

CURCULIO

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Academic Background

Bachelor of Arts (Zoology), University of Cambridge,
Girton College, Cambridge, UK - 1998

Master of Science (Advanced Methods in Taxonomy and
Biodiversity), Imperial College of Science and Technology,
London, UK - 2000

Doctoral Student, University of California at Berkeley,
California, USA - 2000 to present

Research Interests

Systematic relationships of Entiminae; diversification of phy-
tophagous insects; evolution on islands; Pacific biogeogra-
phy; molecular systematics.

I have long been interested in studying evolution, and espe-
cially the geographic context and underlying processes driv-
ing lineage diversification. Insects, and in particular weevils
provide an excellent group to study this, because of their as-
tonishing diversity. However, it is only relatively recently that
I have come to work with Curculionidae.

I studied biology and geology as an undergraduate at the
University of Cambridge. In my final year there I got the oppor-
tunity to visit Hawaii for a summer, as a visiting student in the
lab of George Roderick and Rosemary Gillespie, at the Univer-
sity of Hawaii. This was my first experience of molecular lab-
work and my first time in the tropical Pacific - I was hooked. It
immediately became clear to me that molecular techniques could

Featured Researcher

Elin Claridge

Insect Biology Division
University of California
at Berkeley, USA



(Elin Claridge on the Teaetapu waterfall trail, Raiatea, French Polynesia;
photo courtesy of Elin Claridge)

be used to address many of the evolutionary questions that
interested me. I was also seduced by the many advantages of
studying evolution on oceanic islands. Oceanic islands have

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Editor - Nico M. Franz. National Center for Ecological Analysis and Synthesis, 735 State St., Suite 300, Santa Barbara, CA 93101.
Email: franz@nceas.ucsb.edu

Editorial Comments

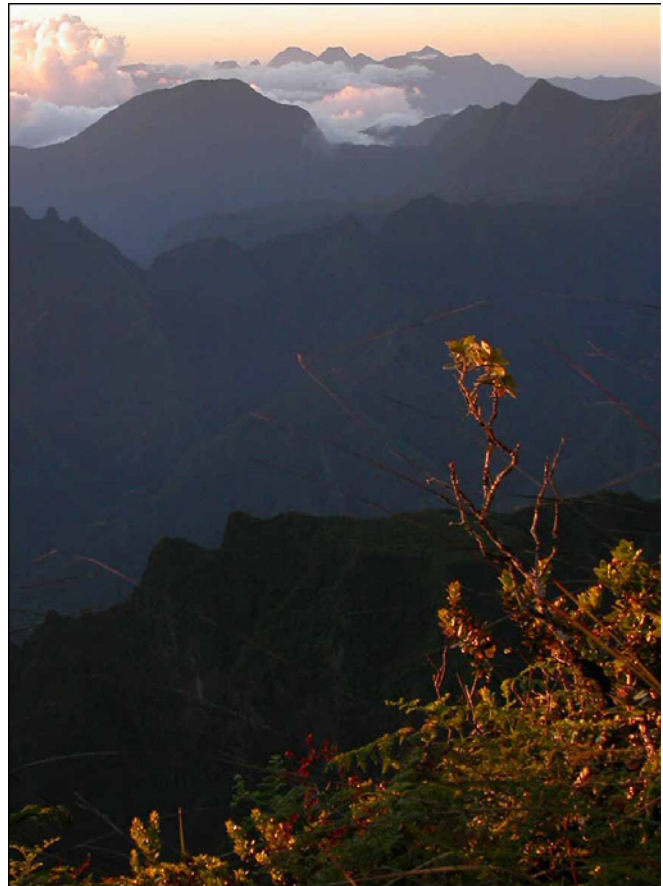
The 50th volume of CURCULIO in 29 years starts with a new face. Elin Claridge, a Ph.D. student from the University of Berkeley, is introducing her research on Pacific *Rhyncogonus* weevils. Horace Burke has treated us with another outstanding article; this time he is reviewing the life and work of William Pierce (p. 6). There are additional reports on a meeting of weevil researchers in Salt Lake City (p. 10), and a collecting trip with Willy Kuschel in New Caledonia (p. 12). Thanks as always to everyone who contributed to this issue. I hope we will see many more.

NMF

Elin Claridge (continued)

long been heralded as ideal systems for the study of biological processes, because of their formation *de novo* from oceanic crust and isolation from continental landmasses. This allows such islands to evolve as experimental microcosms, buffered from the confounding factors of historical legacy and high colonization rates. The islands' biota are comprised of taxa that were able to colonize the islands and their descendants. Hotspot island chains such as Hawaii and those found in French Polynesia form in a linear chronological series due to the motion of the Pacific tectonic plate over a hotspot in the earth's mantle. This provides multiple series of islands of differing geological age. K/Ar (potassium/argon) dating provides a reliable means for determining the age of these islands and so puts an upper bound on the age of any lineages inhabiting an island.

In 1999 I was accepted into a Masters program in Advanced Methods in Taxonomy and Biodiversity, run jointly by Imperial College and the Natural History Museum, London. That year provided me with further training in systematic techniques and the opportunity to work on the phylogenetics and biogeography of *Neocicindela* (Cicindelidae) tiger beetles from New Zealand, under the supervision of Alfred Vogler. New Zealand poses a host of interesting biogeographic questions. There is little doubt that the tumultuous geology of this continental island has had a profound effect on the composition and diversification of the biota, including the tiger beetles. New Zealand was ripped off the coast of Australia during the break-up of Gondwana some 80 million years ago. Since that time the landmass has been drifting away from Australia in isolation. In the Oligocene the landmass was almost entirely submerged by the sea, but it was subsequently re-uplifted. After a period of mountain-building and faulting ensued. More recently there have been glaciations and resultant sea-level changes.



Rhyncogonus habitat; view of inaccessible mountainous interior of Tahiti, from Mount Pinatete, French Polynesia; photo by Elin Claridge

However, all these competing processes become very difficult to distinguish using molecular phylogenetics and dating methods. I wanted to work on a broad biogeographic project in the Pacific that would allow me to study diversification in a system with known age, limited historical dispersal and multiple independent replicates (i.e. lots of islands). I needed to look no further than the broad-nosed weevils (Entiminae *sensu* Thompson, 1992, *Journal of Natural History* 26: 835-891). So I came to the University of California, Berkeley, to work with George Roderick and Rosemary Gillespie, once again.

