edaphic conditions that caused the change in plants or mammalian diversity. This made the trip much more enjoyable as well as productive. Indeed, Dave and I were fortunate to have Justin with us.

Justin looks for elephants while Catherine nabs some more flea beetles —*photo by D. Hunter*

Kruger park is 350 km long with the northen border being almost the northern border of the country at the Limpopo River and extending South almost to Swaziland. The North is xeric and the South a mesic forest. The abundance of chrysomelids (and game) diminishes as you go North, but the those you do find are extremely interesting; cassidines significantly outnumber the other subfamilies. Beth, Justin and I found a *Cassida* sp. (possibly new) on *Salvatora augustifolia* near Sirihni where Beth spent New Years day with her mom. I found a very interesting *Laccoptera* sp. on *Ipomea*. However, the most interesting item was an observation that Justin and I made of baboons apparently eating the larvae of *Conchylactaenia sp*. from *Solanum paduriforme*! This observation may explain some of the many plants which had feeding damage but 'nobody home.' Even the weevils in the northern part of the park were interesting, but nowhere in Kruger did I find the elusive oedionychines, *Physonychis* or other related genera for which I was looking. Our collecting was interrupted more than once by elephants which was very cool as well as a little intimidating.

After picking up Karl and Roger in Johannesberg, we went on to the Coast of Kwa-Zulu Natal, stopping at a private game park for some casual collecting along the way. The Santa Lucia wetlands (a reported collecting site of *Physodactyla*) was our destination. Despite seeing zebra, wildebeast, flying dung beetles (they look like little tanks), and leopard tracks where we had been collecting at night, we found few chrysomelids and only one *Physodactyla* after an extremely vigorous search. After four days of rain (and a general lack of enthusiasm), we headed for the next site.

Karl, Roger, and Catherine enjoy an entomology breakfast in the Santa Lucia wetlands —*photo by D. Hunter*

Our luck totally changed in Eshowe, a coastal cloud forest at about 500 m. elevation. Eshowe is as close to heaven for a chrysomelid worker as I can imagine. In the pouring rain we were finding *Octotoma*

(hispines), *Sonchia*, and *Chosnia* (galerucines), and when the sun came out we were raking in chrysomelids in a little patch of protected habitat (200 Ha) in the center of town. The diversity of *Lema* was astounding. I netted many morphologically diverse cassidines ranging from small *Cassida* and *Aspidomorpha* to *Laccoptera*, *Acrocassis* and a highly vaulted chenopod feeder that looked like bird poop (neither Beth nor I could identify it). However, the diversity of all the subfamilies collected was good, especially the Galerucinae and Chrysomelinae. *And,* I found a large series of *Physodactyla*, at the roadside less than 0.5 km from the hotel in front of the boys school. The next day, Karl found *Philopona* so I was able to relax.

Unsuspecting *Physodactyla*

After Eshowe we went South to the Umgeni Valley Nature reserve in Howick, a grasslands area with blasebok, zebra and lots of *Physodactyla*! I have been able to get female *Physodactyla* to lay eggs, but not hatch (probably because of all the travel). Dave and I returned to Pretoria where I tried to collect more larvae and worked with Beth on identifying specimens from the trip.

Beth was fantastic to work with, and we were on the same wave length; both coffee fiends. She gave us a great send off with a traditional South African braai (barbeque) featuring 'turtles' (little patties of seasoned chicken and liver wrapped in caul fat). Yummm. After we departed, the eggs finally hatched. Beth informs me that the larvae appear to be nocturnal but... I am dying to see them!

South Africa is a wonderful place to collect. The colleagues are great, the parks and reserves are well organized, the road system is good and the plant and chrysomelid diversity are truly amazing. I recommend it to all.

Acknowledgments: This trip was supported by NSF grant DEB 9974036 and for David's patience. Special thanks go to Daniel Pienaar and Justin Bowers of Kruger Park for helping expedite that part of the trip.

The Permit Process in South Africa

Obtaining an insect collecting permit in South Africa is complex and a little confusing, but not difficult. Under the current government, each province is responsible for granting permits on its lands and in provincial parks; the national park system has its own permit, as does Kruger Park . If you want to collect in parks in all provinces and all the National parks, you will have to apply to 11 separate entities. Most of the provinces require the same type of information so this is not as complicated as it sounds. The entire permit process should take about 3 months, which is the time period Western Cape Province requires to process a permit. Some provinces process their permits more speedily (e.g. Kwa-Zulu Natal took only two months) while others took up to five months. I had very good luck getting my permits in time as I spoke to the appropriate official by telephone or successfully contacted them by email.

