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Hamuli

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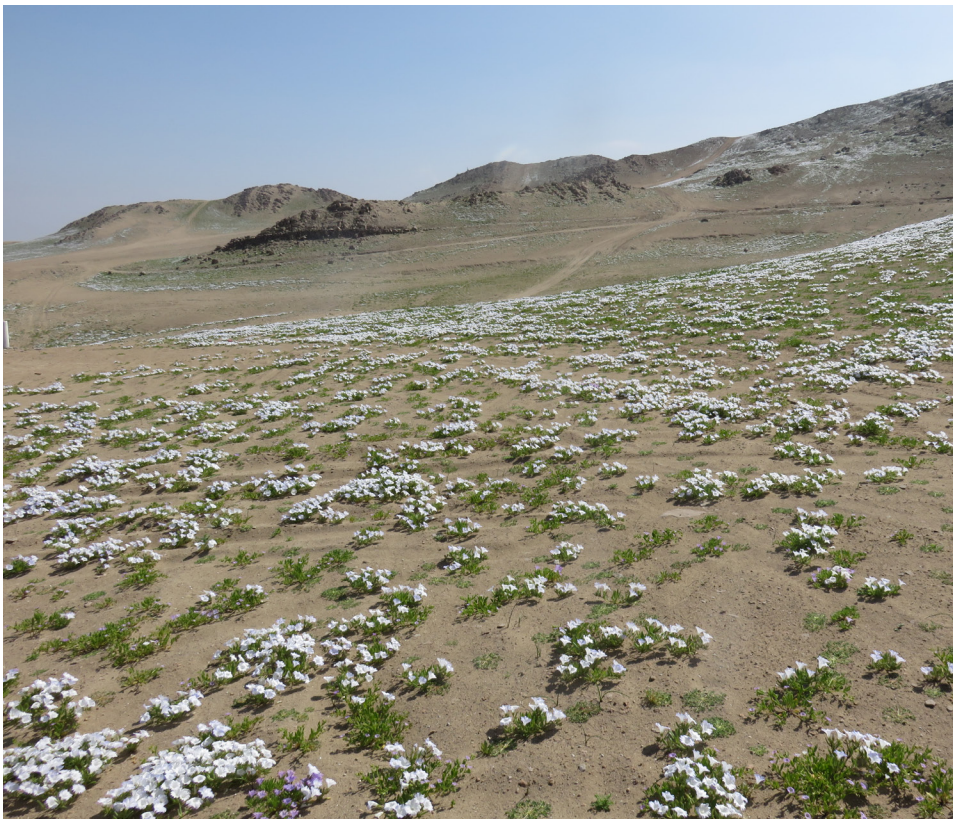

Figure 1. *Nolana* flowers just to the north of Antofagasta in early May 2015. Vegetation this lush is very unusual here, especially in late summer as this locality is in the winter rainfall area with no rain at all between December and May inclusive and monthly averages of between 0.1 and 0.6 mm in the months of June to November

Field trip to Northern Chile, April/May 2015

By: Laurence Packer, York University, Toronto, Ontario, Canada

The Atacama Desert is well known as being the driest and one of the oldest in the world. Rainfall in many places averages less than 1 mm a year. The two most northern coastal towns, Arica and Iquique, average 0.5 and 0.6 mm of rain per year and the small village of Quillagua on the Rio Loa has an annual average rainfall of only 0.05 mm. But averages are misleading. In parts of the Atacama it might rain heavily in one day and then not again for more than a decade. This creates interesting challenges for the entomofauna.

In most of the Atacama, if there is any rain, it generally comes in winter. However, to the northeast and at altitudes of 3000 m or so and above, if there is any rainfall, it tends to come in summer – the so-called "Invierno Boliviano".

On March 25th–26th, 2015 parts of the Atacama received more rain in 24 hours than they usually get in over a decade (see video at http://earthobservatory.nasa.gov/IOTD/view.php?id=85685). Overall,

In this issue...

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Articles appearing herein should not be considered published for the purposes of zoological nomenclature.. Find us on the Web:
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Fieldtrip to Chile ... *Continued*

Figure 2. The southern section of the coastal port of Chañaral in late April 2015. The Pan American Highway used to pass across the mid-distance of the area shown in this picture. All except the water in the far distance was solid ground until the devastating floods of late March 2015.

the heaviest rain for more than 80 years. Even more unusual, this late summer rain occurred mostly in the winter rainfall region and resulted in devastating floods (see http://www.cbc.ca/player/News/ID/2661855092/), a state of emergency being declared, and scores of deaths.

