



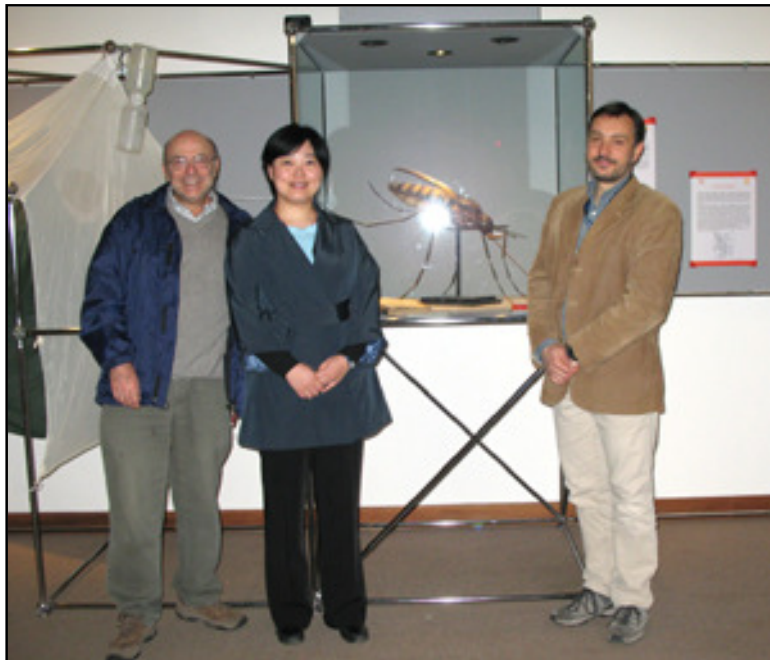
CHRYSOMELA newsletter

Dedicated to information about the Chrysomelidae

Report No. 52

April 2010

Chrysomelinae Research in Italy



Dr. Mauro Daccordi (left) invited Dr. Se-Qin Ge (middle; Institute of Zoology, Chinese Academy of Sciences, Beijing, China) to conduct research together on Chinese Chrysomelinae in March 23-April 24, 2009.

Also appearing in photo is Dr. Leonardo Latella, a cholevid specialist and curator, Museo di Storia Naturale, Verona, Italy.

Mauro and Se-Qin focused mainly on the Chinese species of the genus *Chrysolina*. Research results are fantastic, with more than 30 new species being described. They found the relationships among the subgenera of Chinese *Chrysolina* still very problematic and requiring more intense study.

-Se-Qin Ge

Research Activities & Interests

Dan Cavan (USA) is volunteering from time to time with Dr. Shawn Clark in Utah and has identified (with help) 91 Chrysomelid genera in his personal collection. He is collecting examples of all 203 North American genera of Chrysomelidae.

Franck Duhaldeborde (France) is reviewing the species of *Cryptocephalus flavipes* species group, and would like to study *flavipes* Fabricius from Romania. He is interested in specimens and literature of Cryptocephalinae.

Alex Delobel (France) has general research interests in the taxonomy of Old World Bruchinae, with emphasis on insect-plant relationships (collab. B. LeRu & B. Delobel) and phylogeny (collab. G. Kergoat). Current projects focus on African Bruchinae feeding in Leguminosae Indigoferaeae (so-called “*Conicobruchus*”); redescriptions of Fahraeus’ and Gyllenhal’s South African species, and general revisions of European species. He is willing to examine any

Old World Bruchine. He is interested in all Bruchinae from Africa (especially Central Africa, and including Indian Ocean islands) and Asia. He can exchange with European (Mediterranean) and Senegalese species.

Frank Fritzlär (Germany) is still working on leaf beetles and especially on the faunistics of Cyprus (where has visited three times).

Elizabeth Geiser (Austria) has research interest in all Chrysomelidae except Alticinae and Cassidinae in Central Europe with emphasis on *Oreina*. She is editor of the journal, *Entomologica Austriaca*.

Gene Hall (USA) works on chrysomelid systematics and is studying the morphology of the pterothorax and spermatheca. He wishes to borrow or exchange brachypterous/apertous species.