When I had trouble getting the forms from some less responsive provinces, I sent them a letter with all the information that Western Cape and Kwa-Zulu Natal Provinces had requested. Additionally, I was careful to point out that I would deposit any types in South African Museums and that I was in contact with Elizabeth Grobbelaar of the Plant Protection Institute in Pretoria. My permits are still trickling in at this writing (March 1).

The information required aside from the standard identifiers (i.e. where, when, and how to contact the investigator) was degrees obtained by investigator, passport or other ID number, project title, objectives and motivation of the project, project sponsor, species to be collected, South African contact or collaborator, and a statement of institutional endorsement.

I expect that any researcher who contacts a South African collaborator and sends letters to each of the appropriate provincial agencies with the data above, should be able to obtain their permits in four months. In our case, chrysomelid workers Beth Grobbelaar was the obvious choice for a collaborator. (Beth told me later that some provinces called her to check my credentials.)

Useful Contact Information

A willing person to help with information about the permit process is Beth Grobbelaar (email: <vreheg@plant5.agric.za>, phone: +27-12-323-8540, FAX: +27-12-325-6998) at the National Insect Collection, Biosystematics Division, Pretoria, South Africa. She will be able to refer you to the relevant Nature Conservation authorities in the area you would like to visit. The Museum website is: <http://www.arc.agric.za/lnr/institutes/ppri/Biosysdiv.htm>.

General contact information was available (may be out-of-service) on the Transvaal Museum website, <www-tm.up.ac.za/coleop/permit.htm>, but may be available in the future. The Institute of Plant Protection plans to put such information on their website in the near future (address above).

Contact Details for the Most Visited Provinces and/or Parks

National Park Service: FAX 53-833-4543, Dr. Mike Knight, phone 53-832-5488;
Kruger Park: Dr. Danie Pinaar <dpienaar@parks-sa.co.za>;
Western Cape: Mr. Deon Hignett <dhignett@pawc.wcape.gov.za>;
Eastern Cape: FAX +27-04-137-37118, Mr. Alan Southwood <southa@cncpe.ecape.gov.za>;
Northern Province: <cites.nprov@pixie.co.za>, Mr. Deon von Wielligh <s.nprov@pixie.co.za>.

Research Activities and Interests *(cont. from page 1)*

Analysis of Morphological and Ecological-Geographical Aspects of Biodiversity (Coleoptera: Chrysomelidae)" using more than 150 species of *Cryptocephalus*. Also, working on Chrysomelidae of the Ural and Altai Mountains, mostly alpine species. Willing to identify all Palearctic *Cryptocephalus* and *Chrysolina*.

Giuseppina de Nardis (L'Aquila, Italy) doing research on flea beetle larvae.

H. R. Pajni (Chandigarh, India) working on egg parasitoids of Bruchidae and their use in biological control.

Ewa Pietrykowska (Lublin, Poland) currently doing research on: morphology and biology of developmental stages of, generally, *Cryptocephalus*; some aspects of physiology (oxygen consumption, duration of the development in various conditions, etc.), and distribution and occurrence of Chrysomelidae in south-eastern Poland.

George Poinar (Corvallis, USA) currently working on the ecology of *Timarcha*, *Galerucella nympheae*, fossils, and parasites and pathogens.

Chris Reid (Australian Museum, Sydney, Australia) continues to work and publish on various leaf beetle projects including: the return of *Peltoschema* to Chrysomelinae (from Trogossitidae), a new chrysomeline genus (with females that guard their larvae), and a key to the Australian genera of Chrysomelinae.

Duncan Sivell (York, UK) Studying metapopulations of *Chrysolina graminis* along the River Ouse, near York. This beetle was historically found through much of southern Britain but is now, largely, restricted to just two main sites in England. The aim of the research is to understand the cause of this decline. Dispersal ability, habitat fragmentation, and foodplant chemistry (*Tanacetum vulgare*) will constitute initial investigations on the project. Would be interested in any information on *Chrysolina graminis*, but particularly on its dispersal ability. (Can it fly?)

James M. Sullivan (Hazelwood, USA) maintains an interest in plants and their native phytophagous insects.

