

METALEPTEA

THE NEWSLETTER OF THE



ORTHOPTERISTS' SOCIETY

President's Message

By **ALEXANDRE V. LATCHININSKY**

President

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Dear Fellow Orthopterists, dear friends,

First of all, I would like to wholeheartedly wish all of you a fruitful and successful year 2018! This year promises to be a very busy one for the Society – as every pre-Congress year is. I am very pleased to share with all of you the news about our next meeting. In the previous months, the Organizing Committee met several times and significant progress in preparation for the 13th International Congress of Orthopterology has been made. The dates of the Congress are set for March 24-28, 2019 in Agadir, Morocco, which means that there are only about 13 months before it starts.

The overall theme is “*Challenges in front of climatic and environmental changes.*” On page 3-4, in the letter from the President of the Organizing Committee, Prof. Amina Idrissi, please find more information regarding the Congress, including important deadlines for Symposia submissions.

Next, I am going to touch upon another very important subject for the Society: its website. I would like to thank our previous web-master Dr. Piotr Naskrecki for his long-term successful work and welcome our new web-master Dr. Derek A. Woller. Derek is the successional leader of the USDA-APHIS Rangeland Grasshopper and Mormon Cricket Management Team in Phoenix, Arizona. I wish Derek good luck making the Society



website functional, attractive, and resourceful.

In November 2017, the Orthopterists' Society organized a Symposium in the framework of the Annual Meeting of the Entomological Society of America in Denver, Colorado. You will find the summary report on this event (led by omnipresent Dr. Derek A. Woller!) on page 31-42. Several members of the Society involved in applied orthopterology will also participate in the 9th International Integrated Pest Management Symposium in Baltimore, Maryland, on 19-22 March 2018. And on April 12-14, 2018, a Global Locust Initiative will be launched from Arizona State University in Tempe. For more information about this exciting event see page 4-5.

Once again, best wishes for the new 2018 year to all!

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ily. During the first four nights of the trip, we only encountered 4 immatures, yet towards the very end of the trip, we obtained six adults and ten additional immatures. It is also worth mentioning that the majority of the *Mimetica* were encountered after a brief but strong wind storm. The same can be said for *Celidophylla albimacula* Saussure & Pictet, 1898, another pterochrozine we found during the trip. Like many katydids, these groups of Costa Rican pterochrozines are probably canopy dwellers and are inaccessible to collectors at the ground level. The *Mimetica* were found clinging onto the stems of broad-leaved understory plants and one individual was positioned in the center of a large fern leaf. Many of the adults found on the last night of the trip were found in close proximity, some being only 20 or 30 feet away from each other. As for the data collected from the third experimental attempt, there were some observations of typical camouflage behaviors exhibited by *L. coronatum* (while it was alive) and *C. hastata*. These two katydids were totally immobile diurnally, yet, perhaps unsurprisingly, became active at nightfall. The positions adopted by the two katydids consisted of clinging to the bottom of a broad leaf larger in size than the

katydids themselves. When active at night, the katydids would traverse the understory by walking from branch to branch up and down the understory. They also tended to remain in the same general area from day to day, with net movement no greater than 15 feet most days.

Acknowledgments

I would like to thank the Orthopterists' Society for helping fund this project with the Ted Cohn grant. Even though the experiment did not produce ideal data due to negative circumstances I hope that others who are potentially interested in using radio telemetry on orthopteroid insects learn from this report, so that they may be able to avoid similar pitfalls. I would like to thank the staff of the TAMU SRC for graciously hosting us and providing us with meals and facilities every day. I would also like to thank my advisor, Dr. Hojun Song, for providing me with field study guidance while simultaneously teaching a study abroad class. Lastly, I would like to thank the students in the class for helping me procure live katydids and for assisting me with the tracking during the trip.

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Orthoptera Species File Grant Reports

The Brazilian fauna of phalangopsid crickets (Grylloidea, Phalangopsidae): types from the collection of the Museu de Zoologia da Universidade de São Paulo (MZSP)

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Brazil is the largest Neotropical country and the world's most biodiverse. Regarding Orthoptera, it is expected that Brazil houses the richest fauna of our favorite insects, although several lineages are poorly known or

practically unknown. This is true for crickets (Grylloidea), a taxon historically neglected in entomological studies in Brazil, the fauna of which is far from being well-known. Phalangopsidae, the most diverse Neotropical lineage of Grylloidea, only recently have been systematically studied in

Brazil.

