CHRYSOMELA newsletter

Dedicated to information about the Chrysomelidae

Report No. 49 December 2007

Chrysomelid Hunting in Central America

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Las Cuevas, Belize (Photo: Ken Lorenzen)

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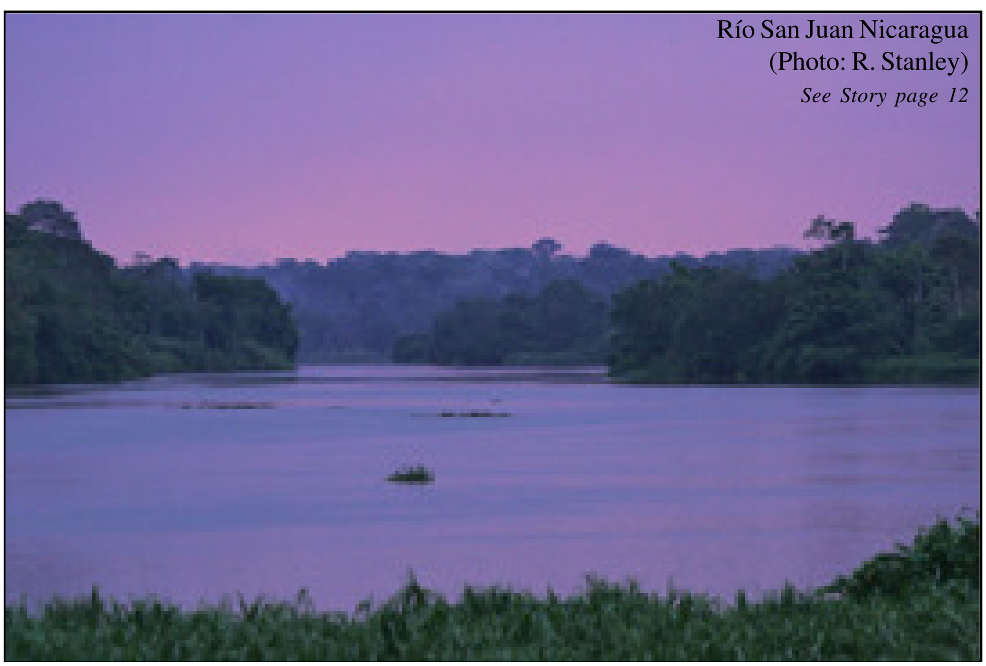

Río San Juan Nicaragua
(Photo: R. Stanley)

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International Date Book

2008 Workshop in Applied Phylogenetics, http://www.eve.ucdavis.edu/bodega/bodega08app.doc; Bodega Marine Laboratory, California, March 8-15

2008 New field station opening, Kinabatangan flood plain, Sabah, Borneo; Cardiff University (UK) and the Sabah Wildlife Department (Malaysia) http://www.cf.ac.uk/biosi/research/sabah/index.html

2008 EMBO Course: "Advanced Methods in Recon structing Molecular Phylogenetic Relationships" March 3-9, Botanical Garden, Rio de Janeiro, Brazil, http://bioinf.ncl.ac.uk/molsys/

2008 International Congress in Entomology, Durban, South Africa, July 6-12; http://www.ice2008.org.za/ 7th International Symposium on Chrysomelidae contact: Michael Schmitt

2008 20th International Congress in Zoology, Paris, France, http://icz2008.snv.jussieu.fr/program.htm

2008 Entomological Society of America, Nov 16-19, Reno, Nevada, USA; www.entsoc.org

2008 Society of Systematic Biologists, June 20-24 Minneapolis, Minnesota

The Editor's Page

Caroline S. Chaboo (USA)

Dear Chrysomelid colleagues and friends:

For this issue there is no shortage of interesting and informative news from colleagues in all corners of the globe. I thank all contributors for making my job simple.

I hope you enjoy these stories and that they inspire you to go collecting our splendid animals, and discover new information on their biology. And let us know about this in an upcoming issue of our newsletter.

Happy Holiday Season to everyone! Best wishes for 2008!

- Caroline S. Chaboo

Research Activities & Interests

Chris Brown (USA) is finishing his Ph.D. work on *Neochlamisus* behavior in the lab of Dr. D.J. Funk at Vanderbilt University. Chris was recently awarded 2nd place in his section at the ESA meeting for his talk on tradeoffs on the effects of humidity on fecal cases. Bravo!

Marc Debreuil (France) is interested in Palearctic chrysomelids and is the editor and publisher of the magazine, RUTILANS.

Frank Duhalborde (France) is interested in the taxonomy of Cryptocephalinae – mainly the Palearctic Region. He is interested in receiving papers dealing with Cryptocephalinae and in exchanging or borrowing specimens.

Flavia Fernandes (Brazil) is working with systematics, taxonomy, phylogeny and biology of Neotropical Cassidinae. She has worked with the biology, host plant, immature stages and evolution of *Charidotis gemellata*. In her masters degree she worked with an Omocerine genus and completed a taxonomic revision and cladistic analysis of *Canistra* (Coleoptera, Chrysomelidae, Cassidinae). Zundir José Buzzi was her supervisor for 5 years and has his literature to share. She is now working on the phylogeny of the cassidine tribe Omocerini and is interested in obtaining specimens of Basiprionotini and Epistictini.

Joachim Mauser (Germany) is working on afrotropical Alticinae

Stefano Zoia (Italy) is working on a revision of the Afrotropical genus *Mecistes*; he would appreciate receiving material of this genus on loan.

The Newsletter CHRYSOMELA-Founded 1979-is published semiannully, usually in June and December. It is hosted by the Division of Entomology, 1501 Crestline Drive, Suite 140, University of Kansas, Lawrence, KS, USA, 66049-2811. E-mail: cschaboo@ku.edu. This newsletter is sent to students of Chrysomelidae to encourage the exchange of ideas and to disseminate information on these insects. **Editor:** Caroline S. Chaboo, Kansas. Advisors: David Furth, Washington; Vivian Flinte, Rio de Janeiro; R. Wills Flowers, Tallahassee; Elizabeth Grobbelaar, Pretoria; Pierre Jolivet, Paris; Alex Konstantinov, Washington; Michael Schmitt, Bonn; and Terry N. Seeno, Sacramento.

Beetle Collecting in Belize

Arthur J. Gilbert (USA) and Fred G. Andrews (USA)

Fred and I have traveled to many countries in Central and South America over the years and the logistics involved in planning the trips is usually the most difficult and stressful part of the process. Occasionally, a mule collapsing and nearly falling on you in a remote mountainous area of the Baja California peninsula or nearly running over a pedestrian in Chile can top this. Our most recent trip to Belize in May 2007 was no exception, although there were no near catastrophes once the trip was underway. We decided to travel to Belize as we had never ventured to this part of Central America. Once we began inquiring of coworkers about collecting there, it became evident that there was little helpful information available concerning permits, lodging, research facilities, etc. One colleague provided us with some good information that convinced us to skip the flat marshy area of Northern Belize where, from

Figure 1. Las Cuevas Research Station (Photo: Ken Lorenzen). Figure 2. On front cover.

his perspective, the coleoptera fauna was not very interesting. Eventually, with a little internet investigation and a lot of luck we found everything we were looking for and the trip went forward. However, the permit process wasn't completely resolved until completion of the trip.

Two other entomologists joined us on this occasion, Norm Smith (Fresno County Department of Agriculture) and Ken Lorenzen (Bohart Museum of Entomology, UC Davis). We arrived in Belize City, the largest city in the country, on May 13, 2007 and stayed one night at the Radisson before heading out the next day. Our first destination was Las Cuevas (Figure on cover), a research station located in the Chiquibul Forest Reserve and National Park at about 1,500-2,000 feet elevation in the Maya Mountains along the western boundary of Belize with Guatamala (Cayo District). The station is associated with the Royal Botanic Garden Edinburgh in Scotland and operated locally by Mr. Nicodemus Bol. The exact relationship of the Royal Botanic Garden and the government agencies of Belize is not entirely clear to us. The importance of this association is the communications link that either Nicodemus (or Chapal as he is known locally), nico_bol38@yahoo.com or Chris Minty (C.Minty@rbge.ac.uk) with the Royal Botanic Garden can be contacted for reservations and for assistance with permits. Chapal can also help with other logistical problems such as directions to the station, acquiring a generator or transportation (including to and from Belize City). Rates for lodging and meals at Las Cuevas are very reasonable. Their prices are listed on their website www.mayaforest.com. The modest rooms lack air conditioning, but are comfortable. Bathrooms are communal with showers. Chapal's wife, Celia, is the cook and her tasty meals are economically priced. The meals along with beer and soft drinks are an additional cost. We rented Toyota Land Cruisers in Belize City from Hertz for convenience of mobility (about $900 US per person for two weeks). It rained very little during the trip, and if it had rained more, Chapal informed us that these vehicles would be hard pressed to traverse the wet dirt roads leading to the research station. But this was the best we could find.