My doctoral thesis focuses on the systematics and evolution of *Rhyncogonus* Sharp, a genus of broad-nosed weevils that occurs across the eastern Pacific. This genus is striking for several reasons. (1) It has successfully colonized some of the remotest oceanic islands in the world, despite being an atypical island colonist - species tend to be large, always flightless and generally slow moving, with soil-dwelling larvae. (2) Species within the genus are almost exclusively single-island endemics, and are often restricted to a single valley or mountain top. (3) Many islands have multiple endemic species.

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Elin Claridge (end)

There are 112 described species of *Rhyncogonus*, 60 of which occur in French Polynesia. Most of these species were described by Edwin Van Dyke, from material collected by the Pacific Entomology Survey (PES) organized by the California Academy of Sciences and the Bishop Museum, Honolulu. A young Elwood Zimmerman was the key collector on the PES Mangarevan Expedition in 1930. This was an experience that inspired his interest in the Curculionidae. He was fascinated by the stunning diversity of *Miocalles* Pascoe (Cryptorhynchinae) that he found on the island of Rapa, the remotest of the Austral islands (Zimmerman, 1957, Bulletin of the California Insect Survey 11: 79-94). This project was continued by Paulay (1985, Biological Journal of the Linnean Society 26: 95-187); there are currently 67 described species recorded from this 40 km² island, in a part of the world generally considered depauperate.



Rhyncogonus sp. nov. from Raivavae, Austral Islands, French Polynesia; photo by R. Englund

I have been using mitochondrial and nuclear markers to establish a molecular phylogeny for this genus and to elucidate the relationship of this genus with respect to the genus *Elytrurus* Boisduval and members of the closely allied tribe Celeuthetini (Marshall, 1956, British Museum, 134 pp.). In order to collect material for this phylogenetic project I have spent much of the past four years traveling widely across the Pacific, chasing *Rhyncogonus* and its relatives. Much of my collecting work has focused on French Polynesia, partly because it is an area of the Pacific that has been relatively poorly studied, but also because the University of California has a very conveniently located field station in Moorea, an island neighboring Tahiti (see the Gump Station's website for more details www.moorea.berkeley.edu). I have also had the opportunity to visit Hawaii, Samoa, Tonga, Fiji and Sulawesi. Thanks to the kind efforts of many other collectors I also have material from the Cook Islands, Vanuatu and the Solomon islands. The material I have from French Polynesia includes material of 17 undescribed spe-

cies. I am in the process of describing these for my thesis and will also be revising South Pacific *Rhyncogonus*. Most of the undescribed species were found in the Society Islands. Further survey work, to be carried out over the next three years as part of an NSF-funded French Polynesia biotic survey grant, will no doubt uncover additional new species. I will be using the phylogeny and current knowledge about the geological history of French Polynesia and the Pacific to elucidate the direction and timing of colonization by these weevils. These insights will be linked with both morphological and host preference shifts.



Rhyncogonus cordiformis, from Temehani Rahi plateau, Raiatea; photo by Elin Claridge

At this point it is hard to imagine life beyond the thesis, but I am interested in continuing work in the Pacific basin. I would like to be able to continue work on broad-nosed weevils, and in particular to focus further on the southwestern genus *Elytrurus*, and allied genera in the Elytrurini. I am also interested in working further in French Polynesia, and in particular focusing on understanding the cause of radiations on single islands, such as Rapa or Tahiti, which represent centers of diversity for several insect groups in French Polynesia.

Research Activities and Requests for Specimens

Michelle Baker (Australia: missymoo_mb@yahoo.com.au). Currently an Honors student at Griffith University, Brisbane, Australia. Examining the host specificity of leaf-eating curculionids and chrysomelids on Myrtaceae and Mimosoideae hosts. Will compare the similarity of herbivore assemblages to the tree phylogeny, and test for the presence of a relationship.

Malcolm Furniss (USA: malfurniss@turbonet.com). Studying the birch bark beetle, *Dryocoetes betulae* Hopkins, in the paper birch *Betula papyrifera* in Idaho and wishing to communicate with anyone familiar with it in nature.

Viktor Fursov (Ukraine: v_fursov@yahoo.com). Working on the biology and taxonomy of chalcid wasps (Hymenoptera, Chalcidoidea) which are egg parasitoids of different insects. Some Eulophidae, Eurytomidae, Torymidae, Eupelmidae, and Pteromalidae wasps are well known as egg, egg-larval, larval, and pupal parasitoids of Curculionidae. Egg parasitism of weevils was poorly studied until now because of the hidden biology of many weevils and the small size of their egg parasitoids. Some species of Trichogrammatidae, Mymaridae, and Pteromalidae wasps were recorded as egg parasitoids of Curculionidae. For example, the wasp *Caenocrepis bothynoderi* Gromakov (Pteromalidae) is an egg parasitoid of important pest - the beet weevil *Bothynoderes punctiventris*. *Anaphes* sp. wasps (Mymaridae) are egg parasitoids of weevils in the genus *Sitona*; *Anaphes nitens* (Gir.) is an egg parasitoid of the eucalyptus weevil *Gonipterus gibberus*. *Ceratogramma etienne* Delvare is an egg parasitoid of the citrus root weevil *Diaprepes abbreviatus*. Interested in the peculiarities of oviposition, egg-laying behavior, and ecology of weevils (Curculionidae) and other beetles (Bruchidae, Chrysomelidae, Attelabidae, Buprestidae, Dytiscidae, Hydrophilidae) which are very common and likely hosts of many parasitic chalcid wasps. Many new and unique cases of egg parasitism of Curculionidae and other beetles can be found worldwide. Willing to cooperate with colleagues in such studies. Would appreciate help through the exchange of papers on the oviposition habits of weevils. **Website:** <http://www.icfcst.kiev.ua/siz/depart/taxonomy/icfcst-fr.htm>

Levent Gültekin (Turkey: lgul@atauni.edu.tr). Currently interested in the biodiversity, taxonomy, and biology of Lixini (Coleoptera: Curculionidae: Lixinae) in Turkey. Working on a taxonomic revision of the genus *Larinus* Dejean in the Palearctic region. Also studying weevil biodiversity in Anatolia (mainly Lixinae and Ceutorhynchinae) and bioindicators of desertification and erosion in Turkey. Investigating weevils associated with *Lepidium latifolium* L. as potential biological control agents. **Requesting *Larinus* specimens from the entire Pale-**

arctic region for an ongoing revision of the genus.