The coastal city of Antofagasta averages 1.7mm of rain a year. On March 25th–26th it received 26 mm. This resulted in the hills just north of town turning, in places, to verdant green and then white as the flowers of *Nolana jaffueli* (Solanaceae) and *N. linearifolia* developed higher up and those of *N. aplocaryoides* at lower elevations (I am grateful to Mike Dillon of the Field Museum, Chicago, for these identifications).

Having been interested in the bees of Chile for over 15 years, this seemed like an opportunity that I could not miss, with the result that I undertook a field trip to the Atacama from April 18th to May 9th of this year.

Flowers were often abundant in the southern regions of the Atacama and also at higher altitudes in the far north. But bees were scarce except at the higher altitudes when summer is the time of year when rainfall might be expected. In part, this was because I was a little early: on the way north in late April, the hills north of Antofagasta were green with almost no flowers, but on the way back south in early May some parts of these hills were carpeted with *Nolana* (see Figure 1). Nonetheless, the records obtained were of interest as they were often of bees for which I know of no records from this time of year. Examples include *Neofidelia* (Megachilidae: Fideliinae, several species) which are commonly collected from September to November, but hitherto unknown in late summer; *Penapis larraini* (Halictidae: Rophitinae) is a species I recently described from material obtained from a fog oasis south of Iquique with specimens known only from November and early December; I found it at several coastal localities from Tocopilla to Antofagasta in late April and early May; *Parasarus* (perhaps *atacamensis*, perhaps an undescribed species), *Spinoliella* spp. (both Andrenidae: Panurginae), *Leioproctus* (Colletidae: Neopasiphaeinae) and *Alloscirtetica* (Apidae: Apinae) were also collected in low elevation localities at times of year entirely atypical for them in such areas. Other genera that seem ubiquitous whenever and wherever there are flowers were also found: such as *Lasioglossum* and *Caenohalictus* (both Halictidae: Halictinae), *Anthidium* (Megachilidae: Megachilinae) and *Centris* (Apidae: Apinae) [As of July 2015, little of the material has been identified to species level].

Even with an abundance of flowers, capture rates at lower elevations were very low. Two days of pacing among the *Nolana* just outside of Antofagasta (see Figure 1) yielded less than ten bees; pan and vane traps left out for two weeks yielded barely one bee per trap. Slim, but very interesting, pickings.

As always when performing fieldwork in Chile, I am indebted to Rolando Humire Coca, Luisa Ruz and Alfredo Ugarte.

A new key to the North and Central American subfamilies of Ichneumonidae

By: David Wahl, American Entomological Institute, Gainesville, FL, USA

Identifying North American ichneumonids to subfamily is not an easy task for the non-ichneumonologist. Passing over the scarcity of collections with reliably determined specimens that can be used for confirmation, finding a good key is the greatest hurdle. Until recently, a Google search will turn up the 1955 Smith & Shenefelt key (1) as the first offering! This key is outdated and unworkable. A better choice would be the 1969 Townes key to World subfamlies (2). Taxonomy has moved on since then, however, and the Townes key is burdened by the paucity of illustrations and Townes' idiosyncratic family-group names. My 1993 key to World subfamilies (3) is fully illustrated, but suffers from blind spots and being dated.

I've made a new key to North and Central American subfamilies, available for download on the American Entomological Institute website: http://www.amentinst.org/Subfamily_Key.php

Figure 1. *Gelis* sp.

Figure 2. *Euceros* sp.

Figure 3. *Cryptohelcostizus genalis*

It is consistent with current classification and takes care of most variant taxa (within the limits of practicality). There are 403 figures, most of which are photographs made by an Entovision imaging system (see Figures 1–3). The key is not interactive, but is instead arranged so that the component PDFs can be downloaded and used on a variety of platforms; the figures are arranged into plates that work well on tablets or laptops. Supporting information on ichneumonids, including morphology, is on the AEI website under *Genera Nearcticae Ichneumonorum* (http://www.amentinst.org/GIN).

1. Smith, L.K. & R.D. Shenefelt. 1955. A guide to the subfamilies and tribes of the family Ichneumonidae (Hymenoptera) known to occur in Wisconsin. *Wisconsin Academy of Sciences, Arts and Letters* 44: 165–219.
2. Townes, H. 1969. The genera of Ichneumonidae, part 1. *Memoirs of the American Entomological Institute* 11: 1–300.
3. Wahl, D.B. 1993. Family Ichneumonidae. In H. Goulet & J.T. Huber (eds.), *Identification manual to families of Hymenoptera (Insecta) of the world.* Agriculture Canada, Ottawa. 668 pp.