The four main Orthoptera collections in Brazil are: 1) Museu Nacional, Rio de Janeiro (MNRJ – ca. 221 type specimens according to OSF); 2) Instituto de Pesquisas da Amazônia, Manaus (INPA – ca. 27 type specimens according to OSF); 3) Escola



Figure 1. The Museu de Zoologia da Universidade de São Paulo

Superior de Agricultura “Luiz de Queiroz”, Universidade de São Paulo, Piracicaba (DEFS – ca. 267 type specimens according to OSF); and 4) Museu de Zoologia da Universidade de São Paulo, São Paulo (MZSP). Another important collection focused mainly on Ensifera is the collection of the Departamento de Zoologia da Universidade Estadual Paulista, Botucatu (BOTU), headed by Francisco de A. G. de Mello.

With the support of the Orthopterists’ Society, I made photo documentation of the types of Phalangopsidae from the Museu de Zoologia da Universidade de São Paulo, São Paulo (MZSP – Fig. 1). A total of 98 type specimens (holotype, allotype, and paratypes) from 44 species were photographed and the images are being uploaded to OSF (see Table). For each specimen, approximately four images were obtained: dorsal and lateral habitus; and head and thorax, in dorsal and lateral views. The number of photographs per species was variable depending on the condition of the specimen and the presence of relevant, diagnostic characters. Thus, a total of 413 images are being uploaded to OSF. I am also uploading photographs of specimens in the field, whenever identification is possible, totaling almost 500 images.

The MZSP houses more than 10

million animal species and is one of the largest zoological collections in Latin America. The MZSP was created from another institution called Museu Paulista, whose first natural history collection was acquired in 1890. In 1939, the Departamento de Zoologia (Zoology Department) of the Secretaria de Agricultura, Indústria e Comércio do Estado de São Paulo (Secretariat of Agriculture, Industry and Trade of São Paulo) was created to manage the increasing

zoological collections. Later, from 1940-1941, the zoological collections were transferred to a new building, the so-called Museu de Zoologia. Then, in 1969 the Museu de Zoologia was associated with the Universidade de São Paulo and received its actual name: Museu de Zoologia da Universidade de São Paulo.

The MZSP is the most important collection of Grylloidea types in Brazil, mainly due to the taxonomical studies of Francisco de A.G. de Mello in the early 1990’s. Unlike other museums, the cricket collection is composed of specimens fixed in ethanol and kept in glass tubes and vials, differing from the traditional dry-pinned specimens. The preservation of crickets in ethanol started with Francisco A.G. de Mello on the 1980’s (possibly influenced by his colleague Daniel Otte) and was followed by other Brazilian orthopterists, such as Carlos Sperber, Edison Zefa, Márcio Bolfarini, and myself. As a former student of Francisco, he taught me that keeping specimens in ethanol 80-85% is a good option because, despite the possible loss of coloration (as observed in green katydids), it al-