Junhoa Huang (China: huangjh@ioz.ac.cn). Currently a Ph.D. candidate in China, with a research focus on the systematics of Chinese Ceutorhynchinae. Open to international collaboration, in need of relevant literature and specimens.

David Langor (Canada: dlangor@nrcan.gc.ca). Continues to work on the systematics of *Pissodes*. A revision of Nearctic species is near completion and new species from China will be described. Work on the ecology and molecular biology of *Pissodes* species continues. A publication on the Curculionoidea of Newfoundland is in progress. **Interested in borrowing specimens of *Pissodes* from Asia for revisionary work.**

Andrei Legalov (Russia: legalov@ngs.ru). Continues to study the leaf-rolling weevils of the world fauna. Interested in exchanging or purchasing material. Offering cooperation in studies of the leaf-rolling weevils to other experts.

Márcio Luís Leitão Barbosa (Brazil: marciolb@inpa.gov.br). Continuing his doctoral thesis research on the phylogenetic systematics of the Neotropical tribe Neotropical Optatini (Curculionidae: Baridinae). In the process of redescribing the genera of Optatini and leveraging characters for a phylogenetic analysis. **Requesting specimens of Optatini**, mainly species belonging to following genera: *Agalmatus* Kuschel, 1958; *Costovia* Casey, 1922; *Eurypages* Pascoe, 1892; *Macroptatus* Heller, 1906; *Parasymprestia* Casey, 1922; *Pardisomus* Pascoe, 1889; *Pistus* Faust, 1894; *Pseudopatus* Champion, 1907; and *Tripestes* Casey. **Also in need of suitable outgroups in the Baridinae and Molytinae:** *Ambates caecus* Chevrolat, 1833 (Ambatini); *Anopsilus bonvouloirii* Kirsch, 1870 (Anopsilini); *Baris artemisiae* Herbst, 1795 (Baridini); *Madarus corvinus* (Fabricius), 1801 (Madarini); *Madopteris talpa* Gyllenhal, 1836 (Madopterini); *Nertinus mannerheimi* (Boheman), 1844 (Nertinini); *Pantoteles tenuirostris* Boheman, 1845 (Pantotelini); and *Conotrachelus diaconitus* (Klug), 1829 (Molytinae).

Luigi Magnano (Italy: luigimagnano@libero.it). Interested in Curculionidae, especially Entiminae. Currently compiling a catalogue for the genus *Otiorhynchus* (Otiorhynchini) and also studying *Otiorhynchus* from central and oriental Asia. **Would be grateful for the loan of *Otiorhynchus* material from this wide geographical region.**

Vitaliy Nazarenko (Ukraine: nazarenko@iz.freenet.kiev.ua). Currently working on the Curculionoidea of the Ukraine and adja-

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Research Activities (end)

cent regions, especially on their faunistic and biological peculiarities. Also investigating the biodiversity of the urban weevil fauna, including aquatic and semi-aquatic weevils. Has published several descriptions and redescriptions of weevil larvae for the genera *Liparus*, *Lepyryus*, *Donus*, and *Minyops*. Planning to revise some supraspecific taxa in the Hyperinae and Molytinae. Very interested in obtaining specimens and new literature on Curculionidae.

Hélène Perrin (France: hperrin@mnhn.fr). Would be happy to study African specimens of the genus *Curculio*.

Charles O'Brien (USA: cobrien6@cox.net). "Retirement and Work. Now that I have completed my year of phased retirement and retired permanently from Florida A&M University, August 31, 2004, I have been busier than ever. Everyone assumes I have nothing but time to do their identifications and literature searches, etc. I should not say everyone because most of the taxonomists have realistic views of the amount of research I have had to put off for years while working at a University. Meanwhile Lois and I arranged last year to move to Green Valley in Arizona, south of Tucson and a 15-minute drive from Madera Canyon in the Santa Rita Mountains. Our new home was completed early in December rather than January as expected, so we were caught off guard and started packing immediately. It took 8 weeks with the two of us working 7 days per week and 10 to 14 hours per day. Only the help of several friends allowed us to meet the deadline. The last two days we packed as the 74-foot moving van was loaded and finished packing 20 minutes before the loading was finished. I drove three hours that night and 10 to 12 hours each of the following three days, arriving the day before the van arrived and unloaded. Since then we have unpacked although Lois went back to Tallahassee to finish preparing the house there for sale. In spite of the workload we are both happy with the decision to move and are sure we will not regret it in the future. Meanwhile I will continue to do the research planned with various collaborators and other papers of my own interest, and Lois will do the same. Now living on a fixed income I will take up consulting to pay for our trips and research expenses. Agencies such as the USDA, the US Army Corps of Engineers, Universities and others that can afford to pay will be expected to, or I will not have any time to work on research of my interest and could have problems paying for this and trips as well. I will continue to identify material from developing countries and for select friends as long as I may retain samples of any species sent if I wish them. As long as our health allows we will continue to collect often, and I have begun with several weekend trips alone, and with friends, in the sand dunes for *Trigonoscuta* and other

dune weevils. Before leaving the East during the winter in December and January I collected with friends and now have 25 undescribed species of *Cercopeus* collected in the last four years, with the addition of three species this winter. I continue to work on the Madagascar weevils of the California Academy of Sciences and on projects with *Diaprepes*, *Lissorhoptrus*, *Rhopalotria*, weevils of Dominica, and many other long deferred studies. I am enjoying the challenge of relearning the basic flora of the region and plan a major study of the cactus weevils of the genus *Gerstaeckeria*. My sights are set high and I will do what I can to finish as many of my projects as time will allow. If I can help any taxonomist, please contact me and I will see what I can do to help. I expect to be busy for years to come and want to pass on as much of my experience and knowledge as possible. Our new address, e-mail and phone number respectively are: 2313 W Calle Balaustre, Green Valley, AZ 85614-8047, USA; cobrien6@cox.net and (alternatively) cweevil3@yahoo.com; and 520-829-7370. Please contact me at any time and I will respond as soon as possible, which might take some time if I am in the field."