Figure 3. Coptocycla (Psalidonota) leprosa (Boheman) collected at Las Cuevas (Photo: Ken Lorenzen).

Beetle collecting at Las Cuevas was sparse during the day and somewhat better at the blacklight/mercury vapor lights. As it turns out, we didn't accurately time the rainy season (we intend to rectify that in 2008). The specimens we did collect were interesting, particularly the chrysomelids, and the potential for collecting at Las Cuevas appears to be very promising. There are good trails and a couple of dirt roads that provide good access to the forest. The generator is

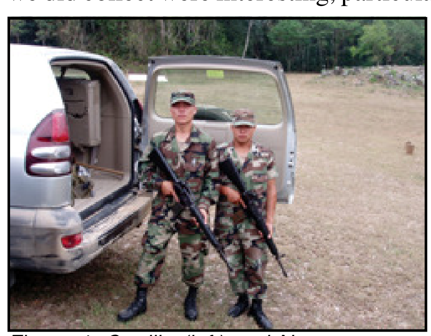


Figure 4. Carrillo (left) and Normo, our BDF escorts to Caracol (Photo: Norm Smith).

usually turned off at 10:00 p.m., but we convinced Chapal to allow us to keep it on longer, generally until 11:00 p. m. or slightly later.

Chapal or his brother, Isidro, can assist with travel to other areas of the forest and provide security, if needed. There have been some problems in the past in this part of Belize with Guatemalans robbing tourists, cutting trees and clearing land to settle illegally in Belize or striping the forest of certain prized palms that are highly valued in the florist trade. For this reason a small contingent of the Belize Defense Force (BDF) is permanently stationed at Las Cuevas. They will often accompany you, if need be, to guarantee your safety. We took a side trip to the Mayan ruins at Caracol, while we were at Las Cuevas and two BDF personnel accompanied us. With their M-16's we gave them the duty of riding shotgun in each vehicle. We had to explain the terminology, "riding shotgun." When we climbed the main temple at Caracol I took a picture of Carrillo, one of the BDF soldiers. He in turn took my camera, gave me his M-16 and took my picture. This picture was going to be a prized possession when I returned home, but it was out of focus. How could he do that? However, this trip to Caracol was the only time they felt we might need security. Of course, the U. S. Marines were at Las Cuevas for most of our stay receiving training from the BDF in jungle survival. That might have helped keep people away.

Figure 5. Art, Nicodemus, Norm and Fred relaxing before a meal at Las Cuevas (Photo: Ken Lorenzen).

After a week at Las Cuevas we drove about five hours south and stayed at Tranquility Lodge operated by Ms. Penny Leonard (mspenny1@yahoo.com) near Punta Gorda (Toledo District). Her facility lacks internet and she goes 13 miles into Punta Gorda for emails, so it might be a few days before a response. There is also a website, www.Tranquility-Lodge.com. Due to a problem with our permits we needed to cancel a night at Tranquility Lodge and divert to a hotel in San Ignacio so that we could correct our permits at the Forestry offices in the capitol city of Belmopan when they opened on Tuesday (Monday was a holiday). An entire day was basically wasted but we did get the permits corrected, although not completely as we wanted. If the original permits were accurate when we applied, this problem would not have existed. Penny charges about $25 per night per person, including breakfast. Dinner is extra and optional. She is a good cook if dinner at the lodge is desired. We ate there most nights. The Emery is a good restaurant in Punta Gorda for a change of pace. There are four rooms at Tranquility Lodge and all are air conditioned which made for comfortable sleeping. The area around the lodge has considerable native vegetation and there are good collecting sites not too far from the lodge.

Permits, as it turns out, are very specific. The country is divided into six districts, Corozal, Orange Walk, Belize, Cayo, Stann Creek, and Toledo. Each district is overseen by a local office of the Forestry Department. In addition, there are National Parks and other areas that are governed by various agencies. In order to collect in any particular area the permit must state that area specifically. It must also state what your research includes. So if you intended to collect at various locations within Belize, they must all be listed on the permit application. The research goals must also be stated. But be aware that if you state that your project is to collect 100 specimens of *Dysphenges,* for example, then that will be specifically stated on the permit as "to collect 100 specimens of *Dysphenges* only" and technically that will be all that you can collect. So when applying for a permit it might be best to keep it more general. Permit applications can be downloaded from the Las Cuevas website. Nicodemus will handle the permit process for all locations to be visited in Belize, but everything must be included on the permit application. Nicodemus does not work for the Forestry Department; he just acts as an intermediary. The permit application will cost $100 US. Before leaving the country an export permit and a phytosanitary certificate will be required. The export permit is obtained at the Forestry office in Belmopan (there was no charge for this) and the phytosanitary certificate (about $10 US) is issued by Belize Agricultural Health Authority (BAHA) located near San Ignacio about 20 miles west of Belmopan. All trips should be planned with a one day stop at the end in San Ignacio (there is a nice hotel there, the Cahal Pech) or Belmopan to handle this process. The general email for the Forestry Department is fdsecretary@mnrei.gov.bz. However, it would be best to go through Nicodemus and Las Cuevas for permits unless you do not intend to visit Las Cuevas.

Figure 6. Tranquility Lodge, 13 miles northwest of Punta Gorda (Photo: Norm Smith).

Continued on page 5

If you plan a trip to Belize and work the permit process carefully and completely, everything should go smoothly. The country is very small geographically and in population (total population about 300,000). The people are friendly, including the BDF soldiers, and there was really never a sense of danger. Even when we left Las Cuevas, and our BDF protection, there was never a sense of danger, although the thought remained after having had a military escort at times the first week. Driving the roads is probably the most dangerous activity. There are few cars and traffic was always light, except in Belize City. But despite the few vehicles, our partners, returning one evening from dinner at Punta Gorda, were nearly involved in a head-on collision when an oncoming vehicle crossed the centerline and forced them off the road. I guess that might qualify as a near catastrophe.

Our partners on the trip wrote a short article in the Bohart Museum Society Newsletter Spring 2007. For a different perspective and a few additional pictures we recommend reading their article.

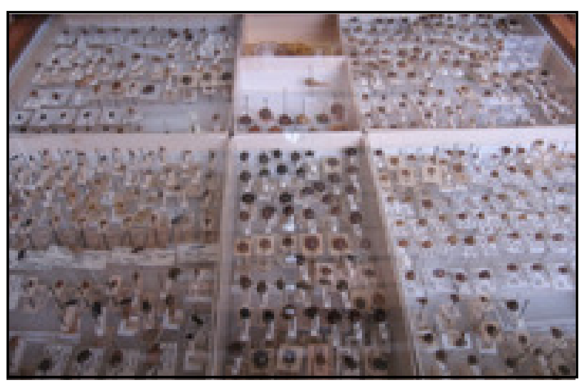
South African Insect Collections

National Museum, Bloemfontein

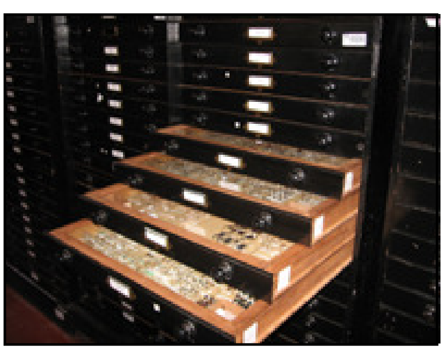
The beetle collection of the National Museum, Bloemfontein, South Africa, is housed in 30 cabinets (707 drawers) and comprises 155001 specimens, including 7691 chrysomelids. Please send queries or requests for visits to: Ms. Sonnika Otto, Collections Manager, Entomology Department, National Museum, Bloemfontein, South Africa. *Email:* insects@nasmus.co.za. *Telephone:* (051)4479609; *FAX:* (051)4476273; *Website* (currently being upgraded): www.nasmus.co.za

- Sonnika Otto

Durban Natural Science Museum, Durban



The Durban Natural Science Museum is celebrating its 120th birthday this year (2007). It is located at the City Hall on the first floor of the cultural block in Smith Street, Durban, with a new research centre based in Old Fort Road. The public displays are situated at the museum and entrance is free. The research department is located at the research centre where the mammal and bird collections are also housed. The Entomology collection is still based at the museum. It consists of about 300 000 specimens, dominated by butterflies and beetles. The beetle collection has approximately 33 000 specimens in 6 cabinets (100 drawers) and 5500 of these specimens are Chrysomelidae. The curator of entomology is Ms Kirstin Williams, who can be contacted to arrange visits to the collection (williamsk@durban.gov.za). The museum's website is: http://www.durban.gov.za/durban/discover-durban/our-durban/museums/nsm