Arturo L. Teran (Tucumán, Argentina) in collaboration with C. D. Johnson, has completed the study of numerous specimens of *Megacerus* (Bruchidae) from Central and northern South America.

Gérard Tiberghien (Rennes, France) interested in chrysomelid systematics (excl. Alticinae), biology (esp. Chrysomelinae, Cryptocephalini, Clytrini), and biogeography of the Palearctic zone (including North Africa)

LITERATURE AVAILABLE OR NEEDED

Hugh D. C. Heron (Escombe, South Africa) requests anything dealing with mimicry involving cassids and coccinellids.

Yuri E. Mikhailov (Yekaterinburg, Russia) needs all publications on Cryptocephalinae of China published after Gressitt & Kimoto. Has surplus, recent reprints on Chrysomelidae.

H. R. Pajni (Chandigarh, India) needs any papers on *Uscana* spp. (Trichogrammatidae: Hymenoptera).

Ewa Pietrykowska (Lublin, Poland) needs:

Rupertsberger, M., 1894. Die biologische Literatur über die käfer.....Linz:225-271;

Rupertsberger, M., 1880 Biologie der Käfer Europas. Linz, XII, 295pp.

Cox, M. L., 1994. Egg bursters in the Chrysomelidae with a review of...Kluwer, Dordrecht: pp75-100.

Jolivet, P., 1972a. An Interpretation of the Host Plant selected.....Kor. J. Entomol., Seoul, 12(1):21-26;

Jolivet, P., 1972b. Observations sur les plantes-hotes de *Timarcha*...Ann. Soc. Hortic., Paris 112(4):330-332.

Jolivet, P., 1985. Contribution a la Biologie. Cah. Liaison Opie. 19(1):7-10, 19(2):7-14.

Jolivet, P., 1986. Contribution a la Biologie. Cah. Liaison Opie. 20(1):17-21;

Jolivet, P., 1987. Contribution a la Biologie. Cah. Liaison Opie. 21(1):21-25.

K. D. Prathapan (Bangalore, India) has original copies of Fauna of British India on Chrysomelidae (Jacoby 1908, v.1, 534 pp, Maulik 1919 439pp, 1926 441pp, and 1935 648pp.; would like to exchange for Gressitt & Kimoto (1961, 1963 1A & 1B 1026pp), Seeno & Wilcox (1982 221pp), and taxonomic literature on Oriental Alticinae. (Please contact with offer).

SPECIMENS AVAILABLE OR NEEDED

J. Gordon Edwards (San Jose, USA) has unidentified material, especially from Central and South America, that he would like identified. Please contact.

Frantisek Kantner (Dubné, Czech Republic) has a large number of undetermined leaf beetles in all subfamilies (including bruchids) from Zimbabwe, Namibia, India, Nepal, China, Malaysia, Turkey, etc.. Would like to find colleagues willing to identify some of this material (exchange is possible).

Yuri E. Mikhailov (Yekaterinburg, Russia) needs *Cryptocephalus* and *Chrysolina* from Mediterranean Region (Europe, N. Africa, Asia Minor, Near East), Iran, China, and Japan. Can offer Chrysomelidae (excl. Alticinae) from Russia and former USSR, including endemics from Altai, Tuva, etc.

Giuseppina de Nardis (L'Aquila, Italy) would like literature dealing with biology and ecology of the Alticinae.

S. M. Pappers (Nymegen, The Netherlands) *Galerucella* spp. needed, worldwide. Please contact for details.

Zuzana Swigonova (New Brunswick, USA) wishes to borrow specimens of any *Trirhabda* species from Central America.

Arturo L. Teran (Tucumán, Argentina) wished to borrow specimens of Bruchidae from Argentina in collections of North America and Europe.

Preservation of Chrysomelidae for Molecular Study

Catherine N. Duckett, San Juan
& Zuzana Swigonova, New Brunswick

Macromolecules, such as proteins and nucleic acids, have been used in studies of genetic relationships since the 1970's. The 1980's experienced a rise in techniques employing DNA and recently direct sequencing of DNA became widely popular. This trend can be observed also in studies of Chrysomelidae (Futuyma and McCafferty 1990, Funk et al. 1995, Farrell 1998, G—mez-Zurita et al 1999, and many others). Molecular techniques bring a set of information to systematics, independent from characters in traditional use, which is also valuable in identification of immature stages, sibling species, and geographic variants, that are often difficult to discriminate morphologically. For those who want to learn about molecular techniques there are many sources, each recommending several techniques for different taxonomic levels (Miyamoto and Cracraft 1991., Hsiao 1994, Hillis et al. 1996, etc.). The degree of success of DNA extraction and amplification depends on the preservation technique used and the conditions under which the specimens were stored. In this communication, we would like to share some of our experience with preparation and storage of specimens to be used in a molecular study. The information presented here may be useful to those actively using molecular techniques, those that are planning to do some in the near or far future, or those that are collecting specimens for "molecular" colleagues.