Frank Pelsue (USA: eucyllus@msn.com). **Would like to purchase or trade for Curculionini from anyplace in the world except North America.**

Alessandra Sforzi (Italy: alessandra@unifi.it). **Now working at the revision of the Brentidae from Madagascar and interested in studying material from that country.**

Jiri Skuhrovec (Czech Republic: jirislav@email.cz). Now a Ph.D. student at the Charles University in Prague and working on the taxonomy and bionomy of the subfamily Hyperinae (Coleoptera: Curculionidae). Especially interested in larvae and bionomy of Hyperini weevils; the breeding of larvae is key to gaining knowledge of their bionomy. Planning to describe larvae for more than 30 species of Hyperini. Has already seen material already of five genera: *Hypera* (*Antidonus*, *Eririnomorpha*, *Dapalinus*, *Boreohypera*, *Hypera* sensu stricto), *Donus*, *Limobius*, *Coniatus*, and *Metadonus*. Description of a new *Hypera* (*Dapalinus*) species from Syria is progressing now. Also planning to collaborate closely with Herbert Winkelmann (Germany) on the taxonomy and bionomy (primarily host plants) of the adults of Hyperini weevils. **Requesting to loan specimens of Hyperinae for a cladistic analysis, in particular: *Adonus*, *Agriochaeta*, *Coniaticus*, *Diastrophilus*, *Eremochorus*, *Lamprohypera*, *Lycosura*, *Oreochorus*, and *Orthodonus* (all Hyperini); as well as *Cepurellus*, *Frontodes*, *Nothyperus*, *Saginensis*, *Tanarus*, and *Xeda* (all Cepurini).** **Willing to exchange Hyperinae for identification and future studies.** Also available for exchange of other Curculionidae from Portugal, Turkey, Syria, India, China, Madagascar, etc.

Notable Weevil Specialists of the Past

By **Horace R. Burke** (USA: hrburke@tamu.edu)

There has been little recognition of the entomological contributions made by **William Dwight Pierce** during a career that spanned approximately the first two-thirds of the 20th century. Not even an obituary or a notice of his death was published in the scientific literature when Pierce died in 1967. His research and writings covered a great diversity of entomological subjects, one of which involved study of the biology and systematics of the Curculionoidea. Pierce's work on weevils is reviewed here along with a summary of his other entomological accomplishments. The following account of his life and work was taken mostly from a letter Pierce wrote to Arnold Mallis in 1962 describing his early career; a brief paper by A. B. Gurney (1978) containing some biographical information; one by H. R. Burke (1997) emphasizing his work on the boll weevil; and comments on his work habits by E. L. Sleeper (1975), editor of Pierce's posthumous publication on the curculionid genus *Trigonoscuta*.

William Dwight Pierce (1881-1967)

William Dwight Pierce (W. Dwight Pierce) began his studies of curculionoids in 1904 when he was sent to Texas by the United States Department of Agriculture to conduct research on the boll weevil (*Anthonomus grandis* Boheman). This work involved investigation of the ecology of the new cotton pest with emphasis on its natural enemies (especially parasitoids). Since many of the enemies of the boll weevil also attack other species of weevils, his research was expanded to include a wide array of curculionoids that might serve as alternate hosts. The collection and identification of local weevil species potentially involved in such interactions led to Pierce's broader involvement with the group. His interest in weevils continued off and on for approximately the next 60 years.

W. Dwight Pierce was born in Champaign, Illinois, November 16, 1881. His infatuation with insects began during his high school days in Omaha, Nebraska, when he and young acquaintances formed what they called the Polyphemus Club. This enthusiastic group of budding naturalists produced a monthly hand-written report on their experiences rearing butterflies and moths. Pierce's interest in entomology received a special boost when he had the opportunity to attend weekly lectures by Professor Lawrence Bruner of the University of Nebraska. This led to his enrollment at the University of Nebraska in 1900 to study entomology. There he worked at various tasks to pay for college costs, further developed his interest in the biological sciences, and had the opportunity to work with many groups of insects. He graduated from the Univer-

sity of Nebraska with an A.B. degree in 1904 and, after a brief period of employment as an entomologist, obtained the A.M. degree in 1907 from the same institution. His academic credentials were further enhanced when he was awarded the Ph.D. from George Washington University in 1917. Biologists with such an extensive academic education in entomology were rare those days.



William Dwight Pierce sorting invertebrate fossils at the Los Angeles County Museum of Natural History; photo courtesy of Brian Brown

Immediately after graduating from the University of Nebraska in 1904, Pierce obtained a position as Assistant State Entomologist in Mississippi, serving in this capacity only a few months before being appointed as Special Agent of the Bureau of Entomology, United States Department of Agriculture. He was sent to Victoria, Texas to work on a boll weevil project already in progress there under the direction of W. D. Hunter. As part of his work on this pest, he became interested in the insects of the area and collected and learned much about the taxonomy and biologies of other species of weevils. As noted above, he was especially interested in any of the many species of weevils that served as alternate hosts of parasitoids and predators of the boll weevil. On the basis of weevil collections made locally, he and J. D. Mitchell, a Texas naturalist and

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William Dwight Pierce (continued)

Bureau of Entomology collaborator, published a paper on the weevils of Victoria County (Mitchell & Pierce, 1911). Although based on a geographically restricted faunal study, this paper is still frequently cited for the information it contains on the life histories and host plants of weevils. Pierce's thesis for the Masters degree at the University of Nebraska on the biologies of the Rhynchophora of North America grew out of his boll weevil work in Texas. The extent to which the boll weevil studies influenced his subsequent investigations of a broader array of weevils is emphasized in the introduction to the thesis. Information included in the thesis came from field work that he had conducted on weevils, supplemented with that gleaned from the literature, to provide a comprehensive summary of the subject. The resulting publication (Pierce, 1907) is still being cited as the most complete and, in many cases, the only available reference on the biologies and host plants of many species of North American weevils.

The publications of Pierce, alone and in collaboration with colleagues, on the boll weevil in Texas are important contributions to the early knowledge of the life history, habits, and natural enemies of this pest. It was in regard to the latter that Pierce made his greatest addition to knowledge of the boll weevil, and possibly to entomology in general. A comprehensive bulletin published on the natural enemies of the boll weevil (Pierce, 1912) included a figure depicting the intricate relationships between the cotton plant, weevils, parasitoids, predators, and other pest species. It is obvious from this illustration and information presented in the text of the bulletin that Pierce viewed the boll weevil and its enemies as part of an intricate ecological network, a somewhat novel view at the time and one that has subsequently been investigated as part of management strategies of insect pests. Gurney (1978) considered this to be "an outstanding example of the interdependent associations of insects and plants."