- Kirstin Williams

National Museums of Kenya

Morris Nzioka, Wanja Kinuthia and Charles Lange (Nairobi)

The National Museums of Kenya was initiated in 1910 by the members of the East Africa Natural History Society (presently Nature Kenya) with the first office located in the present Nyayo house, Nairobi. The main purpose in establishing the institution was to create a facility to keep, preserve and develop the regional natural history collections. After some time, the initial site proved too small and in 1922, a larger building was put up where the present Nairobi Serena Hotel stands. Several years later, another more suitable site was identified at the present museum hill and construction of the facility started in 1929 after the government set aside the land for it. The facility was completed and officially opened on September 22, 1930 and named Coryndon Museum in honour of Sir Robert Coryndon, who was at one time the governor of Kenya and a staunch supporter of the Uganda Natural History Society. With the opening of museum, the society moved its extensive library into the museum complex. Part of this collection formed the nuclei foundation collection for what is now the Herbarium. In the early forties and fifties, the late Dr. Louis Leakey made a public appeal for funding to enlarge the museum galleries. The result was the construction of the present galleries to the right of the main entrance these were named in honor of Nairobi community members who contributed financially to the construction. In the early sixties, the Nairobi Snake Park was built with the aim to educate the public about snakes and common reptiles of Kenya. In 1964, the Coryndon Museum changed its name to the National Museums of Kenya. There after, several regional museums, sites, and monuments were opened throughout Kenya.

The insect collection comprises 35,000 species and over 2 million specimens. There are 114 cabinets, including 22 for Coleopteran and 2 for Chrysomelidae. There are also 27 cabinets for wet preserved specimens, one cabinet for the dry preserved type collection and one cabinet for the wet preserved type collection. The total number of drawers is 4,560, with 717-drawers for Coleoptera and 70-drawers for Chrysomelidae.

Today, there are several people employed in the Entomology collections, including Dr. Wanja Kinuthia, a coleopterist, and Mr. Morris Nzioka, a research technician. Has any chrysomelid specialists ever worked in Kenya? Do you have past or current collaborations for insect biodiversity studies in Kenya and other countries or museums?

The invertebrate collection has grown through focused collecting in certain sites: *Throughout Kenya:* National Parks and Game Reserves; *Western province:* Kakamega forest (Tropical forest) , Mt. Elgon; *Coast Province:* Taita Hills (Eastern Arc Mountains); Arabuko-sokoke; *Central Province:* Mt. Kenya; *Eastern Province:* Kitui and Mwingi (Dry land areas marked with little rainfall).

How to arrange a visit of the insect collections.

The public galleries are open throughout the week from 9.00am to 18.00pm and visitors enter at a fee. Visit to the research collections can be arranged by request through the Director General. How many personnel are working in the insect collection?

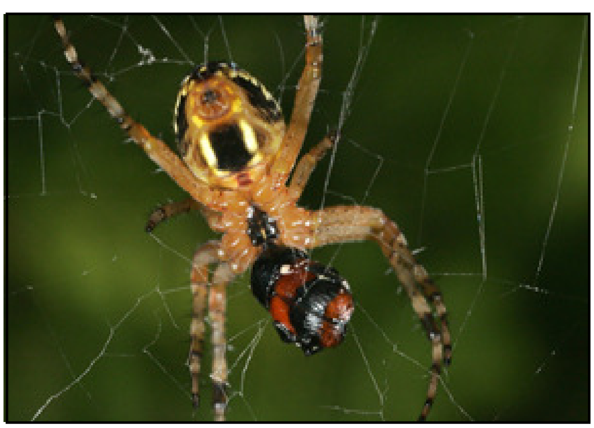
Accommodations near to the National Museums of Kenya

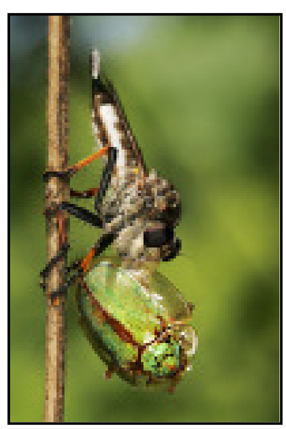
Hotel Boulevard (300 metres), Norfolk Hotel (500 metres), Sirona Hotel (500 metres), and United Club of Kenya (600 Metres).

Specimen Loans

A signed loan form, requiring the return of specimens within a one-year period, and a permit to export the specimens are issued by the Director Research and Collections NMK.

Chrysomelid predators in Nicaragua





During a recent visit to Nicaragua (see article on page 12) I had the opportunity to photograph many attractive chrysomelids. I was also able to capture some interesting predation - (on left) a spider feeding on a pachybrachine adult (Cryptocephalinae), and (on right) a fly (Asilidae) with its *Physonota* adult (Cassidinae) prey.

- Rick Stanley

Chemical Ecology of Chrysomelid Interations with Plants and Parasitoids

Torsten Meiners (Germany)

Ecosystems consist of complex trophic relationships between plants, herbivores, and their natural enemies. To study and control these complex associations, we require a basic understanding of plant location and choice behaviors of herbivores and of the defense strategies of their host plants. Chrysomelid beetles are very suitable organisms to study such multitrophic interactions since they offer a great variety of relationships with their host plants that have evolved under different ecological conditions. I am performing comparative studies of different plant – leaf beetle – parasitoid systems that include the distribution of natural populations, the behavior, sensory ecology and communication of all species involved. The aim of my research is to gain new insights into mechanisms controlling these systems, and to offer new approaches that will lead to the development of new or improved strategies for biological control.

Figure 1. Elms heavily fed upon by elm leaf beetles in a park, Melbourne, Australia.

I work at the Department of Applied Zoology/Animal Ecology, Free University of Berlin, headed by Monika Hilker. Our research focuses on the chemical ecology of insects. Chrysomelids (Hilker & Meiners 1999) as well as insect egg deposition (Hilker & Meiners 2002a) play a major role in our studies. Information transfer between plants, herbivorous insects, predatory and parasitic insects is mediated by a plethora of chemical signals and cues, such as, e.g., plant volatiles or pheromones. Our major aim is to unravel this infochemical web in several multitrophic systems by studying the mechanisms and functions of chemical communication. The identification of infochemicals involved in multitrophic interactions, studies of their biological activities, and investigations of their biogenesis are our major tasks. We use chemical and molecular techniques as well as modern behavioural assays for our studies. Knowledge of the chemical ecology of multitrophic interactions may contribute to a better understanding of the evolution of a food web and lead to an optimal use of naturally occurring chemicals in crop and forest protection.

Chemical Ecology of Plant Defenses Induced by Chrysomelid Egg Deposition

Plants defend themselves directly or indirectly with the help of parasitoids or predators against herbivores. They attract natural enemies of the herbivores by the emission of specific plant volatiles. The larvae and adults of the elm leaf beetle, *Xanthogaleruca luteola* (Fig. 1), are major natural pests of the European field elm (*Ulmus minor*), and can occasionally defoliate whole trees (Fig. 2). Field elms respond to oviposition of these beetles by releasing novel blends of volatiles, which attract the elm leaf beetle egg parasitoid *Oomyzus gallerucae*, even in the absence of herbivory. This system has been well characterized ecologically (Meiners & Hilker 1997; 2000; 2003; Hilker & Meiners 2002b; 2006; Meiners *et al.* 2000; 2005) and is an entirely natural system that has not been disturbed in any way by agricultural selection pressures. An elicitor from the oviduct secretion that glues the eggs to the leaf triggers the release of volatiles in the field elm that specifically attracts *O. gallerucae*, prior to any herbivory having occurred. This volatile release exactly coincides with the time needed for the leaf beetles eggs to hatch, whereupon the tree ceases to be attractive to the egg parasitoids. In a project funded by the German Resarch Council "Induction of plant volatiles by insect egg deposition on elm, *Ulmus minor*: using molecular methods and genetic transformation to understand an ecological phenomenon" I investigate the defense mechanisms of the elm further in cooperation with Trevor Fenning (MPI Chemical Ecology, Jena). It is the intention of this project to dissect how this exceptionally interesting suite of responses in elms is initiated and regulated at the molecular – genetic level. The research objectives are to determine (1) the mode of volatile induction by eggs of *X. luteola* at the level of gene expression, (2) how *U. campestris* regulates the production of the induced volatiles, (3) which genes and biochemical pathways are associated with the volatiles involved in leaf beetle and parasitoid attraction. I study furthermore in the lab and in the field a) the function of certain terpenoids and the meaning of background odours for the orientation of the egg parasitoid, b) the temporal and spatial variability of induced defenses within and between trees, c) plant-mediated mechanisms of aggregation. The plasticity of induced responses in plants caused by herbivore oviposition can certainly influence the presence and distribution of herbivores and parasitoids. The leaf beetles themselves might employ volatiles emitted as part of indirect plant responses to herbivore attack to localize conspecifics or to avoid competition. While the lab work is done in Berlin, the collection and the field work is performed in elm stands Southern France and Northern Spain.