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International Date Book

- 2010 IXth European Congress of Entomology
Aug. 22-27, Budapest, Hungary
- 2010 Entomological Society of America
59th annual meeting, Dec. 12-15, San Diego
USA; www.entsoc.org;
Entomology Collections Network, Dec. 12-13;
Coleopterists Society, Dec. 15

The Editor's Page

Dear Chrysomelid Colleagues:

S.O.S. Save Our Newsletter! Article submissions have declined greatly over the last year! If no one contributes there is no future for our historic newsletter. Is our international community of more than 200 readers deciding that *Chrysomela* is no longer relevant for keeping in touch? This trend makes my editorial task simpler, but less interesting.

Apart from the above bad news, I am happy to report that I am making pdfs of older issues of *Chrysomela*, so please check the Coleopterists Society website for new uploads.

My lab continues to grow with the addition of a graduate student from Taiwan and three undergraduate researchers. We look forward to fieldwork in Kansas and Peru this summer.

My daughter is now one year old, talking in her special way and walking (which is stressful for the parents keeping her safe). She is the best kind of distraction from chrysomelids.

- Caroline S. Chaboo

Research Activities & Interests

Yoko Matsumura (Japan) is in the first year of her Ph.D. research on Criocerinae, especially the genus *Lema*, at Hokkaido University. She is interested in the evolutionary processes and mechanisms of genital morphology and has been investigating this issue using criocerine species. For understanding evolutionary processes, she is trying to reconstruct criocerine phylogeny with adult morphology including not only the major genera, *Lema*, *Oulema*, *Lilioceris*, *Crioceris*, but also other minor genera and will discuss the evolutionary transformation of genital characters. She is also studying behavioral ecology of *Lema*. She would like to exchange specimens, especially *Pseudocrioceris* & *Ovamela* which is the endemic genus of Madagascar, *Elisabethana*, *Sigrisma*, *Trichonotolema*, *Atactolema*, *Mimolema* & *Incisolema* which is an African endemic genus, *Oulema* (*Parhapsidolema*) which is an endemic Argentinian subgenus. She can exchange specimens of the Japanese chrysomelids (especially from Hokkaido island).

Bruna Menezes Ramos (Brasil) is working with Flávia Nogueira de Sá (UFRGS) and Gervásio Silva Carvalho (PUCRS) on the biology and morphology of *Eurypedus thoni* (Cassidinae).

Haruki Suenaga (Japan) is interested in the immature stages of Cassidinae and is currently preparing a paper on the immature stages of *Notosacantha*. He is also interested in *Altica*. He would like to receive literature on larvae, Cassidinae, *Notosacantha*, Alticinae, *Altica*, Asian chrysomelids, taxonomy, and chaetotaxy. He wants to exchange *Altica* spp. from all over the world.

Gérard Tiberghien (France) continues work on palaeartic *Timarcha*, principally biogeography, species clusters and overlapping forms, trophic behaviour, validity analysis of main and secondary features. He is willing to borrow and/or identify *Timarcha* (please ask first); he also would exchange materials of this genus.

Jean-François Voisin (France) studies systematics and ecology, mostly of the Palearctic zone. His interest in chrysomelids can be considered as an extension of his specialization in Curculionids.

Andrzej Warchalowski (Poland) has interests in all Chrysomelidae, except for Cassidinae, especially Alticinae of the Palearctic area, and Eumolpinae and Galerucinae of SE Asia.

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The Newsletter CHRYSOMELA-Founded 1979-is published semiannually, 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. Seeeno, Sacramento.

Relocation of the South African National Collection of Insects

Beth Grobbelaar (Pretoria)

The Manager and staff of the ARC-Plant Protection Research Institute Biosystematics Division take great pleasure in announcing the relocation of all staff and collections to the new premises at the ARC-Roodeplat

complement the collections. All this, with the calls of indigenous birds ringing in one's ear, makes for very pleasant working conditions.



Fig. 1. The old Vredehuis



Fig. 3. From the old.....



Fig. 2. The new Biosystematics Division



Fig. 4. To the new.

campus. The Division comprises the National collection of Arachnids, Insects, Nematodes and Fungi. For the first time all these units are located under a single campus, under one roof. Following years of planning and subsequent preparation, the collections were successfully moved during October and November. It took teams of packers, movers and unpackers to transport 100 removal truck loads to the new location.

The South African National Collection of Insects now has a custom-built facility in a beautiful bushveld setting, with large collection halls and a specifically designed room for alcohol collections. In addition, secure archive facilities, a walk-in safe for the type collection, and a digital imaging facility are now available. Adjacent to the collections rooms are the offices and laboratories that

Postal address:

ARC-PPRI Biosystematics Division
Private Bag X134, Queenswood 0121
SOUTH AFRICA

New physical address:

ARC-Roodeplaat, KwaMhlanga Road (R573)
(Look out for sign on left hand side of the road)

Tel: +27 (0)12 808 8278 (switchboard); FAX: +27 (0)12 808 8297; email addresses remain the same and are fully functional. We look forward to welcoming you at our new research facility.