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Review of "An Illustrated Guide to Japanese Bees" Edited by Osamu Tadauchi and Ryuki Murao

By: Laurence Packer and Sumie Ishikawa, York University, Toronto, Ontario, Canada

An Illustrated guide to Japanese Bees
Edited by Osamu Tadauchi and Ryuki Murao.
ISBN 978-4-8299-8842-8
Bun-ichi Co., Ltd. ¥12,000.

Not many countries have books permitting the identification of all of their bee species. Unsurprisingly, island nations, with their reduced diversity, figure predominantly in such thorough treatments (e.g. Madagascar, Pauly et al., 2001; New Zealand, Donovan, 2007). Now another island nation, Japan, joins the list and also raises the stakes in terms of how user friendly a guide to bees can be.

Osamu Tadauchi and his student Ryuki Murao have edited a beautifully illustrated treatment of the 389 species of bee in Japan that, with a combination of traditional identification keys and copious illustrations, makes most of Japan's bee fauna identifiable to the species level even for someone with no taxonomic training or knowledge of Japanese. Of course, the most problematic of bees – *Lasioglossum* are not so easily dealt with, but even here some progress is possible just with this book: some species have readily identifiable features that can be seen in the photographs.

After the introduction and table of contents, there is a short section that deals with classification, ecology (floral relations, nesting behaviour, sociality), collection methods and finally morphology. All of the important morphological features are then illustrated with labelled colour photographs. The morphology section immediately precedes the two page key to families, where again, all features are illustrated. Michener's classification of the bees into 7 families is followed, although only 6 of them are found in Japan (stenotritids are Australian endemics). The family key is made easier by the absence of the genera that are exceptions to otherwise diagnostic features, such as the apine genera *Ancyla* and *Ctenoplectra* (long-tongued bees with short-tongued bee mouthpart morphology) and rophitines (some of which have labial palps of long-tongued bees despite belonging to the short-tongued bee family Halictidae).

One feature that makes this book particularly easy to use is that each family is colour coded along the upper margin of each page and each genus is colour coded along each outer margin. Thus, to get to the beginning of the treatment of the Halictidae, the user just has to flip through to the beginning of the dark red section. The first pages of each family's section provides a generic level key, again with all characteristics imaged. Once the genus has been identified, flipping through the different tabs of colour on the outer margin readily locates the species treatments for that genus. In addition to being colour coded along the outer margin, the genera within a family are also numbered. For the larger genera – such as *Andrena*, *Lasioglossum* and *Megachile*, subgeneric level keys are provided. The result, is that image-driven keys take the user to a manageable number of species for which merely looking through the habitus images and illustrations of species diagnostic characteristics facilitates complete identification.

For each species the scientific and Japanese common names are provided, followed by the bee's size range, phenology, geographic distribution (including extralimital regions), known floral hosts and a brief morphological description. In addition to illustrations of habitus and diagnostic characteristics, there are often images of a live bee on a flower. This is a useful addition given that bees on flowers often look surprisingly different from photographs of pinned specimens.

There is an extensive list of references at the end – starting with general papers and then arranged family-by-family. Lastly, there are three sets of indices: Latin names and then common Japanese names for bees and floral hosts.

Anyone interested in bees or in the entomofauna or natural history of Asia will want to buy this book: although it is written in Japanese, it is so well illustrated and organized that it fulfills the objective of making Japanese bees largely identifiable even when the reader cannot understand the Japanese script. Unsurprisingly, this book has already gone for a second printing.

Donovan, B.J. 2007. Apoidea (Insecta: Hymenoptera). *Fauna of New Zealand: Ko te Aitanga Pepeke o Aotearoa*. Manaaki Whenua Press, Lincoln, Canterbury, New Zealand. 295pp.

Pauly, A., R.W. Brooks, L.A. Nilsson, Y.A. Pesenko, C.D. Eardley, M. Terzo, T. Griswold, M. Schwarz, S. Patiny, J. Munzinger and Y. Barbier. 2001. Hymenoptera Apoidea de Madagascar et des îles voisines. *Annales du Musée Royal d l'Afrique Centrale (Sciences Zoologiques), Tervuren (Belgium)*, 286:1-390, pls. 1–16.

Braconinae needed!

By: Rebecca Kittel, Kobe University, Japan

I have recently started a project on Braconinae in the lab of Prof Maeto in Japan. I wonder if someone from the Hymenoptera community has some spare specimens of *Bracon* or representatives of other genera of the Braconinae (preferably in ethanol), which I could borrow? Any help would be much appreciated! Please contact me: rebecca.n.kittel@gmail.com

Co-Authorship can be discussed if you can provide specimens of either *Argamania*, *Vaepellis*, *Megacoeloides*, *Lapicida*, *Baryproctus*, or *Chivinia*.