Figure 2. Adult elm leaf beetle.

Chemical and structural diversity of the vegetation: Influence on chrysomelids and their parasitoids

Often neglected aspects of biodiversity are the chemical and structural diversity of the vegetation and their effect on multitrophic interactions. Up to date most studies have concentrated on the influence of plant diversity on host-parasitoid interactions in general and did not separate the effects of chemical and physical features. Plant chemical diversity as well as plant structures have been shown singly to influence the choice of oviposition places by herbivores and the host finding of the parasitoids. The combined influence of both factors on the interaction between herbivorous insects and their parasitoids in the field, as well as their scale dependency is not known. Together with Elisabeth Obermaier (Department of Animal Ecology and Tropical Biology, University of Würzburg) I investigate the function of the chemical complexity of habitat odors and the vegetation structure for leaf beetle - parasitoid interactions.

Our model system is the tansy leaf beetle *Galeruca tanceti* (L.), its egg parasitoid, *Oomyzus galerucicvorus* (Hymenoptera: Eulophidae), and its food plants (e.g. yarrow, *Achillea millefolium* (Asteraceae)). The leaf beetle (Fig. 3) and its egg parasitoid are common on grasslands (Fig. 4) all over mid-Europe. The beetle is polyphagous and feeds on species of the families Asteraceae, Brassicaceae, Caryophyllaceae, Dipsacaceae, Liliaceae, Lamiaceae, Polygonaceae, and Solanaceae (Lühmann, 1939; Prevett, 1953; Obermaier & Zwölfer, 1999). In autumn, females of the tansy leaf beetle deposit their egg clutches on vertical structures within the herbaceous vegetation layer, mostly on grass and other non-host plants, where the egg clutches then hibernate (Meiners *et al.*, 2006). The gravid females are unable to fly (but see Beenen 2005) and have to walk up the plant structures for oviposition. After hatching in April-May, the larvae have to find suitable host plants in the surrounding of the oviposition site where they feed for about three weeks until pupation (Obermaier & Zwölfer, 1999). After pupation, the adults can be found from early June onwards before they enter a reproductive diapause in mid-summer. The eulophid wasp *O. galerucivorus* parasitizes different *Galeruca* species (Sinacori & Mineo, 1993), however, its main host in Germany is the tansy leaf beetle. *O. galerucivorus* parasitizes the egg clutches of its host shortly after beetle oviposition in autumn. The parasitoid larvae hibernate in the host eggs and adults emerge next spring (Meiners *et al.*, 2006). The 1.5 mm long egg parasitoids search at close range for host egg clutches by walking up and down vertical structures within the vegetation and using chemical contact cues from the host faeces (Meiners *et al.*, 1997). Parasitism caused by *O. galerucivorus* is the most immediate mortality factor for the egg clutches of *G. tanaceti* and parasitism rates can reach up to 90% (Meiners *et al.* 2006).

Plant chemical diversity

In the field the tansy leaf beetles chose oviposition sites on the basis of food plant presence and quantity; furthermore plant species diversity influenced oviposition site selection (Randlkofer et al. 2007). *G. tanaceti* females laid their egg clutches preferentially in the immediate vicinity of their main food plants (*A. millefolium* and *C. jacea*), which were present more often and in higher densities in oviposition plots compared to control plots within the investigated natural grassland habitats. By ovipositing close to the host plants *G. tanaceti* ensures ready access to nutritional resources for hatching larvae, despite the fact that their eggs may also be more subject to parasitism, since the presence of the host plant *A. millefolium* enhanced the probability of egg parasitism by *O. galerucivorus*.

Figure 3. Ovipositing female of *Galeruca tanaceti.*

Odour blends originating from host plants, non-host plants and diverse plant mixtures influenced oviposition site selection of the leaf beetle (Randlkofer et al. 2007). Oviposition olfactometer tests clearly showed that the female beetles responded during oviposition to the volatiles released by the plants. *G. tanaceti* preferred the odours of a diverse plant species mixture for oviposition, which always included food plants when tested against the odours of grass plants, which they mostly use as an oviposition substrate.

We have shown that experienced female parasitoids are attracted to odours from *A. millefolium* (Randlkofer et al. 2007). Our results indicate that *O. galerucivorus* can exploit host plant volatiles for host location, although an enhanced plant odour complexity hampered the orientation of the specialised egg parasitoid. In olfactometer bioassays with the parasitoid neither naïve nor experienced egg parasitoids were attracted to odours of a leaf beetle host plant (*A. millefolium*) when offered simultaneously with odours of a non-host plant (*T. vulgaris*). In contrast, there was a significant attraction of experienced but not of naïve parasitoids to the pure host plant odour. These results suggest that the egg parasitoid does not respond to the volatile cues emitted from the host plant of its host when the diversity of the volatile blend is enhanced by adding a non-host plant species, at least if it has not experienced this odour blend before.

Figure 4. Field-work in the Hassberge, Germany: looking for belowground interactions.

Plant structural complexity

Field studies on calcareous grasslands revealed that structurally complex vegetation has profound effects on the foraging success of *O. galerucivorus*. On a small spatial scale (r = 0.1 m) a reduced probability of egg parasitism could be explained by the parameters vegetation density and vegetation height (Meiners & Obermaier 2004; Obermaier *et al.* 2007). The number of egg clutches in areas with different grass stem density is directly proportional to the number of stems in these areas (a similar probability of an oviposition event per stem in high and low stem density areas); the number of egg clutches in areas with high stem densities is disproportionately higher than in low stem density areas. At three investigated grassland sites of all vegetation structure parameters only the factors stem density and vegetation height were significantly positively correlated with the presence of egg clutches. Oviposition height of the leaf beetle is not uniform, but changes with the structure of the habitat and during the season (Obermaier *et al. 2006*). Mean oviposition height per site (70 cm) was significantly higher than mean vegetation height (28 cm). Our results suggest that females try to oviposit as high as possible in the vegetation and on the plants selected. In accordance with this, the probability of egg parasitism and of winter egg clutch mortality significantly declined with increasing oviposition height.

We will continue this work in a Priority Programme of the German Research Council in three Biodiversity-Exploratories (http://www.biodiversity-exploratories.de/) in Germany and study the influence of land use intensity on a) the chemical complexity of habitat odors and b) the vegetation structure and their function for the leaf beetle - parasitoid interactions. Further research on leaf beetles will also include a comparison with other *Galeruca* species. Thus, overwintering egg masses of different *Galeruca* species are very welcome.

Literature:

Beenen, R. 2005. Flight muscles in *Galeruca tanaceti*. Chrysomela 45: 15-17.

Hilker, M. & Meiners, T. 1999. Chemical cues mediating interactions between chrysomelids and parasitoids. pp.197-216. *In:* Advances in Chrysomelidae Biology. M.L. Cox (ed.).

Hilker, M. & Meiners, T. (Eds.) 2002a. Chemoecology of insect eggs and egg deposition. Blackwell Verlag, Berlin, 410 pp.

Hilker, M. & Meiners, T. 2002b. Induction of plant responses towards oviposition and feeding of herbivorous arthropods: a comparison. Entomol. Exp. Appl. 104: 181-192.

Hilker, M. & Meiners, T. 2006. Early herbivore alert: Insect eggs induce plant defense. J. Chem. Ecol. 32: 1379-1397.

Hilker, M., Rohfritsch, O. & Meiners, T. 2002. The plant's response towards insect egg deposition. pp. 205-233. *In:* Hilker, M. & Meiners, T. (Eds.) Chemoecology of Insect Eggs and Egg Deposition. Blackwell Verlag, Berlin.

Lühmann. 1939. Beiträge zur Biologie der Chrysomeliden. 4. Beobachtungen an *Galeruca tanaceti* Lin. Entomol. Blätt. 35: 91-95.

Meiners, T., Hacker, N., Anderson, P. & Hilker, M. 2005. Response of the elm leaf beetle to host plants induced by oviposition and feeding: The infestation rate matters. Entomol. Exp. Appl. 115: 171-177.

Meiners, T. & Hilker, M. 1997. Host location in *Oomyzus gallerucae* (Hymenoptera: Eulophidae), an egg parasitoid of the elm leaf beetle *Xanthogaleruca luteola* (Coleoptera: Chrysomelidae). Oecologia 112: 87-93.