In principle, any specimen can be used for molecular study. Only a minute amount of material is needed (we are using just 1-2 legs) leaving the rest of the specimen intact for other (say, morphological) study. It is common knowledge that the best way to preserve newly collected insects for molecular study is by freezing them in -20 degrees (celsius). However, in the field this is basically impossible. A simple, yet efficient, field technique is to preserve freshly collected clean specimens in 100-95% alcohol and freeze or refrigerate them upon return to a laboratory or field station. DNA can be obtained from those preserved in 70% ethanol depending on the age of the specimens and how they have been treated. In our experience, extraction from specimens (including larvae and eggs) which had been kept in 70% ethanol at room temperature for 6 months presented no trouble. Our colleagues (K. Kjer, R. Blahnik, and F. Carle) recovered DNA with moderate difficulty from aquatic insects kept in 70% ethanol at room temperature for up to 25 years.

DNA can be obtained also from dried specimens. We had little trouble obtaining DNA from specimens which were dried immediately after death and were less than 5 years old. We obtained DNA from several 25 year old dried specimens by using modified regular extraction procedures (Sambruk, 1989) such as extended incubation of the tissue samples with protein kinase followed with some extra effort in using polymerase chain reaction (PCR) at different temperatures and amplifying shorter pieces of DNA (ca. 300 nucleotides).

In summary, we recommend that newly collected specimens be kept in 95% ethanol and subsequently refrigerated at -20 degrees. For specimens stored in 70% alcohol, a change of alcohol to 95% and subsequent refrigeration of the specimen may extend the utility of the specimen for DNA extraction. We also recommend that dry specimens be kept in airtight cases with a desiccant and insecticide repellent, and occasionally frozen at -20 degrees (celsius) to prevent contamination of specimen's DNA from pest's DNA (fungi, dermestids, psocoptera etc.).

Recovery of DNA from specimens up to 20 years old requires extra time and effort on the part of the investigator and therefore, with the exception of very rare species or morphs, we recommend the collection of fresh specimens.

References:

Farrell, B. D. 1998. "Inordinate Fondness" Explained: Why there are so many beetles. Science. 281: 555-559.

Futuyma, D. J. and S. S. McCafferty. 1990. Phylogeny and the evolution of host plant association in the leaf beetle genus *Ophraella* (Coleoptera, Chrysomelidae). Evolution. 44(8):1885-1913.

Funk, D. J., D. J. Futuyma, G. Orti, and A. Meyer. 1995. A history of host associations and evolutionary diversification for *Ophraella* (Coleoptera: Chrysomelidae): new evidence from mitochondrial DNA. Evolution. 49(5):1008-1017.

Hillis, D. M., C. Moritz, and B. K. Mable. 1996. Molecular systematics 2nd ed.,. Sinauer Associates, Inc. Sunderland, Massachusetts, U.S.A.

Hsiao, T. H. 1994. Molecular techniques for studying systematics and phylogeny of Chrysomelidae. *In*: P. H. Jolivet, M. L. Cox, and E. Petitpierre (eds.), Novel aspects of the biology of Chrysomelidae, pp. 237-248. Kluwer Academic Publishers, Dordrecht, Netherlands.

Miyamoto, M. M. and J. Cracraft. 1991. Phylogenetic analysis of DNA sequences. Oxford Univ. Press, New York.

G—mez-Zurita J., Garin, C.F., Juan, C. and Petitpierre, E. 1999. Mitochondrial 16SrDNA sequences and their use as phylogenetic markers in leaf beetles with special reference to the subfamily Chrysomelinae. In: M. L. Cox, Ed, Advances in Chrysomelidae Biology 1, pp 25-38. Backhuys Publishers, Leiden, The Netherlands.