<http://www.arc.agric.za/home.asp?PID=936&ToolID=63&ItemID=1792>

Deadly perfumes: new fumigants from leaf beetles

Jürgen Gross (Germany)

During my last ten years of research on chrysomelid larvae I analyzed the chemical composition as well as the ecological functions of exocrine glandular secretions of leaf beetles from the taxon Chrysomelina. Together with my coworkers I found antimicrobial activities of these secretions (Gross et al. 1998, Gross et al. 2002) and hence a new, and possibly, their most important function.

Larvae of the leaf beetle taxon Chrysomelina possess nine pairs of dorsal exocrine glands, which are inserted in the body surface and contain reservoirs of glandular secretions. In case of predator attack, the larvae evert their glandular reservoirs to present the fluid secretions towards the exterior. The secreted toxins vary both in structure and biosynthetic origin. The major components secreted by leaf beetle larvae belonging to the taxa *Phaedon*, *Gastrophysa*, *Linaeidea*, and most *Phratora* species are iridoid monoterpenes, which are produced *de novo* via the acetate-mevalonate pathway (Oldham et al. 1996). On the other hand, the larvae of *Chrysomela* spp. and *Phratora vitellinae* emit secretions in which salicylaldehyde is the major component (Pasteels et al., 1988). When feeding upon willows (Salicaceae), larvae of the latter species sequester phenolic glycosides (e.g. salicin) from their host plants as precursors to produce salicylaldehyde. Different biological functions have been reported for larval glandular secretions from beetles: Some prevent intraspecific competition (Gross and Hilker, 1995), while others show insecticidal activities or act as allomones in defense against predators. But the repellent activity of Chrysomelina allomones acts only against some generalist predators (Rank et al., 1996; Gross et al., 2004), while it failed in defense against predatory bugs or the multicolored Asian lady beetle *Harmonia axyridis* (unpublished results). Additionally, it has also detrimental effects for the larvae by attracting specialized predators and parasitoids (Köpf et al., 1997; Gross et al., 2004; Zvereva and Rank, 2004). These facts raise the question: Why do Chrysomelina larvae permanently produce such secretions?

Insects can get infected by pathogens after ingestion, through wounding or when the insect cuticle is breached by an entomopathogenic fungus. Antimicrobial defences which can combat pathogens that have gained access to the insect mixocoel include the production of reactive oxygen and antimicrobial peptides (Jones 2008). In our recent publications on this topic (Gross 2009; Gross et al. 2008) we provided evidence that larvae of the brassy willow leaf beetle *Phratora vitellinae* constitutively release volatile glandular secretions to combat pathogens in their microenvironment. We identified salicylaldehyde as the major component of their enveloping perfume cloud, which is emitted by furrow-shaped openings of larval glandular

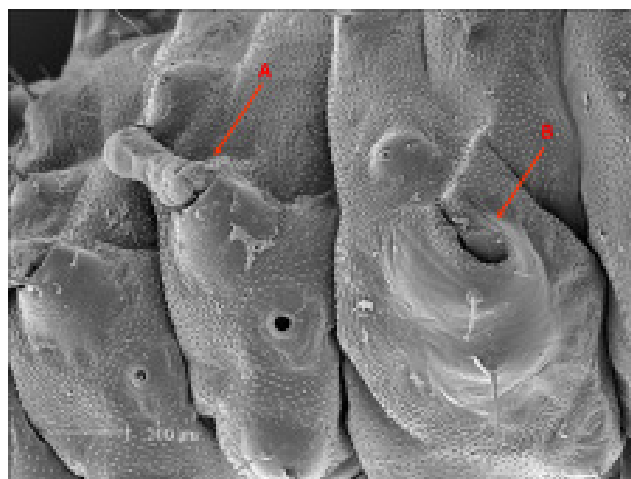


Fig. 1: Scanning electron micrograph of larva of *Phaedon cochleariae* with everted (arrow A) and inserted abdominal glandular reservoirs with its furrow-shaped opening (arrow B). (Photo by H. Schmidtberg 2008).