Meiners, T. & Hilker, M. 2000. Induction of plant synomones by oviposition of a phytophagus insect. J. Chem. Ecol. 26: 221-232.

Meiners, T. & Hilker, M. 2003. Chemical signalling between host plant and egg parasitoid of a galerucine leaf beetle. pp. 227-241. *In:* Furth, D. (Ed.) Special topics in leaf beetle biology. Pensoft Publishers, Sofia.

Meiners, T., Köpf , A., Stein, C. & Hilker, M. 1997. Chemical signals mediating interactions between *Galeruca tanaceti* L. (Coleoptera, Chrysomelidae) and its egg parasitoid *Oomyzus galerucivorus (*Hedqvits) (Hymenoptera, Eulophidae). J. Insect Behav. 10: 523-539.

Meiners T. & Obermaier E. 2004. Hide and seek on two spatial scales : plant structure differentially influences herbivore oviposition and host-finding of egg parasitoids. Basic and Applied Ecology 5: 87-94.

Meiners, T., Randlkofer, B. & Obermaier, E. 2006. Oviposition at low temperatures - late season negatively affects the leaf beetle *Galeruca tanaceti* (Coleoptera: Chrysomelidae) but not its specialised egg parasitoid *Oomyzus galerucivorus*. (Hymenoptera: Eulophidae). Europ. J. Entomol. 103: 765-770.

Meiners, T., Westerhaus, C. & Hilker, M. 2000. Specificity of chemical cues used by a specialist egg parasitoid during host location. Entomol. Exp. Appl. 95: 151-159.

Obermaier, E., Heisswolf, A., Poethke, H.J., Randlkofer, B. & Meiners, T. 2007. Plant architecture and vegetation structure: Two ways for insect herbivores to escape parasitism. Europ. J. Entomol. (in press).

Obermaier, E., Heisswolf, A., Randlkofer, B. & Meiners, T. 2006. Enemies in low places – Insects avoid winter mortality and egg parasitism by modulating oviposition height. Bull. Entomol. Res. 96: 337-343.

Obermaier, E. & Zwölfer, H. 1999. Plant quality or quantity? Host exploitation strategies in three Chrysomelidae species associated with Asteraceae host plants. Entomol. Exp. Appl. 92: 165-177.

Prevett, P.F. 1953. Notes on the feeding habits and life-history of *Galeruca tanaceti* L. (Col., Chrysomelidae). Ent. Mon. Mag. 89, 292-293.

Randlkofer, B., Obermaier, E. & Meiners, T. 2007. Mother's choice of the oviposition site: balancing risk of egg parasitism and need of food supply for the progeny with an infochemical shelter? Chemoecology 17: 177-186.

Sinacori A. & Mineo G. 1993. Nota preliminare su *Galeruca* spp. (Coleoptera Chrysomelidae) delle Madonie. Frust. entomol. 16: 97-110.

Wegener, R., Schulz, S., Meiners, T., Hadwich, K. & Hilker, M. 2001. Analysis of volatiles induced by oviposition of elm leaf beetle *Xanthogaleruca luteola* on *Ulmus minor*. J. Chem. Ecol. 27: 499-515.

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Chrysomelidae Literature

Continued from page 17

Londt, J.G.H. 2007. The distribution and biology of *Bittacus tjederi* Londt, 1970 (Mecoptera: Bittacidae). *Afr. Entomol.* 15(1): 225-227. [predation of chrysomelids]

Lopatin, I.K. 2007. New species of the leaf beetles (Coleoptera, Chrysomelidae) from China: VII. *Entomol. review* 87(2): 215-221.

Medeiros, L. & D.S. Bolignon. 2007. Adaptations of two specialist herbivores on hairy leaf surfaces of their host, *Solanum guaraniticum* Hassl (Solanceae). *Rev. Bras. Entomol.* 51(2): 210-216.

Nadein, K. 2007. Review of the *glaber* species-group of the genus *Psylliodes* Latr. (Coleoptera: Chrysomelidae: Galerucinae: Alticinae). *Genus* 18(3): 433-471.

Petitpierre, E. 2006. A new contribution to the cytogenetic knowledge of Alticinae (Coleoptera, Chrysomelidae). *Hereditas* 143: 58-61.

Petitpierre, E. & M. Elgueta. 2007. A cytogenetic study on three Chilean species of Chrysomelinae (Coleoptera, Chrysomelidae). *Folia Biol.* 54(3-4): 87-91.

Samuelson, G.A. 2006. Family Chrysomelidae, the leaf beetles. pp. 249- 252. *In:* Peck, S.B. (ed.), The beetles of the Galapagos Islands, Ecuador: evolution, ecology and diversity (Insecta: Coleoptera). NRC-CNRC, 313 pp.

Santiago-Blay, J. & J.B. Lambert. 2007. Amber's botanical origins revealed. *Amer. Sci.* 95: 150-157.

Staines, C.L. 2007. A review of the genus *Chaeridiona* Baly, 1869 (Coleoptera: Chrysomelidae: Cassidinae). *Zootaxa* 1521: 19-29.

Staines, C.L. 2007. A new species of *Plautyauchenia* Sturm, 1843 (Coleoptera: Chrysomelidae: Cassidinae) from Brazil. *Insecta Mundi* 012: 8pp.

Zhang, J.-F. 2005. The first find of chrysomelids (Insecta: Coleoptera: Chrysomeloidea) from Callovian-Oxfordian Daohugou biota of China. *Geobios* 28: 865-871.

Bali was missing from the page of chrysomelid literature

Mohamed S. Mohamedsaid (Malaysia)

Prior to the publications of Mohamedsaid (2001) on Galerucinae and Borowiec (2001) on Cassidinae from Bali, Indonesia, there were surprisingly very few chrysomelids recorded from this famous resort island. Laboissiere (1932) recorded the only galerucine from the island, *Sphenoraia javana* (Wiedemann), which was later transferred to *Aplosonyx* by Reid (1998). In 1970, Warchalowski recorded *Longitarsus birmanicus* Jacoby and described *Longitarsus fraudulentus* Warchalowski from Bali (Kimoto 2001). The first cassidine species described from Bali was *Dactylispa praegracilis* Uhmann, 1956. Prior to this, Uhmann (1934) recorded the occurrence of *Hispellinus minor* (Maulik). Borowiec (1990) recorded six species (*Aspidimorpha deusta, A. miliaris, A. mutilata, Cassida circumdata, Laccoptera sedecimnotata* Boheman and *L. tredecimpunctata* (Fabricius) and recently he (Borowiec, 2001) recorded another three species (*C. physodes , C. ruralis* and *L. nepalensis*). I recorded 68 species of Galerucinae, including nine new species (Mohamedsaid, 2001). Recently, Bezdek (2005) described a new species of galerucine, *Apophylia takizawai* from the island. All the above species from Bali were recorded in the twentieth century. So, what happened in the nineteenth century?

In the nineteenth century, during an active period of museum expeditions Bali was not selected for collecting trips! Thus, the map of Bali was missing from pages of the chrysomelid literature. Expeditions focused more on Wallacea, a transition zone between the Oriental and Australian Regions. All islands in this zone were visited, such as Lombok, Sumbawa Sumba, Flores, Timor, Buru, Batchian, Tenimbar and Mollucas. As a matter of fact, Lombok, located in Wallacea is separated from Bali by only the narrow Lombok Straits. Surprisingly, nineteenth century expeditions did not stop over in Bali one the way to or from Wallacea. The reason could be that stated by Traino (2002), that during the nineteenth century and again in the 1990s, Wallacean islands were surveyed most intensely by field ornithologists. This deep interest in Wallacea reflects the transition zone between the Oriental and Australian Region and the flora and fauna from both regions.

I suspect that perhaps there may have been a collecting trip to Bali and possibly specimens collected from there were recorded as from Java. But, to verify this, one would have to check all the specimens from Java in the museums collections.

Presently, only two subfamilies are recorded from Bali, Galerucinae and Cassidinae. Surely, Donaciinae, Sagrinae, Cryptocephalinae, Chrysomelinae and Eumolpinae occur there. I suggest a holiday in the beautiful island of Bali, hunting for chrysomelids at the same time.

References Cited:

Bezdek, J. 2005. New and interesting Apophylia from Southeast Asia (Coleoptera: Chrysomelidae: Galerucinae). Raffles Bulletin of Zoology, 53(1): 35-45.

Borowiec, L. 1990. New records and new synonyms of Asiatic Cassidinae (Coleoptera, Chrysomelidae). Bull. Entomol. Pologne 59: 677-711.

Borowiec, L. 2001. New records of Asian and Australopapuan *Cassidinae,* with a description of five new species of *Cassida* from Thailand (Coleoptera: Chrysomelidae: Cassidinae). Genus 12 (4): 493-563.