Pierce's involvement in taxonomic research on the Curculionoidea often had a strong orientation toward pest species. Although many of the 31 papers (not including 26 on the boll weevil) he published on weevils involved species of no economic importance, he frequently included agricultural pests in his taxonomic studies, for example, those of Irish potatoes, sweet potatoes, cotton, and sugar cane. The Entiminae (his Brachyrhinidae, Otorhynchidae or Psallidiidae) also received a large amount of attention; he appeared to have a special attraction to the "broadnose" weevils. Given his early experience with the boll weevil, it is not surprising that he described several new species and a new genus of Anthonomini. Within the presently recognized Curculionidae he ranged widely, occasionally describing one or a few species in widely separated genera, but sometimes concentrating on members of a genus

or related genera for which he provided keys for identification of species and higher categories. In many cases, his keys are still the only ones available for species of certain genera. Pierce (1930) published the first revision of Nearctic Anthribidae (as Platystomidae of his superfamily Platystomoidea) in which he described thirteen new species, three new genera, seven new tribes, and three new subfamilies. Although his "new" taxa of anthribids have not fared well under subsequent scrutiny, Pierce's revision contained extensive host information, keys and illustrations and served as a basis for later studies by others. His venture into the Attelabidae (Pierce, 1913) included descriptions of new species and varieties of *Eugnamptus* and *Merhynchites* and keys for their identification which, except for some restricted faunal works, were the most up-to-date treatments of these genera available until recently. In Brentidae, Pierce (1941) published a detailed paper on the systematics and morphology of the sweet potato weevils *Cylas* and his new genus *Protocylas* (now considered as synonym of *Cylas*). His interest in these weevils probably stems from their status as pests and his lifetime interest in agricultural entomology.

Pierce's (1975) work on *Trigonoscuta* deserves consideration separate from his other weevil publications. This is an extensively detailed and profusely illustrated treatment of a genus of sand dune weevils in which he described 62 new species and 124 new subspecies. Regardless of how subsequent students (if there ever are any) assess Pierce's conclusions concerning the status of species-level taxa of this group of weevils, one has to admire the detail and obvious labor that went into this monograph. The comments of editor E. L. Sleeper that preface this publication should be read to gain an understanding of how Pierce worked and the intensity of his passion for the subject.

Assessment of a person's lifetime contributions to the field of taxonomic endeavor is difficult at best and frequently falls short of desired objectivity. Given the diversity of his activities and prolific output, such an evaluation of W. Dwight Pierce's work is certainly no exception. He had somewhat unorthodox views of the higher classification of weevils, views that have not very well stood the test of time. Many of his "new" tribes sprinkled widely throughout his papers are no longer considered valid. Some of these tribal synonyms came about due to differences of opinion concerning their need in a zoological sense, while others likely have a nomenclatural origin resulting from Pierce's views concerning the precedence of earlier tribal-level names, for example, those of Lacordaire. At a categorically lower level, he had a tendency (some might say excessively so) to recognize many varieties and subspecies, for example, as in the *Trigonoscuta* revision. In an attempt to evaluate, at least in part, Pierce's work, I determined the number and fate of taxa described by him. According to my count, he described 78 new species (not including the 62 of *Trigonoscuta*) of which 52 are

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William Dwight Pierce (continued)

still considered valid. He described 20 new genera, about one-half of which are presently recognized as valid. Of the many "new" tribes he listed in his various papers only three are still considered valid according to the catalog of Alonso-Zarazaga & Lyal (1999). In addition, two valid subtribes are attributed to him.

Although our interest here is primarily in Pierce's activities concerning weevils, his many other contributions to entomology also deserve mention, if only to place his work on weevils in context with other accomplishments. Even before he started to study weevils, Pierce developed an intense interest in Strepsiptera, publishing his first paper on this group in 1904, another in 1908, and an extensive monograph on the group in 1909. This was a remarkable accomplishment by a young entomologist just five years removed from graduation with the A.B. degree, especially when his study of the boll weevil and other pests during this period was surely very time-consuming. A considerable amount of information on the twisted-wing parasites was included in the 1909 monograph. Pierce's dissertation research for the Ph.D. degree at George Washington University in 1917 was based on a study of the comparative morphology of Strepsiptera. He returned to the group from time to time throughout his career, describing new taxa and discussing his views on its phylogenetic relationships. There has been considerable disagreement among entomologists over the years as to where strepsipterans fit phylogenetically in relation to other insects; Pierce was apparently quite eager to enter into this fray. In fact, in his last paper on the group in 1964 he concluded that it constitutes a distinct order whose characters ally it with whiteflies and scale insects on the one hand and Diptera on the other. Two families and many genera and species of North American Strepsiptera owe their names to Pierce. R. M. Bohart (1941), in his own treatment of North American strepsipterans, stated: "The most important contribution [to the group] in recent years was that of W. D. Pierce who in several papers (1908-1918) brought together most of the information on the group and described and figured many new forms."

As Pierce's work on the boll weevil was being phased out, he became involved with other insects in his capacity as a United States Department of Agriculture scientist. He moved from Dallas, Texas to Washington, D.C. in 1912. In 1918, he edited a book on dangerous insects likely to be introduced into the United States, including quite a few curculionoids. During World War I he was "acting in charge" of the *Southern Field Crop Insect Investigations* and *Insects Affecting Man and Animals* sections of the Department of Agriculture. The latter responsibility apparently encouraged his interest in medical entomology as he wrote extensively about the subject in 1918

and occasionally at other times in his career (for examples see *Sanitary Entomology*, and the posthumous *The Deadly Triangle - A Brief History of Medical and Sanitary Entomology*).

Pierce left the Department of Agriculture in 1919 and entered the field of commercial entomology. He was Vice President of Gage-Pierce Research Laboratories, Inc. during 1919-1920, and Managing Director of the Biology Department of the Mineral, Metal and By-Products Company during the period of 1920 to 1923. He also held the title of Consulting Biologist from 1919 to 1927. During the 1920s he wrote on a large array of subjects, including religion, social and economic issues, medical and sanitary entomology, and insect pests of grape, ornamentals, and many other commercially important plants. His deep religious beliefs are evident in the many articles he wrote on this subject. In 1927 Pierce accepted a position as entomologist with the Victorias Milling Company in the Philippines. Upon arriving in that country he immediately began publishing articles on sugarcane insects and during the next two years wrote extensively on this subject.