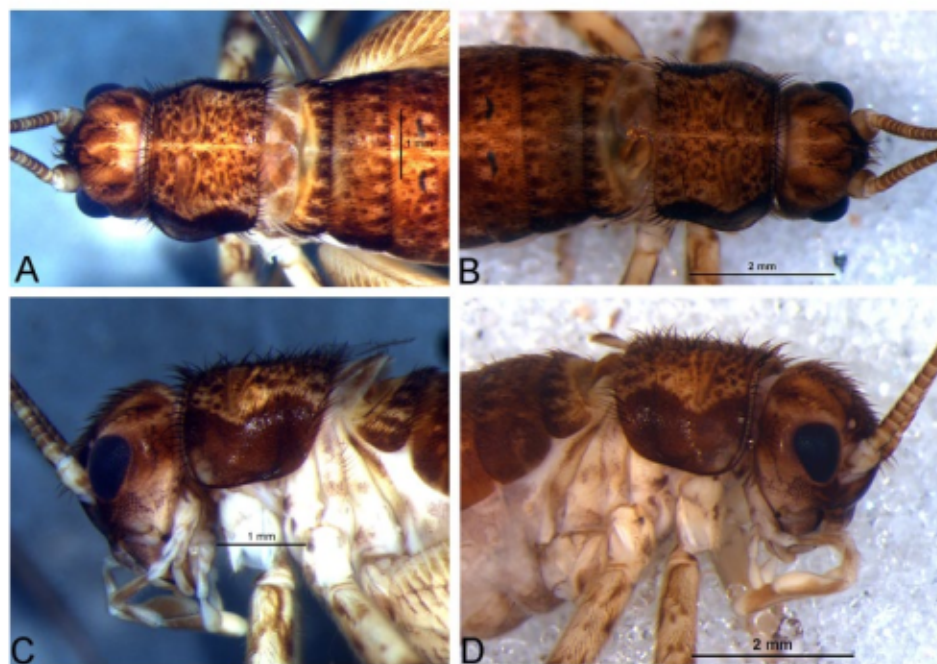


Figure 2. Comparison between different backgrounds: A, C, holotype of *Adenopygus heikoi* Bolfarini & de Mello, 2012 in a grey substrate made of modeling clay; B, D, holotype of *A. heikoi* Bolfarini & de Mello, 2012 in substrate of glass microbeads

lows the manipulation of the specimens (e.g. stretching legs, moving tegminae) and the search for details in structures and characters, since the specimens are not hardened. Moreover, keeping specimens in ethanol 85% (or superior) helps to preserve genetic material, allowing for the extraction of good quality DNA for molecular studies. On the other hand, a humid collection requires more space and is more expensive since the ethanol must be constantly checked and occasionally replaced.

Photographing specimens fixed in liquid can be challenging. The main challenge is the adjustment and adaptation of the lighting system and its interaction with the specimen and the liquid, due to the difference between the refractive indices of air and water. The fluid also makes the stability of the specimen difficult, and the color and nature of the background also influence the images.

Thus, I have done several tests with both different lighting systems and backgrounds in order to find a way to get images with good resolution, minimizing the shadows and showing morphological details. I used different backgrounds, from a uniform grey substrate made of modeling clay immersed in ethanol to a recipient filled with glass microbeads, where the specimens can be partially buried (Figs. 2, 3).

The equipment used was a Leica MZ-16 stereomicroscope attached to a DFC-420 video camera. The images were captured through the software Leica Application Suite LAS 4.0, stacked through Helicon Focus 5.3, and edited in Adobe Photoshop CS6 and GIMP (GNU Image Manipulating Program) 2.8.

Next steps

The OSF lists 108 type specimens of Orthoptera in the collection of MZSP, 56 Phalangopsidae. The only available catalog of Orthoptera types from MZSP was published by Domenico (2005), which listed only 35

Table 1. Checklist of Phalangopsidae species from the Museu de Zoologia da Universidade de São Paulo (MZSP). [* species designated but not sent to the MZSP; ** type specimens found in the collection of Alejo Mesa]