Kimoto, S. 2001. Checklist of Chrysomelidae of South East Asia, South of Thailand and West of Irian Jaya of Indonesia, IX. Alticinae. *B*ull. Inst. Comp. Stud. of Internat. Cultures and Societies, Kurume University 28: 153-249.

Mohamedsaid, M.S. 2001. The chrysomelid beetles of the subfamily Galerucinae from Bali, Indonesia (Coleoptera; Chrysomeldae). Serangga 6 (1): 137-169.

Reid, C.A.M. 1998. The Chrysomeloidea of Taman Nasional Gede-Pangrango and environs, Jawa Barat, Indonesia. Serangga 3(2): 269-315.

Trainor, C.R. 2002. Status and habitat associatins of birds on Lembata Islands, Wallacea, Indonesia, with reference to a simple technique for avifaunal survey on small islands. Bird Conservation International12: 365-381.

Caught in the act!

Nicaraguan Chrysomelinae, Photography by R. Stanley.

Please send identifications to L. Chamorro-Lacayo.

Collecting Leaf Beetles in Nicaragua

M. Lourdes Chamorro (USA) & Alexander S. Konstantinov (USA)

The insect fauna of Nicaragua has received less attention than that of neighboring Central American countries (e.g., Costa Rica). Hence, after collecting for 3 years in the Dominican Republic (2 years for Chamorro and Stanley), our team of 4 researchers and 1 photographer, L. Chamorro (Chrysomelidae), A. Konstantinov (Chrysomelidae), S. Lingafelter (Cerambycidae), R. Stanley (Wildlife Photography), and N. Woodley (Buprestidae), decided to go to Nicaragua. Additionally, Nicaragua is the native country of L. Chamorro, thus we had necessary logistic support. The authors' main objective was to survey and compare the chrysomelid fauna of the three major geographic regions in Nicaragua; the Pacific Lowlands (Región del Pacífico), the Central Highlands (Meseta Central), and the Caribbean Lowlands (Región del Caribe).

Figure 1. Lowland wet tropical forest, Bartola, Rio San Juan (Photo: A. Konstantinov).

The Pacific Lowlands extend from the Pacific coast northward to the Cosigüina volcano on the west and Lake Nicaragua on the east, both setting the northern limits of the northwestern boundary line. The region consists of a series of fertile plains of volcanic origin transversed by a row of active volcanoes (Incer 2000). This region is the agricultural, commercial, and economic center of the nation, the heart of which is the capital city, Managua. The dry season is intensely expressed here, with the landscape becoming brown, the rivers drying up, and most of the vegetation losing its leaves.

The Central Highland region extends from the border with Honduras and the Río Coco eastward towards the Río San Juan along the border with Costa Rica (Incer 2000) and northward beyond the limits of the Pacific Lowlands. Plateaus, mountain ranges, and valleys characterize the region. The oldest geological formations and the highest point of the country, Mogotón (2107 m above sea level), are found in the Department of Nueva Segovia (Incer 2000). According to Incer (2000) the Segoviana plateau was part of a primitive continent that extended from present day Yucatan to the Antilles formed some 200 million years ago. The Central Highland region progressively decreases in elevation finally reaching barely 300 m a.s.l. along the Río San Juan (Incer 2000). Large, dense patches of well preserved forest still exist in the Central Highlands, such as the Bosawas Biosphere Reserve (8,000 km^2), the Indio-Maíz Biological Reserve, and on isolated mountain peaks, yet every year pressure from the agricultural front threaten the integrity of these areas. The climate for most of the region is cooler with a mean daily temperature of 23 C, due to the high altitude of the region (Incer 2000).

The Caribbean Lowlands extends from the Central Highlands northwest towards the Caribbean Sea. The region is relatively flat, marked by several major rivers that flow towards the sea (Incer 2000). The climate is characterized by an extended rainy season, 9 to 10 months, with 2.5 – 5 meters of rain annually and a mean daily temperature greater than 30 C (Incer 2000). Pine forests characterize the area north of Puerto Cabezas and swamps and wet tropical forests predominate in the south; however, the region is facing a high rate of deforestation (Incer 2000). We scheduled our trip at the beginning of the rainy season from June 4–24, 2007. Our counterpart in Nicaragua, Jean-Michel Maes (Museo Entomológico de León) secured our export permits. We rented a 4WD Toyota Prado for the entire trip. Apart from three flat tires in one day and a cracked windshield, our travels were relatively uneventful.

Figure 2. Lodge at Bartola (Photo: L. Chamorro).

This is a preliminary report of our collections since most of the material has yet to be processed. Our inventory of the leaf beetle fauna focused mainly on Alticini and Cryptocephalinae, however other groups were also collected. Our discussions of material collected will largely reflect our groups of interest.

Caribbean Lowlands

The first collecting stop during our three-week expedition was Refugio Bartola, where the Río Bartola meets the Río San Juan adjacent to the western edge of the Indio-Maiz Reserve (Figs. 1, 2). Arrangements for our stay had been made beforehand with Sandra Castrillo. We drove from Managua for 7 hours to the port city of San Carlos, situated at the mouth of the Río San Juan. The boat ride from San Carlos to the historic city of El Castillo took an additional 3 hours (Figs. 3, 4). Finally, the last leg of the trip was a 30 minutes boat ride to Refugio Bartola under a bright starry sky. It is also possible to take an hour-long flight from Managua to San Carlos.

Despite the remoteness of the lodge, it provides comfortable accommodations including mosquito nets, good food, electricity, running water, and howler monkeys just beyond the door (Fig. 2). Numerous trails lead to the wet tropical forest directly from the lodge. During the five days at Bartola, two of which were completely rained out, we did not collect a single cryptocephaline. Flea beetles were numerous and diverse, particularly various monoplatines collected on a variety of vines. Among other chrysomelids, chrysomelines and cassidines, including hispines, displayed diverse shapes and colors.

Figure 4. Mist over the Río San Juan (Photo: L. Chamorro).

Pacific Lowlands

With our wet and muddy clothes we drove to the dry deciduous tropical forests of Reserva Silvestre Privada Domitila in the department of Granada of the Pacific Lowlands (Fig. 5). Even though we arrived well after 10 pm, Maria Jose B. de Mejía, the owner, made sure we were well fed before going to bed. Jean-Michel Maes and a group of Hungarian and French entomologists were already there collecting. The lodge at Domitila is comfortable, ecologically friendly, and offers good food. Various trails lead directly from the house into the forest. Collecting was particularly good for chrysomelids, and luckily for cryptocephalines as well. Most, if not all cryptocephalines were on various legumes or flowering trees. Several cryptocephalines were collected on ant *Acacia* making collecting slightly challenging and sometimes painful. Flea beetles were not as numerous as in Bartola, but not less interesting. Larvae and emerging adults of *Physonota* were noticeable along the trails, as were several other cassidines.

Figure 5. View of the dry tropical forest in Domitila and Volcán Mombacho (Photo: A. Konstantinov).

After Domitila we stayed in the colonial and historic city of Granada in a hotel off the main square allowing easy access to Volcan Mombacho. Collecting at Mombacho was restricted to the properties of retired General Joaquin Cuadra; La Trinidad and La Esperanza (Fig. 6). The highest point of our hike on this isolated cloud forest was 1035 m. Collecting was favorable for flea beetles but not for cryptocephalines. A single cryptocephaline was taken from a legume tree on the roadside on the way down.

Figure 6. Descent from Mombacho. From top to bottom, A. Konstatinov, N. Woodley, L. Chamorro (Photo: R. Stanley).

We continued our survey of the Pacific Lowlands in San Juan del Sur, a quaint and touristy seaside town. The forest resembles that of Domitila, so cryptocephalines were commonly collected. Two localities were sampled around the vicinity of San Juan del Sur, the private reserve surrounding Morgan's Rock Resort and the Chamorro property, Santa Anita; both only 20 minutes drive apart. Collecting at the Chamorro property was cut short due to imminent rain showers. Nevertheless, both places were an excellent source for chrysomelids, particularly for those beetles preferring drier habitats (Fig. 8).

Figure 7. L. Chamorro curating beetles on layers (Photo: A. Konstantinov).

Central Highlands

Figure 8. Chrysomelid from Finca Santa Anita (Photo: R. Stanley).

Figure 9. Our group collecting at the ridge top in Selva Negra (Photo: S. Lingafelter).

From the deciduous dry forests of the Pacific Lowlands we ascended to more humid habitats. We drove from San Juan del Sur to the Selva Negra mountain lodge in the department of Matagalpa (Figs. 9, 10). Lodging and permission to collect had been previously arranged with the owners, Eddy and Mausi Kühl. Roadwork extended the drive from 4 to 6 hours. We rented a comfortable five-bedroom cottage at the edge of the forest for 4 days. Black lighting from the backyard yielded some interesting cerambycids.