By 1931 Pierce was back in the United States where he served as Assistant Editor for *Biological Abstracts*, in Philadelphia, until 1936. His entomological output was understandably reduced during this time but he managed to publish a paper of substantial length on weevils and a few brief ones on other entomological subjects. In 1937, he became Curator of Paleontomology at the Los Angeles County Museum of Natural History. It was during his tenure there that he began work on sand dune insects and fossil arthropods, publishing numerous papers on these subjects. His activities in paleontomology were discussed in a short paper he wrote on this subject (Pierce, 1961). Pierce was active throughout his life and had two large manuscripts in various stages of completion at the time of his death, April 29, 1967, at the age of 86. These manuscripts, one composed of essays on various aspects of medical entomology and the other about his beloved *Trigonoscuta* weevils, were published posthumously as stipulated in his will.

A complete list of the 501 articles written by W. Dwight Pierce was made available to me by the late Richard B. Loomis of California State University. This extensively annotated list of publications had apparently been kept up-to-date by Pierce, and in its entirety presents a revealing look into his long career as an entomologist. Each of the taxonomic papers included in the bibliography is annotated with a list of the higher categories treated, names of new taxa described, and nomenclatural changes made. A review of this list of publications reveals the great breadth of Pierce's interest in diverse aspects of entomology and agriculture in general, religion, sociology, medicine, and history. The outlets for his papers were equally as diverse, including scientific journals, government bulletins, newspapers, books, and church and commercial publications. Aside from his strictly scientific activities, he was obviously interested

(continued page 9)

William Dwight Pierce (continued)

in informing the public about entomology, as evidenced by the many popular and semipopular articles he wrote.

While W. Dwight Pierce's contributions to science have received little attention, even less information is available on his personal characteristics. Judging from that written above, he was obviously a very knowledgeable and dedicated entomologist. Based on his prodigious output, one can only assume that he was driven to communicate his research and views to a broad audience and that he used his time wisely (as verified by Sleeper's comments below). As further indication of his personal nature, A. B. Gurney (1978) states "Dwight Pierce seems to have been a consistently imaginative, studious entomologist, glad to tackle new and difficult problems. Even if not always successful in an outstanding way, he made important and unforgettable contributions. Throughout his career, he was a scholarly naturalist of the old school." E. L. Sleeper who had many opportunities to talk with Pierce during the latter's last years and was also editor of the extensive *Trigonoscuta* paper, remarked that he never ceased to be amazed at Pierce's devotion to so many tasks with such an unbelievable degree of organization. He scheduled his time for maximum efficiency (Pierce, 1975). Sleeper continues: "Each day of the week was a particular study day and had a specific task assigned to it as 'stamp collection day;' 'nodule day' [fossils]; 'religious study day;' etc. Tuesday of each week was, without fail, *Trigonoscuta* day." To conclude, I quote a statement made by E. L. Sleeper to E. R. Tinkham (personal communication, April 13, 1982) concerning Pierce's personal characteristics: "A more honest, moral, frugal gentleman I have never met."

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(continued page 10)

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Informal Weevil Meeting - ESA 2004 Salt Lake City

By Nico Franz (USA: franz@nceas.ucsb.edu)

Following an annual tradition, researchers interested in weevils met for a two-hour informal exchange session at the Entomological Society of America (ESA) meetings in Salt Lake City, Utah, on November 16, 2004. Charles O'Brien (now residing in Green Valley, Arizona; see page 5 of this issue) opened the meetings as he has over the past decade and stated its main purpose: to inform each other about our current work and plans, and to thereby encourage collaborations and avoid redundancy or conflicts. The updates are summarized here *in chronological order*.

Robert Anderson (Canadian Museum of Nature) is currently on a sabbatical and using the time to curate the Museum's collection and rearrange it according to Alonso-Zarazaga & Lyal's classification. He continues to study the taxonomy and

biology of Neotropical leaf litter weevils, with a particular focus on finishing a large revision of *Theognete*. He has recently published several papers on Dryophthoridae and is now moving on to other projects. These include: a handbook on Canadian weevils in collaboration with Pat Bouchard and Don Bright; a paper describing a new Costa Rican genus of Oxycorinidae whose adults feed on parasitic Balanophoraceae plants; and the supervision of a new student at McGill University who will investigate biological control possibilities with weevils in Costa Rica. **Nico Franz** (National Center for Ecological Analysis and Synthesis) is continuing his postdoc in biodiversity informatics (see <http://seek.ecoinformatics.org/>). His main thesis chapter on the phylogeny of derelomine flower weevils is now in press in *Systematic Entomology*. He has plans to study the systematics of New World baridine weevils in the near future.

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Weevil Meeting SLC 2004 (continued)

Anne Howden (Canadian Museum of Nature) has published a revision of *Pandeleteius* of northern South America and continues to work on the Tanymericinae. **Lawrence Kirkendall** (University of Bergen, Norway) is studying the evolution of breeding systems in bark beetles. His research program is diverse, including community ecology (*Scolytodes* in *Cecropia* leaf petioles), population genetics (phylogeography of the *Coccotrypes* species complex using a range of molecular techniques), taxonomic revisionary work (Central American Tesserocerinae, select new species of xyloborines, *Dendroc-*

on the bark beetles of Southeast Asia. Don is planning to move to Colorado and hopes to work in affiliation with Colorado State University at his new location. **Henry Hespeneide** (University of California at Los Angeles) came to the ESA meeting in Utah to present a talk on his long-term studies of the Conoderinae at La Selva, as part of the ALAS project symposium (see also <http://viceroy.eeb.uconn.edu/alas/alas.html>). He is finishing up several related manuscripts, including reports on the conoderines of *Cecropia* leaf petioles. His next project will focus on *Laemosaccus*. **Douglas Pfeiffer** (Virginia Tech) is studying the biogeography of the plum curculio *Conotrachelus nenuphar* whose northern and south-