Sambrook, J., E. F. Fritsch, and T. Maniatis. 1989. Molecular cloning: a laboratory manual, 2nd ed. Cold Spring Harbor, New York.

Acknowledgments:

We thank Roger Blanik, Frank Carle and Karl Kjer for sharing their copious knowledge of successful amplification of DNA. We also thank Luciano Azevedo Moura, Ting Hsiao and Ed Riley for providing us with specimens used for this communication. This study was made possible in part by NSF grants DEB 97-07544 to CND and DEB 96-32879 to K.M. Kjer.

Fifth International Symposium on the Chrysomelidae
(Pierre Jolivet Chrysomelid Symposium)
ICE Satellite Event
Iguacu, Brazil—25-27 August 2000
David G. Furth, Washington

Program (List of Participants and Titles)

Formal Oral Presentations
Friday, 25 August 2000

Charles, E. (Panama)
Vertical stratification of Chrysomelid fauna in Panama

Duckett, C. & K. M. Kjer (USA)
Phylogenies of the Oedionychina

Flowers, R. W. (Costa Rica) and P. E. Hansen (USA)
The diversity of the Chrysomelidae fauna in Costa Rica: Insights from a Malaise trapline

Furth, D. (USA)
Alticinae diversity in Costa Rica

Garneria, I, C. Juan, and Petitpierre, E. (Spain)
Molecular phylogeny of the genus *Cyrtonus* (Coleoptera: Chrysomelidae).

Hawkeswood, T. (Australia)
General biology, host-plant relationships and ecology and evolution of the Australian Chrysomelidae, with particular reference to the Chrysomelinae, Hispinae and Cassidinae

Jerez, V. (Chile)
Phylogeny and biogeography of the genus *Procalus* (Clark) (Chrysomelidae: Alticinae)

Jolivet, P. (France)
Subaquatic Chrysomelidae

Macedo, M. V. and R. Goncalves (Brazil)
Polymorphism in a Cassidinae species

Meiners, Torsten and Monika Hilker (Germany)
Chemical signaling between a host plant and egg parasitoid of a galerucine leaf beetle

Mueller, Caroline and Monika Hilker (Germany)
The abdominal shields of Tansy feeding Cassidine species—Defense versus attraction

Pasteels, J. (Belgium), D. Windsor (USA/Panama), D. Daloze (Belgium), J. Braekman (Belgium), and T. Hartmann (Germany)
Chemical defense in Neotropical Leaf Beetles

Sprecher, Eva (Switzerland)
Nepal as a center of speciation for Himalayan Chrysomelid fauna

Suzuki, K. (Japan)
Systematic position of the subfamilies Megapodinae and Megascelinae (Chrysomelidae) based on the comparative morphology of the internal reproductive system

Vasconcellos-Neto, J. (Brazil), D. Windsor (USA), Z. J. Buzzi (Brazil) & V. Rodriguez (Brazil) [poster]
Systematic position of two polymorphic species of *Chelymorpha* Boh. (Coleoptera: Chrysomelidae: Cassidinae)

Verdyck, P. (Belgium)
Genetic patterns in phytophagous beetles of the Galapagos Archipelago.

Vig, K. (Hungary)
The Leaf Beetle fauna of the Carpathian Basin: What do we really know? Historical background and perspectives.

Wagner, T. (Germany)
Phylogeny and biogeography of Afrotropical *Monolepta* and related taxa

Informal Presentations & Posters
Saturday, 26 August 2000

Jerez, V. (Chile)[poster]
Interspecific differentiation in eggs and larvae of *Procalus* (Chrysomelidae: Alticinae)

Sa, F. (Brazil) [posters]
Biological data and population abundance of three species of Cassidinae (Coleoptera: Chrysomelidae) in a Brazilian tropical forest.

Influence of natural enemies in the populations of two Stolaini species (Coleoptera: Chrysomelidae: Cassidinae) in a Brazilian tropical forest.

Frieiro-Costa, F. A. & J. Vasconcellos-Neto (Brazil) [poster]
Biological and ecological studies on *Omaspides tricolorata* Boheman 1854 (Coleoptera: Chrysomelidae: Cassidinae)

Field Trip
Sunday, 27 August 2000

Location to be announced

Literature on the Chrysomelidae

Aslan, I. 1998. Faunistic and systematic studies on the subfamily Galerucinae (Coleoptera: Chrysomelidae) in Erzurum provinces. Türk. Entomol. Derg. 22(4):285-298, 2 figs.

