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# *EntNews*

The Newsletter of the Department of Entomology

Vol. 20 No. 11 November, 2005

## Cerambycidae Symposium Participants, November 10, 2005



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Frank Hovore, Charyn Micheli, Steve Lingafelter



Marcela Monné, Miguel Monné, Annie Ray



Jim Wappes, Francesco Vitali, Gino Nearn

## Front Cover:

Shown are the participants for the recent Neotropical Cerambycidae Systematics and Faunistics Symposium. Apologies to Francesco Vitali, whose first name was incorrectly spelled.

## ANNOUNCEMENTS:

The 109<sup>th</sup> regular meeting of the **Entomological Society of Washington** will convene on December 01 at 7:00 pm in the Cathy Kerby Seminar Room at the National Museum of Natural History. Desmond Foley, NRC Research Associate, Walter Reed Biosystematics Unit, will present "The curious case of the ant & the mosquito and other tales of culicid complexity."

## GENERAL NEWS:

**Jonathan Coddington** recently provided insight on spider web construction for a daily radio broadcast of Science Update AAAS. Radio show host Bob Hirshon had received a question asking why spider webs have a standard hole in their center, and Jon offered a definitive answer that some spiders have a signal line from the center of the web's hub to the spider's nearby retreat. This line picks up vibrations of web visitors, and the spider can rush to the scene more easily via an area of reduced webbing. This short program may be heard by visiting <http://www.scienceupdate.com>, selecting "archives," then November, then Nov. 17<sup>th</sup> (on lower part of the page).

## PUBLICATIONS BY STAFF:

Research papers by members of the combined entomological staff who are retired will be listed, and those will be preceded by a double asterisk.

**Brady, S.G. & Ward, P.S.** 2005. Morphological phylogeny of army ants and other dorylomorphs (Hymenoptera: Formicidae). *Sys. Entom.* 30: 593-618.

**-abstract**—The dorylomorph group of ants comprises the three subfamilies of army ants (Aenictinae,

Dorylinae, Ecitoninae) together with the subfamilies Aenictogitoninae, Cerapachyinae, and Leptanilloidinae. We describe new morphological characters and synthesize data from the literature in order to present the first hypothesis of phylogenetic relationships among all dorylomorph genera. These data include the first available character information from the newly discovered male caste of Leptanilloidinae. We used ant taxa from Leptanillinae, Myrmeciinae, and the poneromorph (Ponerinae *sensu lato*) subfamilies Amblyoponinae, Ectatomminae, and Paraponerinae as outgroups. We scored a total of 126 characters from twenty-two terminal taxa and used these data to conduct maximum parsimony and bootstrap analyses. The single most-parsimonious tree and bootstrap results support a single origin of army ants. The Old World army ant genus *Dorylus* forms a monophyletic group with the enigmatic genus *Aenictogiton*, which is currently known only from males; the second Old World army ant genus *Aenictus* is sister to this clade. This result generates the prediction that females of *Aenictogiton*, when discovered, will be observed to possess the army ant syndrome of behavioral and reproductive traits. The monophyly of the New World army ants (Ecitoninae) is supported very strongly, and within this group the genera *Eciton*, *Nomamyrmex*, and *Labidus* form a robust clade. The monophyly of Leptanilloidinae is also upheld. The subfamily Cerapachyinae appears paraphyletic, although this conclusion is not supported by strong bootstrap results. Relationships among genera of Cerapachyinae similarly are not resolved robustly, although parsimony results suggest clades consisting of (*Acanthostichus* + *Cylindromyrmex*) and (*Cerapachys* + *Sphinctomyrmex*). We tested for the effect of incompletely known taxa by conducting a secondary analysis in which the two genera containing ~50% missing character data (*Aenictogiton* and *Asphinctanilloides*) were removed. The strict consensus of the seventeen most-parsimonious trees from this secondary analysis is poorly resolved outside the army ants and contains no clades conflicting with the primary analysis. The position of *Leptanilla* shifts from forming the sister group to Leptanilloidinae (without high bootstrap support) in the primary analysis, to falling within a polytomy at the base of the root of the dorylomorphs

when incompletely known taxa are removed. This instability suggests that the placement of *Leptanilla* within the dorylomorphs in our primary analysis may be spurious.

Lehr, M.A., Kilpatrick, C.W., Wilkerson, R.C., & Conn, J.E. 2005. Cryptic species in the *Anopheles (Nyssorhynchus) albitarsis* (Diptera: Culicidae) complex: Incongruence between random amplified polymorphic DNA-polymerase chain reaction identification and analysis of mitochondrial DNA COI gene sequences. *Ann. Entomol. Soc. Amer.* 98 (6): 908-917.