Taxon	Domenico (2005)	MZSP	OSF
<i>Adelosgryllus rubricephalus</i> Mesa & Zefa, 2004		X	X
<i>Adenopygus friederickeae</i> Bolfarini & de Mello, 2012		X	X
<i>Adenopygus heikoi</i> Bolfarini & de Mello, 2012		X	X
<i>Anomaloterga mantiqueirae</i> de Mello & Bolfarini, 2010		X	X
<i>Aracamby balneatorius</i> de Mello, 1992*	X		X
<i>Aracamby mucuriensis</i> de Mello, 1992	X	X	X
<i>Aracamby picinguabensis</i> de Mello, 1992*	X		X
<i>Bambuina bambui</i> de Mello, Horta & Bolfarini, 2013		X	X
<i>Cacruzia bahiana</i> de Mello, 1992*	X		X
<i>Eidmanacris bernardii</i> Nihei & de Mello, 2015		X	X
<i>Eidmanacris bidentata</i> Sperber, 1998**		X	X
<i>Eidmanacris caipira</i> Souza-Dias, Campos & Nihei, 2015		X	X
<i>Eidmanacris corumbatai</i> Garcia-Novo, 1998**		X	X
<i>Eidmanacris desutterae</i> Campos, 2017		X	X
<i>Eidmanacris eliethae</i> Nihei & de Mello, 2015		X	X
<i>Eidmanacris endophallica</i> (de Mello, 1990)	X	X	X
<i>Eidmanacris fontanettiae</i> Campos, Nihei & de Mello, 2017		X	X
<i>Eidmanacris gigas</i> Campos, 2017		X	X
<i>Eidmanacris lencionii</i> Bolfarini, 2016			X
<i>Eidmanacris melloi</i> Campos, 2017		X	X
<i>Eidmanacris minuta</i> (de Mello, 1990)	X	X	X
<i>Eidmanacris neomarmorata</i> Campos, 2017		X	X
<i>Eidmanacris papaveroi</i> Nihei & de Mello, 2015		X	X
<i>Eidmanacris putuhra</i> Campos, 2017		X	X
<i>Eidmanacris scopula</i> Campos, 2017		X	X
<i>Eidmanacris septentrionalis</i> Desutter-Grandcolas, 1995*			X
<i>Eidmanacris simoesi</i> Nihei & de Mello, 2015		X	X
<i>Eidmanacris suassunai</i> Souza-Dias, Campos & Nihei, 2015		X	X
<i>Endecous (Endecous) aguassay</i> Mews, 2008		X	X
<i>Endecous (Endecous) alejomesai</i> Zefa, 2010		X	X
<i>Endecous (Endecous) betariensis</i> de Mello & Pellegatti-Franco, 1998	X	X	X
<i>Endecous (Endecous) chape</i> Souza-Dias & de Mello, 2017		X	X
<i>Endecous (Endecous) naipi</i> Souza-Dias, 2017		X	X
<i>Endecous (Endecous) peruassuensis</i> Bolfarini, 2015*			X
<i>Endecous (Endecous) ubajarensis</i> Zefa, 2014		X	X
<i>Endecous (Pedroecous) apterus</i> Bolfarini & Souza-Dias, 2014		X	X
<i>Guabamima lopesandradei</i> Mews & Szinwelski, 2010*			X
<i>Guabamima lordelloi</i> de Mello, 1993	X	X	X
<i>Guabamima pimenteli</i> Mews & Szinwelski, 2010*			X
<i>Guabamima saiva</i> de Mello, 1993	X	X	X
<i>Guabamima zhei</i> Mews & Szinwelski, 2010*			X
<i>Izecksohniella aimore</i> de Mello, 1992	X	X	X
<i>Izecksohniella almeidai</i> Mews & Mól, 2009		X	X
<i>Izecksohniella puri</i> Sperber, Rocha, Lopes-Andrade & Mesa, 2003		X	X
<i>Joadis mesai</i> Mews & Sperber, 2009		X	X
<i>Laranda uai</i> Mews, 2008			X
<i>Lernecopsis beta</i> de Mello, 1995	X	X	X
<i>Marcgraviella muriciensis</i> Souza-Dias, 2014		X	X
<i>Mariella titai</i> Mews & Mól, 2009		X	X
<i>Melanotes moraesi</i> Desutter-Grandcolas, 1993*			X
<i>Mellopsis doucasae</i> Mews & Sperber, 2010		X	X
<i>Microlerneca leticia</i> de Mello, 1995	X	X	X
<i>Ottedana cercalis</i> de Mello & de Andrade, 2003		X	X
<i>Pizacris zefai</i> (Mews & Sperber, 2010)		X	X
<i>Sishiniheia diamantina</i> de Mello & Souza-Dias, 2016		X	X

type specimens in the collection (13 Phalangopsidae). Today the collection must be at least twice as large than in 2005, due to the increase in taxonomical studies in Brazil over the last 10 years (which continue to increase – and this is great!), housing 45 type specimens of Phalangopsidae (October/2017).

However, despite the recent taxonomic studies in Brazil, there is incongruence in the number of type specimens of Orthoptera shown in the OSF database and actually in the collection. Recently, the MZSP incorporated the Orthoptera collection of prof. Dr. Alejo Mesa (1928-2008), acquiring a large amount of specimens (and a lot of undescribed genera and species), both dry-pinned and in ethanol, from several Orthoptera lineages and several localities (even other continents). This new collection allowed us to find types described by him, some of them considered lost. Furthermore, several species whose type specimens were designated to MZSP on the original descriptions were not sent by the authors, explaining the incongruences shown in the Table.

Thus, an updated catalogue of type specimens of Orthoptera from MZSP is being prepared in order to provide new and useful information for our community. Along with the catalogue, a photo documentation of all Orthoptera types from MZSP will be provided and uploaded to OSF.

Table 1. Cont'd.