Aslan, I., B. Gruev and H. Ozbek. 1999. A Preliminary Review of the Subfamily Alticinae (Coleoptera, Chrysomelidae) in Turkey. Turkey J. Zool. 23:373-414.

Aslan, I. and H. Ozbek. 1999. Faunistic and Systematic Studies on the Subfamily Chrysomelinae (Coleoptera, Chrysomelidae) in Artvin, Erzincan and Erzurum Provinces of Turkey. Turkey J. Zool. 23(3):751-767, 1 (33) fig(s).

Barbosa, M., C. R. Fonseca and J. A. Guerra. 1999. Occurrence of *Spaethiella coccinea* Boheman (Coleoptera: Chrysomelidae, Hispinae) on *Theobroma grandiflorum* [Willdenow ex Sprengel] Schumman, (Sterculiaceae), in Manaus, Amazonas, Brazil. Acta Amazonica 29(2):313-317, 6 figs.

Beenen, R. 1999. Revisional notes on *Galeruca* 1 (Coleoptera, Chrysomelidae). Ent. Bl. 95(2-3):85-92, 2 figs.

Bezdek, J. 1998. *Monolepta anatolica* sp.n. - a new species of leaf beetle (Coleoptera: Chrysomelidae: Galerucinae) from Turkey. Klapalekiana 34:149-152, 8 figs.

Bienkowski, A. O. 1998. Morphology and systematics of larvae of some *Chrysolina* species (Insecta: Coleoptera: Chrysomelidae). Entomol. Abh 58(4):73-82, 18 figs.

Biondi, M. and G. D. Nardis. 1998. Descrizione della larva di primo stadio di *Longitarsus minimus* e *L. pratensis* (Coleoptera, Chrysomelidae) (*). Fragm. Entomol. 30(2):261-270, 18 figs.

Bontems, C. 1999. *Chrysochloa peneaui* David, insecte mythique? Bull. Soc. Entomol. Fr. 104(4):393-398, 1 fig.

Bontems, C. 1999. L'énigme de las subdivision des *Oreina selon* Motschulsky (Coleoptera, Chrysomelidae). Bull. Soc. Entomol. Fr. 104(3):267-274, 2 figs.

Borowiec, L. 1998. *Agroiconota judaica* (Fabricius, 1781 and *A. inedita* (Boheman, 1855) - distinct species (Coleoptera: Chrysomelidae: Cassidinae). Genus 9(3):387-393, 10 figs.

Borowiec, L. 1998. *Echoma anaglypta* (Boheman, 1862) and *E. anaglyptoides* n. sp. (Coleoptera: Chrysomelidae: Cassidinae). Genus 9(3):375-385, 7 figs.

Borowiec, L. 1998. Four new species of *Aslamidium* Borowiec, with description of *Neoaslamidium* new subgenus (Coleoptera: Chrysomelidae: Hispinae). Genus 9(3):367-374, 8 figs.

Borowiec, L. 1999. *Cassida kinabaluensis* n. sp. from Sabah, Malaysia (Coleoptera: Chrysomelidae: Cassidinae). Serangga 4(1):1-5, 7 figs.

Borowiec, L. 1999. Four new species of *Cyrtonota* Chevrolat (Coleoptera: Chrysomelidae: Cassidinae). Genus 10(1):89-101, 28 figs.

Borowiec, L. 1999. A new species of *Notosacantha* Chevrolat from Sulawesi, Indonesia (Coleoptera: Chrysomelidae: Cassidinae). Serangga 4(1):7-10, 3 figs.

Borowiec, L. and J. Swietojanska. 1999. A new species of *Notoscantha* Chevrolat from Sabah, Malaysia (Coleoptera: Chrysomelidae: Cassidinae). Serangga 4(2):185-188, 4 figs.

Bourdonné, J.-C. 1999. Les types de *Chrysomela* de Suffrian appartenant au sour-genre *Maenadochrysa* Bechyné 1950 (Coleoptera, Chrysomelidae). Nouv. Revue Ent. (N. S.) 16(1):27-58, 108 figs., 3 tabs.

Broughton, S. 1999. Field determination of larval instar for the lantana leafmining beetles *Octotoma scabripennis* Guérin-Méneville and *Uroplata girardi* Pic (Coleoptera: Chrysomelidae: Hispinae). Aust. J. Ento. 38:229-233, 3 figs., 4 tabs.