--**abstract**—Random amplified polymorphic DNA (RAPI) diagnostic bands are one tool used to differentiate cryptic mosquito species in the *Anopheles albitarsis* complex. Monophyly of four species (*A. albitarsis* Lynch-Arribalzaga, *A. albitarsis* B, *A. deaneorum* Rosa-Freitas, and *A. marajoara* Galvao & Damasceno) currently identified with the RAPD technique was assessed using sequences of the cytochrome oxidase I (COI) mitochondrial DNA (mtDNA) gene. Maximum parsimony, maximum likelihood, and Bayesian analyses support monophyly for *A. albitarsis* ss., *A. albitarsis* B, and *A. Deaneorum*. *Anopheles marajoara*, as identified by RAPD banding patterns, was either polyphyletic or paraphyletic in all phylogenetic analyses. The phylogenetic pattern and within-species genetic distances observed in *A. marajoara* suggest the existence of a previously unidentified species (species E) in northern Brazil and Venezuela. Diagnostic RAPD bands were unable to distinguish between *A. marajoara* and species E, probably because of the low number of correlated bands used to identify species and weaknesses of the RAPD technique, in particular, violations of the untested assumption of homology of comigrating bands. *A. marajoara* (even without species E) is paraphyletic with respect to *A. deaneorum*; if *A. deaneorum* is a separate species from *A. marajoara*, then *A. marajoara* may consist of two or more species in Amazonian Brazil. Based on mtDNA COI sequences, there are at least four phylogenetic species within the Albitarsis Complex: *A. albitarsis* s.s., *A. albitarsis* B, *A. marajoara*, and species E; the species status of *A. deaneorum* is ambiguous.

Solis, M.A., Yen, S-H., Goolsby, J.H., Wright, T., Pemberton, R., Winotai, A., Chattruckul, U., Thagong, A. & Rimbut, S. 2005. *Siamusotima aranea*, a new

stem-boring Musotimine (Lepidoptera: Crambidae) from Thailand feeding on *Lygodium flexuosum* (Schizaeaceae). *Ann. Entomol. Soc. Amer.* 98 (6): 887-895.

--**abstract**—*Siamusotima aranea* Solis & Yen, is a new stem-boring musotimine species from Thailand. It was discovered in the stems of *Lygodium flexuosum* (L.) Sw. (Schizaeaceae) during exploration for biological control agents of *Lygodium microphyllum* (Cav.) R. Br., the Old World climbing fern. This is the first report in the Pyraloidea of a stem-boring larva with unique modifications of the anal segment resembling that of tenebrionid beetle immatures and with observations of possible mimicry between the adult moth and spiders.

Steiner, W.E., Jr. 2005. Notes and proposed studies on the darkling beetles (Coleoptera: Tenebrionidae) of the Bahamian region. Pp. 120-136 *in* Buckner, S.D. & McGrath, T.S. eds., *Proceedings of the Tenth Symposium on the Natural History of the Bahamas*. Gerace Research Center, San Salvador, Bahamas.

--**abstract**—This study reviews the known literature on Bahamian records of members of the family Tenebrionidae, a large and diverse group of insects. Some background information on the life history, distribution, economic importance, techniques used to collect specimens, and biogeography is presented, in anticipation of future collaborative faunal surveys of the islands. Many new distribution records and undescribed species are represented in museum collections; these and future field collections will be studied in order to document the diversity of the Bahamian region and the faunal relationships among the islands and adjacent lands. Several flightless species have been described from a few of the islands of the Bahamas and are presumed to be endemic; these belong to the genera *Branchus*, *Diastolinus* and *Trientoma*, which are proving to be information-rich for biogeographic analyses. An ongoing study of the systematics of *Branchus* species, all of which are relatively large, burrowing beetles of coastal sandy scrub, suggests that a separate species occurs or will be discovered on islands of each of the historically isolated Bahamian banks.

Steiner, W.E., Jr. & Golia, V. 2005. An Asian darkling beetle, *Ceropria induta* (Wiedemann), established in Florida (Coleoptera: Tenebrionidae). *Insecta Mundi* 19:

125-127.

--**abstract**—Specimen records for an adventive darkling beetle, *Ceropria induta* (Wiedemann) (Coleoptera: Tenebrionidae; Diaperinae) show that this Asian insect has become established in southern Florida, USA. Illustrations and a diagnosis of the beetle are provided, with notes on habitats and possible polyporaceous hosts, and the genus is incorporated into a key to the related North American taxa.

Ward, P.S., Brady, S.G., Fisher, B.L. & Schultz, T.R. 2005. Assembling the ant "Tree of Life" (Hymenoptera: Formicidae). *Myrm. Nachr.* 7: 87-90.