Participants of the Informal Weevil Meeting in Salt Lake City, November 16, 2004. From left to right:
Steve Davis, Mahammad Haseeb, Robert Anderson, Charles O'Brien, Douglas Pfeiffer, Nico Franz,
Anne Howden, Jiri Hulcr, Gregory Setliff, Catherine Duckett and Vanessa Carney;
photo courtesy of Catherine Duckett

tonus, use of RFLP techniques to identify species), and island biogeography (with Bjarte Jordal). **Catherine Duckett** (Smithsonian Institution) is working with several collaborators on the higher-level systematics of the Phytophaga focusing on DNA sequence data. She is also currently the Coleoptera: Phytophaga subject editor for *Zootaxa* (<http://www.mapress.com/zootaxa/>), a rapid international journal for animal taxonomists. **Don Bright** (Canadian National Collection) is retired but continues to work on bark beetles. A handbook of the broad-nosed weevils of Canada is in press. Further projects include a paper on the bark beetles of Puerto Rico, a monograph of the bark beetles of the West Indies, and continued studies

ern populations meet it Virginia. These weevils are also infested by *Wolbachia* strains which has taxonomic implications. In spite of its economic importance, the biosystematics of the plum curculio have not been studied since the 1960s. **Vanessa Carney** (Texas A&M University) is an applied entomologist studying the biological control of invasive weed species using weevils. A first and critical step is to investigate the natural history of these potential agents. **Muhammad Haseeb** (Florida A&M University) is also an applied entomologist working on invasive weevils. He is preparing expert identification systems for the citrus root weevil *Diaprepes* and for *Exophthalmus*. He now has a manuscript in press with Charles O'Brien on

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Weevil Meeting SLC 2004 (end)

Myloccerus, a weevil pest originating from the Indian subcontinent. At the ESA meeting he presented a taxonomic study on the rice water weevils in the genus *Lissorhoptus*. Gregory Setliff (University of Minnesota) is a graduate student revising the weevil genus *Asytesta*. He has worked extensively in New Guinea rearing weevils from dozens of tree species as part of a biodiversity inventory with Scott Miller (Smithsonian Institution). He is preparing a checklist of the weevils of New Guinea, including hundreds of digital specimen images. **Steve Davis** (University of Maryland) is finishing his undergraduate degree. He recently worked with Terry Ervin (Smithsonian Institution), curating cryptorhynchids and conoderines from the Peruvian rain forest canopy. He plans to enter a graduate program in the United States and specialize in weevil systematics. **Charles O'Brien** is now retired but continues to work on numerous taxonomic projects. A synopsis of *Lisso-*

rhoptus north of Mexico is nearly completed. A circular on *Myloccerus*, an invasive species from Pakistan that attacks cotton and up to 50 additional economic plants, is in press. Another paper on *Acamptus* is in progress, as is one on a new genus of Derelomini native of South America which is associated with the oil palm *Elaeis*. He is also close to completing type specimen research for a revision of *Diaprepes*, and reported that four species occurring in the Dominican Republic are generalist feeders on trees and composite herbs. Two distinct populations of the citrus root weevil *D. abbreviatus* appear to have entered the United States. Other continuing revisionary projects include *Neoptocus*, *Gerstaeckeria*, *Rhopalotria*, *Cercopius*, *Calles*, and a revision of the Stenopelmini of the New World in collaboration with Guillermo Wibmer. Finally, **Jiri Hulcr** (Texas A&M University) is a graduate student with Anthony Cognato, and has been rearing bark beetles from Papua New Guinea. He is revising *Xyleborus* and preparing an electronic key for the genera of Xyleborini.

Collecting Weevils with Willy Kuschel in New Caledonia

By **Christian Mille** (New Caledonia: mille@iac.nc)

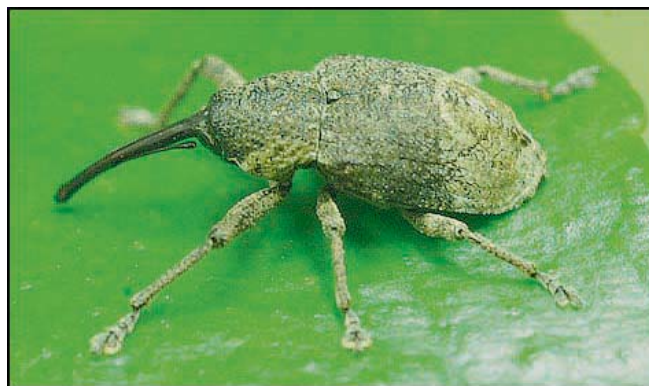
New Caledonia is an archipelago of seven inhabited islands, 1,500 km east of the Australian East Coast and 2,000 km from the North Coast of New Zealand, near the Tropic of Capricorn, and of a surface of 19,000 km². The main island, so called *La Grande Terre* is 400 km long and 50 km wide. This land is known to have been a part of the super-continent Gondwana, 30 million years ago before the creation of the New Caledonian Basin, and separating it from New Zealand (Sanmartín & Ronquist, 2004). This explains a high endemic character of the flora (76% of all species) and the known fauna which numbers approximately 4,500 species, but is suspected to hold 5,000 to 20,000 additional species (Richier de Forges et al., 1998).

We established contact with Willy Kuschel in 2002 in order to receive identifications for several (in fact many!) weevils in our lab collection. In April of 2004, Willy advised us to work with the branch-cutting method. This was to be done firstly on one plant species of Araliaceae, named *Schefflera gabrielleae*, a rather common species in a low land forest on the West Coast of *La Grande Terre*, yet also occurring in some highland humid forests. Fifteen days later we returned to the trap and discovered so many weevils (and also Cerambycidae) that we were encouraged to place more traps in certain locations places and also on several other plant species. The results were and are still fantastic.

Willy Kuschel supposes that we only know 10% of the weevil Fauna of New Caledonia. This is certainly true because

each time we embark on a study of a new plant species we find some species which are new for us and sometimes new to science. Willy is presently working on a catalogue of weevils from New Caledonia and of Vanuatu with which the former shares numerous species, especially with the Loyalty Islands.

The short stay of Willy at our lab from November 3-10, 2004, was an extraordinary moment. He instructed, trained, and helped us in so many ways that the entire lab team still remembers having a most pleasant time. Recently, in January 2005, Willy received more specimens from us to be identified or newly described. They will likely be add-ons to the catalogue in progress!