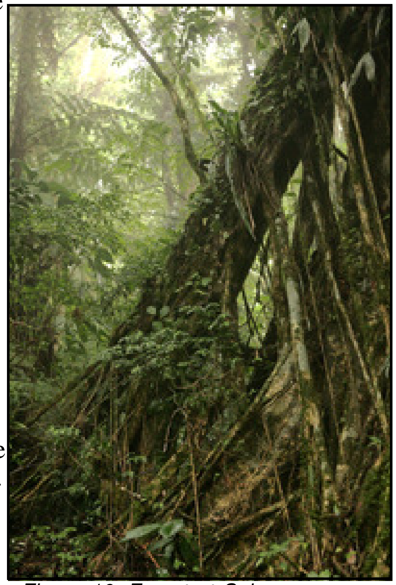
Figure 10. Forest at Selva Negra (Photo: R. Stanley).

Selva Negra is one of the most impressive places we collected in Nicaragua for flea beetles and the only place we sampled moss. During the last couple of expeditions we have made an effort to collect leaf-beetles living in moss. Moss living leaf-beetles, particularly flea beetles, are very common and relatively well known in Europe and Asia, but poorly known in the New World. Thus far, the newly described genus *Kiskeya* Konstantinov & Chamorro-Lacayo, 2006 from the Dominican Republic is the only leaf beetle recorded from moss in the New World. Moss sifting at the top of the ridge in Selva Negra yielded 20 specimens of one species of a yet undescribed flea beetles genus, not closely related to *Kiskeya*. Cryptocephalines again were rarely collected in wet tropical forests. However, we suspect most of the diversity is located high in the canopy and cannot be reached with a sweep-net. Tree falls in the forest were the only window into cryptocephaline diversity in Selva Negra.


Figure 11. Pachybrachine from Selva Negra (Photo: R. Stanley).

Interestingly, Steve collected a most impressive cryptocephaline at a tree fall. It was a large pachybrachine female, bright red becoming lighter caudally with scutellum, labrum, legs, and alternating abdominal segments bright yellow (Fig. 11). Several flea beetles were also collected on Piperaceae and Asteraceae.


Figure 12. Cryptocephalus sp. at Santa Maria de Ostuma (Photo: R. Stanley).

We also collected at the adjacent property of the Salazar family, Santa Maria de Ostuma (Fig. 12). The recently built facilities were very nice; regrettably the trails were yet to be designated. Nevertheless, collecting was particularly good for cryptocephalines along the edge of the road leading to the top of the mountain. Along the trail we found a recently fallen *Ficus* tree that provided most of the buprestid, cerambycid and chrysomelid collecting. One yet to be identified flea beetle was obviously feeding on the ficus' leaves.

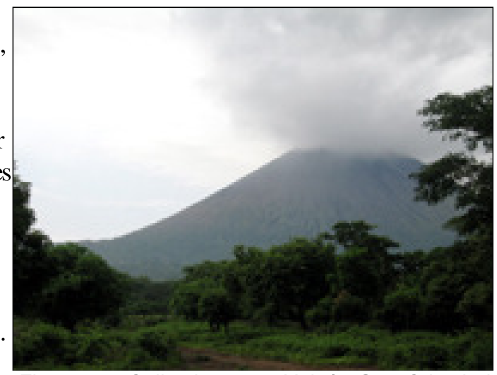
Figure 13. Collecting near Volcán San Cristobal (Photo: S. Konstantinov).

Return to the Pacific Lowlands

We headed back to the Pacific Lowlands to collect in the departments of Leon and Chinandega. In this part of southwestern Nicaragua we collected at three different


Figure 14. Collection at Museo Entomológico de León (MEL). From left to right: A. Konstantinov, L. Chamorro, J-M Maes, N. Woodley (Photo: S. Lingafelter).

spots - San Cristobal (Fig. 13), Santa Rosa del Peñon, and near Cerro Negro in Leon on the road to Laguna de Asososca. The habitat is characteristic of the region with Santa Rosa del Peñon being slightly drier and scrub-like. We got lost on the way to Laguna de Asososca, but instead found a recently cut clearing with piles of dried branches. This spot resulted in great collecting for cerambycids and several large clytrines and chlamisines new for the trip on live trees.

Before the end of the trip we visited the Museo Entomológico de León (MEL), which is maintained and owned by Jean-Michel (Fig. 14). The collection that Jean-Michel has amassed over the years is impressive, being meticulously curated and very diverse. One large and dark room of his colonial house is filled wall to wall with drawers and boxes of specimens. The entrance to his house displays drawers of showy and charismatic beetles or groups currently being worked on by him or a handful of students. Jean-Michel very graciously showed us drawer after drawer of chrysomelids, particularly cryptocephalines. L. Chamorro borrowed a box of cryptocephalines to study and hopes to soon resolve the taxonomic confusion surrounding the identity of Neotropical cryptocephalines.

Overall, collecting was excellent for the entire group. Cerambycid and buprestid collecting exceeded the expectations of Steve and Norm, with more than 80 species of buprestids and in excess of 140 species of cerambycids. Collecting in a relatively large group has its advantages, not only for the comradery that results, but also because we collect for each other specimens that otherwise might escape our attention. Rick took more than 300 high quality images of Nicaraguan wildlife including the pictures featured in this article.

References Cited:

Incer, J. Geografía dinámica de Nicaragua. Hispamer, Managua, 281 pp. (In Spanish).

Konstantinov, A. S. and M.L. Chamorro-Lacayo. 2006. A new genus of moss-inhabiting flea beetles (Coleoptera: Chrysomelidae) from the Dominican Republic. Coleop. Bull. 60(4): 275-290.

Chrysomelidologists Gathering Beutelsbach, Germany, October 2007

Attendees (from left to right): Frank Fritzlar, Michael Schmitt, Uta Heidenreich, Thomas Wagner, Mauro Daccordi, Susanne Düngelhoef, Andrzej Warchalowski, Eva Sprecher-Übersax, Thomas Rönn, Michael Langer, Manfred Döberl, Barbara Bergéal, Matthias Schöller, Pierre Jolivet, Ulf Arnold, Michel Bergéal, Ron Beenen. Not in photo: Elisabeth Geiser and Uwe Heinig (Photo: R. Constantin).

Visit to Texas, USA

Ed Riley invited David Furth and Shawn Clark, through a grant from the National Sience Foundation, to sort Alticinae and Galerucinae at Texas Agricultural and Mechanical University (College Station, Texas, USA) . We were there for a week of sorting and 2 days of collecting. The photo below shows a very frustrated Ed, because

Shawn had just collected the first Texas record of *Phyllobrotica physostegiae* Riley that Ed has been trying to find all around his neighborhood almost since arriving in Texas; Shawn found one specimen only 5 miles from Ed's house. So Ed took Shawn a mile down the road to see if he could get more at a stand of this third/new food plant, P*hysostegia intermedia* (Nutt.) Engelm. & Gray (Lamiaceae).

Photo (from left to rigth): Dave Furth, Ed Riley and Shawn Clark sorting Alticinae and Galerucinae in the collection of Texas A & M University, TX, USA.

- David Furth

Jean Lhoste

Pierre Jolivet (France)

Jean Lhoste was born on 19 September 1913 in Charenton-le-Pont, Paris. He was very productive, writing several books and more than 400 papers, mostly on entomology. His recent communications deal with insecticides and plant protection, and also with his favorite passion, swords. In our August 2007 meeting at his home, we recalled the good old times of entomology at the French Museum under the leadership of Paul P. Grassé and René Jeannel, when Eugène Séguy, Renaud Paulian, André Villiers, Lucien Chopard, Lucien Berland and Ferdinand Le Cerf were the forerunners in French entomology. These were also the times of the old Sorbonne, an entity actually split into more than 12 separate universities. Jean wrote interesting books, e.g., (1979) Des Insectes et des Hommes (=Insects and Men, Fayard publ.), and (1987) Les entomologistes français. 1750-1950 (anecdotes of French entomologists, INRA, Versailles), and (1997) a book 'La Fourmi' (on Ants, Favre publ., Paris) with a museum specialist.

Lhoste divided his life between the Museum and the University. He got his Master in Sciences in 1939 and his Ph. D., in 1952, in the Paris Sorbonne. His Ph.D. thesis was on *Forficula auricularia* (histology, cytology and histochemistry). Later on, René Caussanel, of the same University, studied the maternal care and the hormones involved in the behavior of these Dermaptera. Lhoste also studied the behavior of *Xyleborus morstatti*, a scolytid in coffee tree stems in Africa. For a short period (1935-1939) he studied Scydmenidae in the Museum. The rest of his life was devoted to pesticide use in agriculture. He has been Research Director in different institutes.