Clarke, A. R. 1998. Day-degree estimates for the immature stages of the Tasmanian eucalyptus leaf beetle *Chrysophtharta bimaculata* (Olivier) (Coleoptera: Chrysomelidae). Austral. Entomolo. 25(3):77-80, 1 fig.

Doeberl, M. 1998. Beitrag zur Kenntnis der Alticinen der Orientalischen Region (Coleoptera, Chrysomelidae, Alticinae). Entomol. Bl. Biol. Syst. Kaeffer (94):3, 23 figs.

Duckett, C. N. and S. Moyá. 1999. A new species of *Ptocadica* Harold (Coleoptera: Chrysomelidae, Alticini) from Costa Rica and Panamá. Coleopts. Bull. 53(4):311-319, 4 figs.

Duhaldeborde, F. 1999. Description de *Cryptocephalus* (s. str.) *bameuli* n. sp., nouvelle espéce paléarctique a large répartition géographique (Coleoptera, Chrysomelidae). Nouv. Revue Ent. (N. S.) 16(2):123-135, 19 figs.

Erber, D. and L. Medvedev. 1999. Towards taxonomy of the genus *Smaragdina* Chevrolat (Coleoptera: Chrysomelidae: Clytrinae), with descriptions of new taxa from Asia. Stuttgarter Beitr. Naturk. Ser. A 106:1-10, 31 figs.

Fritzlar, F. 1999. Neue und interessante Nachweise Thüringer Blattkäfer (Coleoptera, Chrysomelidae), Teil 1. Thür. Faun. Abhandlungen 5:193-214, 3 figs., 1 tab.

Garin, C. F., C. Juan and E. Petitpierre. 1999. Mitochondrial DNA Phylogeny and the Evolution of Host-Plant Use in Palearctic *Chrysolina* (Coleoptera, Chrysomelidae) Leaf Beetles. J Mol. Evol. 48:435-444, 5 figs., 2 tabs.

Gilbert, A. J. and F. G. Andrews. 1999. Studies on the Chrysomelidae (Coleoptera) of the Baja California Peninsula: a new species of *Scelolyperus* (Galerucinae), with notes on the genus in Baja California. Pan-Pac. Entomol. 75(1):8-12, 7 figs.

Gomez-Zurita, J., C. Juan and E. Petitpierre. 2000. The Evolutionary History of the Genus *Timarcha* (Co-

leoptera, Chrysomelidae) Inferred from Mitochondrial COII Gene and Partial 16S rDNA Sequences. Mol. Phylogen. Evol. 14(2):304-317, 5 figs., 3 tabs.

Gruev, B. 1998. New data about some Palaearctic Alticinae from the Zoological museum of the University of Helsinki with description of a new subspecies of *Phyllotreta* (Coleoptera: Chrysomelidae). Acta Zool. Bulg. 50(2/3):37-42.

Gruev, B. and I. Aslan. 1998. Four new species of the subfamily Alticinae (Coleoptera, Chrysomelidae) from Turkey. Türk. Entomol. Derg. 22(3):163-169, 1 fig.

Hayashi, M. 1999. Late Pliocene to Early Pleistocene donaciine fossils from the Uonuma Formation in Higashikubiki hills, Niigata Prefecture, Japan, with description of a new species (Coleoptera: Chrysomelidae: Donaciinae). Bull. Osaka Mus. Nat. Hist. 53:1-22, 15 figs.

Jolivet, P. 1999. "Women's Lib. chez les Insectes." ou quand le Sexe faible devient le Sexe fort. (Col. Scirtidae, Lep. Nymphalidae & Lycaenidae). L'Entomologiste 55(3):103-122, figs.

Lingafelter, S. W. and A. S. Konstantinov. 1999. The monophyly and relative rank of alticine and galerucine leaf beetles: A cladistic analysis using adult morphological characters (Coleoptera: Chrysomelidae). Entomol. Scand. 30(4):397-416, 11 figs., 2 tabs.

Lopatin, I. K. 1998. Contribution to the Systematics of Leaf Beetles of the Subfamily Chrysomelinae (Coleoptera, Chrysomelidae). Entomological Review 778(7):848-855, 26 figs.

Mohamedsaid, M. S. 1999. The Galerucinae from Taman Kinabalu Sabah, Malaysia (Coleoptera: Chrysomelidae). Serangga 4(1):87-145, 12 figs.