--**abstract**—Ants are the world's premier eusocial organisms and they have assumed pivotal ecological roles in many terrestrial communities. A well resolved and robustly supported phylogeny of the ants is needed to better understand many facets of their ecology and evolution. We report on a new project designed to clarify the phylogenetic relationships of the major lineages of ants. Funded by the US National Science Foundation under the AToL (Assembling the Tree of Life) program, this project runs for five years and involves collaborators from the University of California at Davis, the California Academy of Sciences, and the Smithsonian Institution. In the first year (2004-2005) of the Ant AToL grant we have focused our efforts on developing a multi-gene molecular data set and assembling a selection of appropriate taxa. A preliminary analysis, based on ~5.8 kb of sequence data from seven nuclear genes and ~100 exemplar species reveals a number of novel findings and contradicts some earlier conclusions derived from morphological data. Nearly all of the 21 extant ant subfamilies recognized in a recent morphology-based classification of ants (BOLTON 2003) appear to be monophyletic, but our evidence suggests that only two of the six supra-subfamilial groups (dorylomorphs and myrmeciomorphs) are monophyletic. We find strong support (parsimony and likelihood bootstrap 100%, Bayesian posterior probability 1.00) for a group, here termed the "formicoid clade," which contains all extant ants except Agroecomyrmecinae, Amblyoponinae, Leptanillinae, Paraponerinae, Ponerinae, and Proceratiinae. Relationships among these early diverging (non-formicoid) ants are not well resolved. This work is ongoing, and a more comprehensive account and analysis

with additional taxa and new molecular data will be completed at the year's end.

Wilkerson, R.C., Foster, P.G., Li, C. & Sallum, M.A.M. 2005. Molecular phylogeny of Neotropical *Anopheles* (*Nyssorhynchus*) *albitarsis* species complex (Diptera: Culicidae). *Ann. Entomol. Soc. Amer.* 98(6): 918-925.

--**abstract**—A phylogeny was reconstructed for four species belonging to the Neotropical *Anopheles* (*Nyssorhynchus*) *albitarsis* complex using partial sequences from the mitochondrial cytochrome oxidase I (COI) and NADH dehydrogenase 4 (ND4) genes and the ribosomal DNA ITS2 abd D2 expansion region of the 28S subunit. The basis for initial characterization of each member of the complex was by correlated random amplification of polymorphic DNA-polymerase chain reaction (RAPD-PCR) markers. Analyses were carried out with and without an outgroup (*An.(Nys.) argyritarsis* Robineau-Desvoidy) by using maximum parsimony, maximum likelihood, and Bayesian methods. A total evidence approach without the outgroup, using separate models for "fast" (COI and ND4 position 3) and "slow" (rDNA ITS2 and D2, and COI and ND4 position 1) partitions, gave the best supported topology, showing close relationships of *An. albitarsis* Lynch-Arribalzaga to *An. albitarsis* B and *An. marajoara* Galvao & Damasceno to *An. deaneorum* Rosa-Fritas. Analyses with the outgroup included showed poorer support, possibly because of a long branch attraction effect caused by a divergent outgroup, which caused one of the *An. marajoara* specimens to cluster with *An. deaneorum* in some analyses. The relationship of the above-mentioned result to a separately proposed hypothesis suggesting a fifth species in the complex is discussed.

## VISITORS:

**Lourdes Chamorro-Lacayo** from the University of Minnesota will visit Alexander Konstantinov and the Coleoptera Collection November 21-25.

**Tanya Dapkey** of the University of Pennsylvania will visit John Burns and the Skipper Butterfly Collection on November 23 to work with skippers and true butterflies of the Guanacaste Conservation Area of Costa Rica.

**Mehrdad Hajibabaei** from the Department of Integrative Biology, University of Guelph, Canada, visited John Burns

and the Skipper Butterfly Collection on November 16 for DNA barcoding of skippers of ACG, Costa Rica.

**Daniel Janzen** from the University of Pennsylvania will visit John Burns and the Skipper Butterfly Collection on November 23 for a collaborative study of the skippers of the Guanacaste Conservation Area of Costa Rica.

**Paul Marsh** from Newton, Kansas visited David Smith and the Braconidae Collection October 24-27.

**Edwin Masteller** from Penn State in Erie, Pennsylvania visited Oliver Flint 15-18 November to check records of Pennsylvania and Arizona Trichoptera & Plecoptera.

**David Pollock** from the National Zoological Park in Washington, D.C. visited Bob Robbins on November 17 to make contact with staff for assistance in projects.

**Annie Ray** from the University of Illinois participated in the Cerambycidae Mini-Symposium, November 9-12.

**Molly Rightmyer** from the University of Kansas visited David Furth and the Bee Collection November 21.

**J. Bolling Sullivan**, retired from Duke University, Beaufort, will visit Bob Robbins and the Butterfly Collection November 21-30.

**Natapot Warrit** from the University of Kansas visited David Furth and the Bee Collection November 21.

### **TRAVEL BY STAFF:**

Combined Entomological staff who are known to be attending the **Entomological Society of America** annual meeting in Ft. Lauderdale, Florida, December 15-18 are Terry Erwin, Dave Furth, Mike Gates, Ethan Kane, Alex Konstantinov, Steve Lingafelter, Gary Miller, Ron Ochoa, Alma Solis, Warren Steiner, and Chris Thompson.

**Charlie & Sue Staines** will travel to Louisiana State University. January 5-17 to work on the beetle backlog of the Great Smoky Mountain National Park ATBI.