reservoirs and which inhibits *in vitro* the growth of the bacterial entomopathogen *Bacillus thuringiensis*. The suggested role of salicylaldehyde as a fumigant in exogenous antimicrobial defense was confirmed *in vivo* by its removal from glandular reservoirs. This resulted in an enhanced susceptibility of the larvae to infection with the fungal entomopathogens *Beauveria bassiana* and *Metarhizium anisopliae* (Gross et al. 2008). In current experiments we could show that the volatile toxins (epi)chrysomelidial produced by the Mustard leaf beetle *Phaedon cochleariae* inhibits the growth of different serovars of *B. thuringiensis* (unpublished results). Cuticular openings responsible for emitting antimicrobial volatiles were identified by me and colleagues using scanning electron microscopy in the species *Ph. cochleariae*, *Chrysomela vigintipunctata*, *Gastrophysa viridula*, *Plagioderma versicolora* recently. These results will be published in the current volume of "Research on Chrysomelidae" (Gross & Schmidtberg 2009). Consequently, we established the hypothesis that antimicrobial defense in insects can be expanded beyond innate immunity to include external disinfection of their microenvironment as we learned from leaf beetles.

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2009 Entomological Society of America Annual Meeting Informal Meeting of Chrysomelid Colleagues

On 15 December 2009 Shawn Clark arranged an informal meeting of Chrysomelid-interested colleagues attending the 57th Annual Meeting of the Entomological Society of America, Indianapolis, Indiana. We met during lunch hour; each person introduced himself and related their interest in Chrysomelidae. Shawn Clark (Brigham Young University-BYU) is compiling new distribution and host plant



Photo courtesy of R. Barney: [left to right]: Zack Falin, Lance Meinke, Shawn Clark, David Furth, Mark Goodman, Joe Cavey, Robert Barney, and Ken Miwa.

records for the Leaf Beetles of America Catalog (Riley et al, 2003) and the companion Host Plants of Leaf Beetle species (Clark et al., 2004), respectively. Mark Goodman (University of Kentucky) formerly from BYU working on *Calligrapha*, is currently a Ph.D. student. Ken Miwa (University of Nebraska) another former student at BYU, is currently a Ph.D. student working on *Colaspis*. Lance Meinke (University of Nebraska) is Ken's advisor and works in pest management, biology, ecology of *Diabrotica* and is collecting Chrysomelidae around Nebraska. Joe Cavey (APHIS PPQ USDA Identification Service Head, Maryland) has been recently collecting Chrysomelids in

southern Arizona. Robert Barney (Kentucky State University) continues his subfamily survey of Chrysomelidae of Kentucky and only has Eumolpinae and Cryptocephalinae left to do. He is also concentrating on the genus *Pachybrachis* and host plants of *P. nigricornis*. Zack Falin (University of Kansas) has been collecting beetles around Kansas, including

Chrysomelidae. He has also been the facilitator distributing Coleoptera to collaborators of the Leaf Litter Arthropods of Mesoamerica project (LLAMA), currently preparing the material from Guatemala. David Furth (Smithsonian Institution) is continuing to work on the Alticinae from the vertical transect portion of the ALAS Project in Costa Rica. He also is continuing his work on the faunistics and diversity of Mexican Alticinae, the latest part from the 7th International Symposium on Chrysomelidae (2008, Durban, South Africa) was recently published in the *Research on Chrysomelidae II* (Jolivet, Schmitt, Santiago-Blay, Eds. -see literature section of this newsletter).

- David Furth
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Jean Lhoste: French coleopterist

Pierre Jolivet (Paris)

Jean Lhoste was born on 19 September 1913 in Charenton-le-Pont, in the Paris suburbs. He was very productive and wrote several books, and more than 400 papers, mostly on entomology. Most of his recent communications deal with insecticides and plant protection, and also with his favorite hobby, his ruling passion: swords. I met with him at his house in August 2007 and we recalled together 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 of French entomology. Also they were the times of the old Sorbonne, an entity actually split into more than 12 separate universities. Jean wrote interesting books, in 1979, "Des Insectes et des Hommes" (Insects and Men, Fayard publ.); in 1987, "Les entomologistes français. 1750-1950" (Anecdotes on the lives of French entomologists, INRA, Versailles); and, in 1997, a book on ants, "La Fourmi" (Favre publ., Paris) with a museum specialist.