Mohamedsaid, M. S. 1999. Rekod Baru Jumbang Galerucinae Dari Semenanjung Malaysia (Coleoptera: Chrysomelidae). Serangga 4(2):221-238.

Mohamedsaid, M. S. 1999. *Sinoluperus beta*, n. sp., a second species for the genus (Coleoptera: Chrysomelidae: Galerucinae). Serangga 4(1):17-20, 3 figs.

Mohamedsaid, M. S. and J. D. Holloway. 1999. Biogeography of the Bornean Galerucinae (Coleoptera: Chrysomelidae). Serangga 4(2):151-173, 1 tab., 1 map.

Owen, J. A. 1999. Notes on the biology of *Cryptocephalus coryli* (Linnaeus) (Coleoptera: Chrysomelidae). Entomol. Gaz. 50:199-204, 3 figs.

Petitpierre, E. 1999. The cytogenetics and cytotaxonomy of *Chrysolina* Mots. and *Oreina* Chevr. (Coleoptera, Chrysomelidae, Chrysomelinae). Hereditas 131:55-62, 17 figs., 1 tab.

Reid, C. A. M. 1999. Eucalyptus seedling herbivory by a species of *Cadmus* Erichson (Coleoptera: Chrysomelidae: Cryptocephalinae). Aust. J. Ento. 38:201-203, 2 figs.

Reid, C. A. M. 1999. Reappraisal of the genus *Taumacera* Thunberg with descriptions of two new species from South-East Asia (Coleoptera: Chrysomelidae: Galerucinae). Aust. J. Ento. 38:1-9, 23 figs.

Reid, C. A. M. 1999. Revision of leaf-beetles of the genus *Cadmus* Erichson, subgenus *Lachnabothra* Saunders (Coleoptera: Chrysomelidae: Cryptocephalinae). Invert. Taxon. 13:1-66, 198 figs.

Riley, E. G. and A. J. Gilbert. 1999. Three new species of *Cryptocephalus* Geoffroy from the United States and a new United States record (Coleoptera: Chrysomelidae, Cryptocephalinae). Consort. Coleopt. 3(1):30-35, 3 figs.

Schöller, M. 1999. Nomenklatorische Änderungen in der Gattung *Coenobius* Suffrian (Coleoptera: Chrysomelidae: Cryptocephalinae). Mitt. internat. entomol. Ver 24(1/2):73-75.

Silfverberg, H. 1999. Criocerinae from the Ethiopian Region (Coleoptera, Chrysomelidae). Entomol. Fennica 10:209-213.

Staines, C. L. 1998. A Review of the Genus *Physocoryna* Guérin-Méneville, 1844 (Coleoptera: Chrysomelidae: Hispinae). J. New York Entomol. Soc. 106(4):163-169, 1 fig.

Staines, C. L. 1999. Chrysomelidae (Coleoptera) new to North Carolina. Coleopts. Bull. 53(1):27-29.

Staines, C. L. and S. L. Staines. 1999. Joseph Sugar Baly: The man and his entomological works. Beitr. Entomol. 49(2):489-530.

Swietojanska, J. and L. Borowiec. 1999. Three new species of *Microctenochira* Spaeth from Brazil and Panama (Coleoptera: Chrysomelidae: Cassidinae). Genus 10(1):109-116, 17 figs.

Wagner, T. 1999. An introduction to the revision of the afrotropical *Monolepta* and related taxa (Coleoptera, Chrysomelidae, Galerucinae). Cour. Forschungsinst. Senckenb. 215:215-220, 19 figs., 1 tab.

Wagner, T. 2000. New *Monolepta* species (Coleoptera: Chrysomelidae, Galerucinae) from Eastern Africa*). Entomol. Z. 110(2):34-40, 21 figs.

Warchalowski, A. 1999. Übersicht der westpaläarktischen Arten der Untergattung *Burlinius* Lopatin, 1965 (Coleoptera: Chrysomelidae: Cryptocephalus). Genus 10(4):529-627, 241 figs.

Watanabe, M. and K. Tanaka. 1999. Cold tolerance strategy of the freeze-intolerant chrysomelid, *Aulacophora nigripennis* (Coleoptera: Chrysomelidae), in warm-temperate regions. Euro. J. Entomol 96(2):175-181, 5 figs.