Taxon	Domenico (2005)	MZSP	OSF
<i>Vanzoliniella sambophila</i> de Mello & Cezar dos Reis, 1994	X	X	X
<i>Ubiquepuella telytokous</i> Fernandes, 2015			X

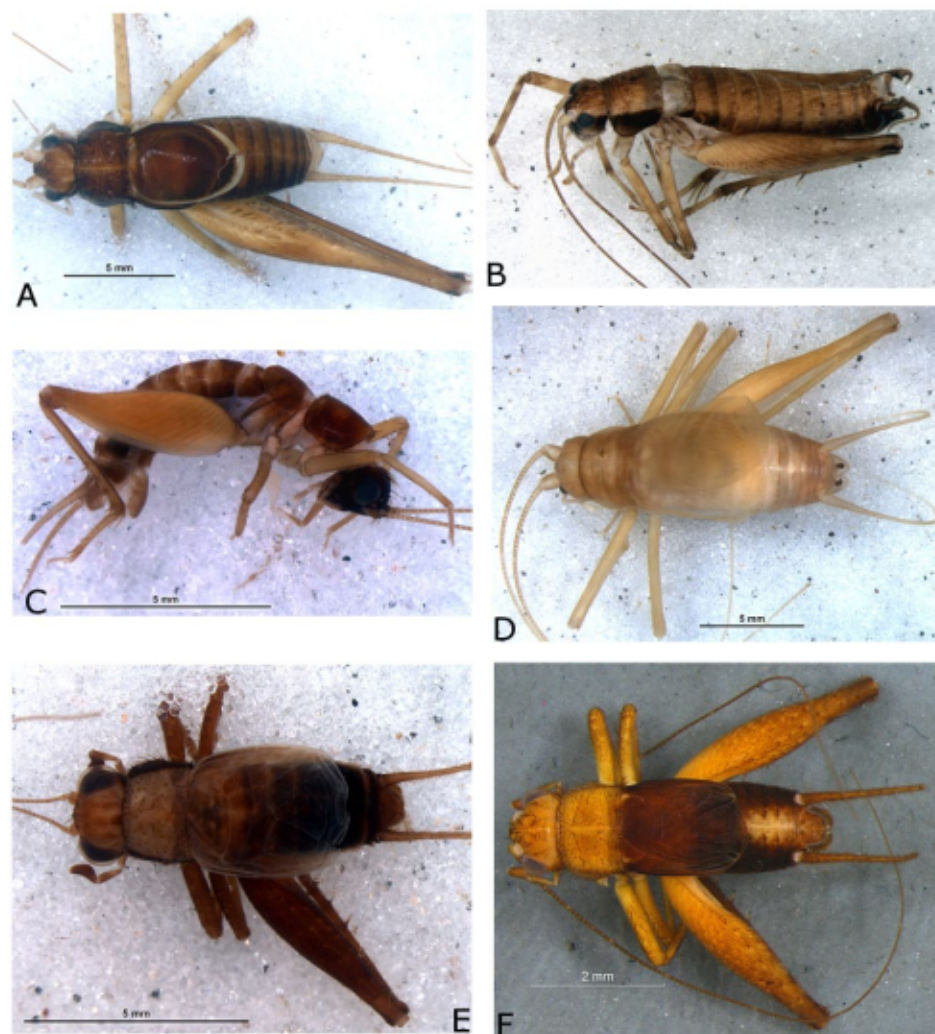


Figure 3. A, male paratype of *Guabamima saiva* de Mello, 1993; B, holotype of *Ottedana cercalis* de Mello & de Andrade, 2003; C, holotype of *Joadis mesai* Mews & Sperber, 2009; D, holotype of *Endecous betariensis* de Mello & Pellegatti-Franco, 1998; male paratype of *Microlerneca leticia* de Mello, 1995; male paratype of *Lernecopsis beto* de Mello, 1995

Dead and Alive - New images of band-winged grasshoppers (Caelifera: Acrididae: Oedipodinae) in the OSF

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The Oedipodinae, or band-winged grasshoppers, are a large subfamily of the Acrididae. With their cryptic coloration, but often brightly colored wings, they are an iconic group within the Caelifera. While some species are

common and fairly widely distributed, others are rare microendemics, which are only known from the type series. Especially for many of the rare species, no images have been available so far, neither of pinned specimens, nor of specimens in the wild.

In our project we aimed to illustrate

species of Oedipodinae in OSF with specific focus on the genus *Sphingonotus*. We added a total of 469 images, belonging to 149 specimens and 129 species to the OSF database. Many types were included (e.g., Fig. 1). 19 species were photographed in the field (Fig. 2-3), many likely for