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

What is more interesting for us is that in 1934 Jean Lhoste studied the Clavareau Collection of Chrysomelids,



Fig. 1. Jean LHoste

donated to the museum, and recently Mauro Daccordi and Chris Reid had the opportunity to scrutinize his papers for their studies of the Fauna of Australia. Let us say that, even if there were some synonymies with the names used by former Australian workers, the recent taxonomists have kept the validity of several taxa. Victor Laboissière helped him during his work, but he never published the complete table for the identification of Australian genera of Chrysomelinae. Chris Reid has done it recently.

In 1948, with Lucie Arvy and Manfred Gabe, he studied *Leptinotarsa decemlineata* blood (haemocoelomic fluid). He was elected to the Academy of Agriculture, in Paris, in 1970. I suppose that this short career in the world of Chrysomelidae deserves to be remembered. Unfortunately, a few months ago, a fire in his basement completely destroyed his collection of reprints.

Thanks to a previous donation to the Department of Agriculture (INRA), he saved a collection.

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Fig. 2. Pierre Jolivet, Mme. LHoste, and Jean LHoste.

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*** To update your e-mail, please contact the editor.**

More Research Activities

Shanmugavel Varadarasan (India) has been working on insect pests of spices, especially cardamom (small and large: *Elettaria cardamomum* & *Ammomum subulatum*), vanilla, black pepper, ginger, turmeric, etc., with particular reference to biological management of the pests. He has studied in detail the bionomics of cardamom root grub (*Basilepta fulvicorne*: Chrysomelidae), a major pest on small cardamom. He developed IPM involving mechanical, chemical and biological methods of management of *Basilepta fulvicorne* and identified entomopathogenic fungi (EPF) (*Metarhizium anisoplia* on grubs & *Beauveria bassiana* on beetles of *Basilepta fulvicorne* and entomopathogenic nematodes (EPN) (*Steinernema* spp. & *Heterorhabditis* spp. on grubs of *B. fulvicorne*). He successfully developed mass multiplication methods of EPF and EPN. A species of EPN, strain ICRI 18, *Heterorhabditis indica*, collected locally in cardamom agro ecosystem, is found to be highly virulent on root grub, *B. fulvicorne* and is being used by farmers to control this pest. He has also studied the bionomics of the flea beetle, *Chalaenosoma metallicum* (Chrysomelidae). His current project is to develop a sustained formulation with longer shelf-life for *Heterorhabditis indica*, a bioagent on cardamom root grub, *Basilepta fulvicorne*. He wishes to share literature on alternate hosts of *Basilepta fulvicorne* and *Chalaenosoma metallicum*.

CHRYSOMELA Questionnaire

Please update the information you wish to appear in the next directory by sending an email or letter with the information below.

1. Date.
2. Name and mailing address (limit to six lines please).
3. Telephone number & **one** e-mail address (only those that can be printed in CHRYSEMELA).
4. Do you want your contact information available on the internet edition of CHRYSEMELA? (YES or NO)
5. Research activities and Interests (general research, current projects, future plans, chrysomelid groups, geographic areas of interest, groups you are willing to identify).
6. Literature which you want or wish to share (give complete citation).
7. Specimens which you wish to borrow, exchange, etc. (be specific).
8. News, notes and general information of interest to chrysomelid colleagues (send electronically as a separate file, or as a separate sheet if possible).
9. Recent publications on Chrysomelidae (Send reprints, pdfs to address below. Or send exact and complete citation).

Send this information to: cschaboo@ku.edu

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Contributions to CHRYSEMELA

Accounts of chrysomelid beetles and research to CHRYSEMELA are welcome. IMAGES: submit each image as separate TIFF files at **100-200 dpi** (Do not embed images into text files). A photo of the author of longer articles is recommended. TEXT: submit article and figure captions as two separate word documents in **10 point Times Roman font**, with paragraphs separated by double spacing and **without indents**. INTERNET citations: please remove all links before submission. See a recent issue for citations format. Please indicate photographers and locality in figure captions. Submissions requiring much editing will be returned to the authors. '*Recent Publications*' column: submit reprints of publications or pdfs.

Generally, each issue will be about 20 pages, to avoid slow downloading of large files from the Coleopterists Society website. Direct any questions and submissions to the editor at cschaboo@ku.edu. Inclusions are subject to the approval of the editor and the advisory committee.

Submission Deadlines: approximately May 1 for the June issue; approximately November 1 for the December issue

In the event of too few submissions, issues will be consolidated into a single annual publication.