Aporotaxus kanalensis Perroud, a New Caledonia endemic;
photo by Sylvie Cazères

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Collecting in New Caledonia (end)

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Mating pair of *Elytrocallus montrouzieri* Chevrolat, the so-called Large Citrus Weevil. This endemic New Caledonian species is much more common (especially in *Citrus* orchards) than *E. chevrolati* Montrouzier, another endemic which is rarely observed on *Dimocarpus longan* trees (Sapindaceae); photo by Sylvie Cazères



Willy Kuschel and Christian Mille in the field in Farino County; photo by Sylvie Cazères

The Bulletin Board

News About Weevils

Michael Caterino (USA: mcaterino@sbnature2.org) forwards the following message from Klaus Klass: "Dear Colleagues, you may have heard before that - after the first one in 2003 - another meeting on insect phylogeny is going to take place in Dresden this year (September 23-25, 2005). The focus of this **"2nd Dresden Meeting on Insect Phylogeny"** is on the interordinal phylogenetic relationships in insects. Invited speakers will talk about the evidence coming from a variety of morphological and molecular character systems, the results of some large scale cladistic analyses will be presented, and there will be some talks about palaeozoic insects and their implications on insect phylogeny. The website of the meeting is now accessible: <http://www.snsd.de/insectphy2005/>; it shows the

programme of the meeting (34 invited talks), provides information about the location (including city maps) and about accommodation in Dresden, and explains how to register as a visitor of the meeting (with electronic registration form). You are welcome to register from now on. You are also highly welcome to further distribute this message! Looking forward to meeting many of you in Dresden this September, Klaus Klass."

Pierre Jolivet (France: Pierre_jolivet@tinmarcha.com) reports on **collecting weevils with Christian Mille in New Caledonia** during January and February, 2005 (see also p. 12). Also met with Willy Kuschel in Auckland, New Zealand. Dr. Kuschel is

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The Bulletin Board (end)

still working intensively and is recovering from a bad fall. Our wishes go out to him for a prompt and full recovery.

Snezana Pešić (Serbia and Montenegro: snpetic@kg.ac.yu) is kindly requesting fellow weevil researchers in Europe to assist her in making contacts to university professors in ecology, with the intent of applying for an **Individual Mobility Grant from the TEMPUS project** (see <http://www.etf.eu.int/tempus.nsf>). She wishes to come in contact with other ecology teachers to design a better, more interesting course program for her students, focusing on practice-oriented ecology. Many thanks in advance.

Peter Sprick (Germany: psprickcol@t-online.de) draws attention to the following **Weevil News publication**, authored by Peter Stüben and Lutz Behne: "The land of *Echinodera* -

travel report and species list of an excursion of the CURCULIO-Institute to Tunisia, 2003 (Coleoptera: Curculionoidea)." It is available at www.curci.de/inhalt.html. Abstract: From October 19th to November 2nd, 2003, the third excursion of the CURCULIO-Institute was carried out. The northern and central parts of Tunisia were the focal areas. Biotopes and field data of many Curculionoidea are presented, and habitats of several new *Echinodera* and *Kyklioacalles* species are described. A complete species list of all collected weevils is given (total: 93 species). Habitus and aedeagus drawings of new and unidentified species are depicted. With 49 figures (end of abstract). Please contact the authors if you are interested in working on these weevils. Furthermore, the **type collection** section of the CURCULIO-Institute's homepage (www.curci.de) now **displays all new species** described in *Snudebiller 5 with habitus and aedeagus illustrations*. The issue was published in November, 2004. It marks the end of a successful year whose highlight was the International Conference in Krakow, Poland (see CURCULIO 49: 18-20).

Recent Publications on Curculionoidea

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- Alonso-Zarazaga, M. A. 2001b.** Antonio Cobos Sánchez (1922-1998). Graellsia 57: 191-210.
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- Alonso Zarazaga, M. A. 2002b.** Addenda y corrigenda a la necrológica del Dr. Antonio Cobos Sánchez. Graellsia 58: 87.
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- Alonso-Zarazaga, M. A., and C. H. C. Lyal. 2002.** Addenda and corrigenda to "A World Catalogue of Families and Genera of Curculionoidea (Insecta: Coleoptera)." Zootaxa 63: 1-37.
- Alonso-Zarazaga, M. A., and C. H. C. Lyal. 2003.** Comment on the proposed precedence of *Aegorhinus* Erichson, 1834 (Insecta, Coleoptera) over *Psuchocephalus* Latreille, 1828. Bulletin of Zoological Nomenclature 60: 144.
- Alonso-Zarazaga, M. A., I. Pérez Moreno, and F. Moreno Grijalba. 2002.** Presencia de dos especies raras de Anthribidae (Coleoptera) en la Península Ibérica. Boletín de la Sociedad Entomológica Aragonesa 31: 141-143.
- Alonso-Zarazaga, M. A., I. Pérez Moreno, and F. Moreno Grijalba. 2004.** Datos para la distribución ibérica de *Enedreytes sepicola* (Fabricius, 1792) (Coleoptera, Anthribidae). Boletín de la Sociedad Entomológica Aragonesa 34: 209.
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Directory of Researchers - Updates

Viktor Fursov
Schmalhausen Institute of Zoology
National Ukrainian Academy of Science
Bogdan Khmelnytsky Street 15
Kiev, 01601
Republic of Ukraine
E-mail: v_fursov@yahoo.com

Junhao Huang
Institute of Zoology
Chinese Academy of Sciences
25 Beisihuan Xilu, Haidian
Beijing 100080
China
E-mail: huangjh@ioz.ac.cn

Jiri Skuhrovec
Department of Zoology
Charles University
Vinicna 7, CZ # 128 44, Praha 2
Czech Republic
E-mail: jirislav@email.cz

Levent Gültekin
Plant Protection Department
Faculty of Agriculture
Atatürk University
25240 Erzurum
Turkey
E-mail: lgul@atauni.edu.tr

Vitaliy Nazarenko
Schmalhausen Institute of Zoology
National Ukrainian Academy of Science
Bogdan Khmelnytsky Street 15
Kiv, 01601
Republic of Ukraine
E-mail: nazarenko@iz.freenet.kiev.ua

Holger Teichert
Systematische Botanik und Ökologie
Universität Ulm
Albert-Einstein-Allee 11, 89081 Ulm
Germany
E-mail: holger.teichert@biologie.uni-ulm.de



Male of *Platysimus dispar* (Saunders & Jekel), a species common to Vanuatu and New Caledonia and especially Maré Island. The "Flat Back Weevil" is mainly found on avocado trees (Lauraceae). It is sexually dimorphic, with the female being more round and without the flat back. See also page 12.