What is more relevant to us chrysomelidologists is that Lhoste studied the Clavareau Collection of chysomelids in 1934. Recently, Mauro Daccordi and Chris Reid studied his papers for their own research on the Australian fauna. Despite some synonymies, they retained the validity of several taxa. Victor Laboissière helped Lhoste during his work, but he never published the complete table for the identification of Australian genera of Chrysomelinae. Chris Reid has done this recently.

In 1948, Lhoste studied *Leptinotarsa decemlineata* blood (haemocoelomic fluid) with Lucie Arvy and Manfred Gabe. He was elected to the Academy of Agriculture, Paris, in 1970. This short career in the world of Chrysomelidae deserves to be remembered. Unfortunately,a few months ago, a basement fire icompletely destroyed his collection of reprints. Fortunately, a previous donation to the Department of Agriculture (INRA) is a record of his works.

References Cited :

Jean Lhoste. 1934. Etude des Chrysomelinae de la Région Australienne. Ann. Soci. Entomol. Fr. 103: 347-362.

Jean Lhoste. **1941.** Structures oculaires et phototropismes comparés de *Forficula auricularia* L. et de *Leptinotarsa decemlineata* Say. Bull. Soc. Zoo. Fr. 66: 317-327.

Arvy, L., Gabe, M. et **Lhoste, J**. **1948.** Contribution à l'étude morphologique du sang de *Chrysomela decemlineata* Say. Bull. Bio. Fr. et Belg. 82(1) : 1-24.

Literature on Chrysomelidae

Andrew, N.R. & L. Hughes, L. 2004. Species diversity and structure of phytophagous beetle assemblages along a latitudinal gradient: predicting the potential impacts of climate change. *Ecol. Entomol.* 29: 527-542.

Barry, C. 2007. Mood bugs. Beetle changes color in fluid fashion. *Science News* 172: 99.

Borowiec, L. 2006b. A new species of *Basiprionota* Chevrolat from Sumba, Indonesia (Coleoptera: Chrysomelidae: Cassidinae: Basiprionotini). *Genus* 17: 245-248.

Borowiec, L. 2006c. A new species of *Aspidimorpha* sgen. *Spaethia* from Zambia (Coleoptera: Chrysomelidae: Cassidinae). *Genus* 17: 249-252.

Borowiec, L. 2006d. *Dorynota* (*Akantaka*) *storki*, a new species from Peru and notes on *Dorynota* (*Akantaka*) *boliviana* Borowiec, 2005 (Chrysomelidae: Cassidinae: Dorynotini). *Genus* 17: 369-372.

Borowiec, L. 2006e. A new species of *Cassida* Linnaeus from Australia (Chrysomelidae: Cassidinae: Cassidini). *Genus* 17: 373-376.

Borowiec, L. 2006f. *Syngambria panamensis*, a new species from Panama (Chrysomelidae: Cassidinae: Casidini). *Genus* 17: 377-379.

Borowiec, L. 2006g. Four new species of *Discomorpha* Chevrolat, 1837 (Chrysomelidae: Cassidinae: Omocerini), with a key to *Discomorpha*. *Zootaxa* 1357: 45-60.

Borowiec, L. 2006h. *Metrionella tucumana*, a new species from Argentina (Chrysomel: Cassidinae: Casidini). *Genus* 17: 567-570.

Borowiec, L. 2007a. *Trilaccodea ecuadorica*, a new species from Ecuador (Chrysomelidae: Cassidinae: Stolaini). *Genus* 18: 103-106.

Borowiec, L. 2007b. Two new species of *Cassida* Linnaeus, 1758 (Coleoptera: Chrysomelidae: Cassidinae) from Madagascar and notes on subgenera of the genus *Cassida*. *Zootaxa* 1586: 47-58.

Borowiec, L. 2007c. Two new species of *Charidotella* Weise (Coleoptera: Chrysomelidae: Cassidinae: Cassidini), with a key to *Charidotella sexpunctata* group. *Zootaxa* 1586: 59-66.

Caron, E., C.S. Ribeiro-Costa & A.M. Linzmeier. 2004. The egg morphology of some species *Sennius* Bridwell (Chrysomelidae: Bruchinae) based on scanning electron micrographs. *Zootaxa* 556: 1-10.

Chaboo, C.S., E. Grobbelaar & A. Larsen. 2007. Fecal ecology in leaf beetles: novel records in the African arrow-poison beetles, *Diamphidia* Gerstaecker and *Polyclada* Chevrolat (Chrysomelidae: Galerucinae). *Coleop. Bull.* 61(2): 297-309.

Clark, S.M. & R.L. Johnson. 2007. Absence of metathoracic wings and corrections to the description of *Chaetocnema labiosa* White, 1996 (Coleoptera: Chrysomelidae). *West. N. Amer. Nat.* 67(2):318-321.

Cuignet, M.P.A., Hance, T. & Windsor, D.M. 2007. Phylogenetic relationships of egg parasitoids (Hymenoptera: Eulophidae) and correlated life history characteristics of their Neotropical Cassidinae hosts (Chrysomelidae). *Mol. Phyl. Evol.* 42: 573-584.

Debreuil, M. 2007. *Clytra espanoli* Daccordi et Petitpierre, 1977: une espèce nouvelle pour la faune de France - (Coleoptera - Chyrsomelidae - Clytrinae). *Rutilans* IX-2: 41-45.

Debreuil, M. 2007. Clé de détermination des espèces françaises du genre *Clytra* Laicharting, 1781 - (Coleoptera - Chyrsomelidae - Clytrinae). *Rutilans* IX-2: 45-47.

Edvardsson, M. 2007. Female *Callosobruchus maculatus* mates when they are thirsty: resource-rich ejaculates as mating effort in a beetle. *Animal Behaviour* 74: 183-188.

Fernandes, F.R. & Z.J. Buzzi. 2007. Descrição dos imaturos e primeiro registro de planta hospedeira de *Charidotis gemellata* Boheman (Chrysomelidae, Cassidinae). *Rev. Bras. Entomol.* 51(2): 234-238.

Flowers, R. W. 2007. Taxonomy's unexamined impediment. *Systematist* 27: 3-4.

Ghostin, J., J.-L. Habib-Jiwan, R. Rozenberg, D. Daloze, J.M. Pasteels, & J.C. Braekman. 2007. Triterpene saponin hemi-biosynthesis of a leaf beetle's (*Platyphora kollar*i) defensive secretion. *Naturwiss.* 94: 601-605.

Gomez-Zurita, J., T. Hunt, F. Kipoliku, & A.P. Vogler. 2007. Recalibrated tree of leaf beetles (Chrysomelidae) indicates independent diversification of angiosperms and their insect herbivores. *PLoS* 2(4).

Gomez-Zurita, J., T. Hunt, & A.P. Vogler. 2007. Multilocus ribosomal RNA phylogeny of the leaf beetles (Chrysomelidae). *Cladistics* 23: 1-17.

Hawkeswood, T.J. & N. Monaghan. 2007. New host plants for *Calomela crassicornis* (Fabricius, 1775) and *Calomela ioptera* (Baly, 1856) Coleoptera: Chrysomelidae) with notes on two *Calomela* species. *Calodema Supp. Pap.* No. 10: 1-4.

Heron, H.D.C. 2007. The life history of *Aspidimorpha areata* (Klug, 1835) (Chrysomelidae: Cassidinae). *Afr. Ent.* 15(1): 75-87.

Hunt, T. 2007, J. Bergsten, Z. Levkanikova, A. Papadopoulou, O. St. John, R. Wild, P.M. Hammond, D. Ahrens, M. Balke, M.S. Caterino, J. Gomez-Zurita, I. Ribera, T.G. Barrowclough, M. Bocakova, L. Bocak, A.P. Vogler. 2007. A comprehensive phylogeny of beetles reveals the evolutionary origins of a superradiation. *Science* 318: 1913-1916.

Jolivet, P. 2006. François Cohic, entomologiste (1921-1992). *Nouv. Revue Ent.* (N.S.) 23(1): 75-78.

Kergoat, G.J. & Alvarez, N. 2007. Assessing the phylogenetic usefulness of a previously neglected morphological structure through elliptic Fourier analyses: a case study in *Bruchus* seed-beetles (Coleoptera: Chrysomelidae: Bruchinae: Bruchini). *Syst. Entomol.* 33: 1-12.

Kergoat, G.J., Delobel, P. & Delobel, A. 2007. Phylogenetic relationships of a new species of seed-beetle infesting *Cercis siliquastrum* L. in China and in Europe (Coleoptera: Chrysomelidae: Bruchinae: Bruchini). *Ann. Soc. Entomol. France (NS)* 43: 265-271.

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