Also, please let me know if you have *Habrobracon hebetor* specimens. I am interested in them as well.

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Facebook, Toilet Tubes, and Imaging

By: John Heraty, Department of Entomology, University of California at Riverside, CA, USA

Okay, so I admit that I look at Facebook. I don't twitter or tweet. Occasionally, something comes up that can be useful.

This one was a simple solution to the problem of imaging through the microscope eyepiece. Javier Torréns (Argentina) first introduced me to the idea of using a camera to take an image through the eyepiece. On my Nikon Coolpix this was relatively easy. When I upgraded to a Canon G15 it became more complicated. The problem is that you need to place the camera lens almost on the ocular lens to get things to work. Enter Facebook and a cool idea.

Basically take a cardboard tube left over from a roll of toilet paper. Cut it about in half and place this over one of the ocular lenses (see photo). One end should be about one inch/2.5 cm higher than the ocular lens. Use a smart phone to take the image. Brace it against the tube both for stability and getting rid of incidental light. Make the appropriate enlargement, tap for focus and take an image or video.

I have been astonished by the results. Simple technology can work very well and very simply. I use this primarily to capture behavior with either a snapshot or a video clip, but for a quick morphological shot they are not bad, and better than some of the images I have seen getting into the literature. There are better imaging systems out there, but the cost and effort of doing this is ideal, especially in the field.

The planidia (first-instar larvae; about 0.12 mm) in the images are from new species of *Orasema* (Hymenoptera: Eucharitidae) in Arizona. The monophyletic group of *Orasema* that these belong to consistently associate with extrafloral nectaries of several different plants. Adults purposefully deposit their eggs close to the nectary, and the ants just happen to be feeding at the nectaries … a perfect way to get your larvae transported back to the ant nest and their brood host. For more details of the

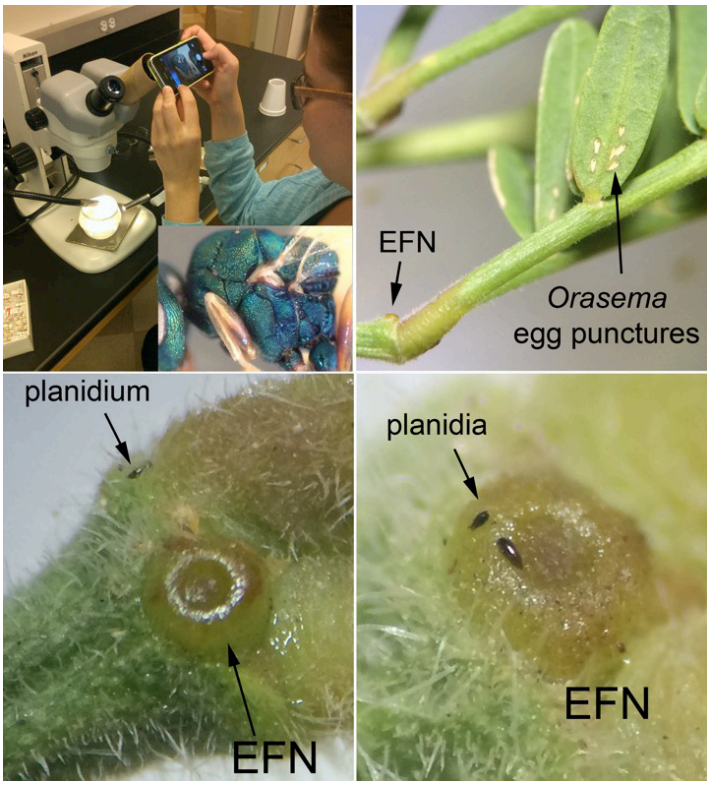

Figure 1. *Orasema* n.sp. (USA:AZ) on Velvet Mesquite (*Prosopis velutina*). Imaging of the adult is through a lighted styrofoam soup cup. No buffered light source was used for the other images (fiber optic source light only).

behavior check out Carey et al. (2012 Nectary use for gaining access to an ant host by the parasitoid *Orasema simulatrix* (Hymenoptera, Eucharitidae) *JHR* 27:47–65).

Videos of planidia on Youtube:

(a) Peru with Canon G15 and AO field scope: https://youtu.be/ZXAWrdrDZ40 (play with sound on)

(b) AZ with iPhone 5 and Nikon 6MZ645 teaching scope: https://youtu.be/pBnwjW2Eg2A

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