

METALEPTEA

THE NEWSLETTER OF THE



ORTHOPTERISTS' SOCIETY

President's Message

By **AXEL HOCHKIRCH**

President

Axel.HOCHKIRCH@mnhn.lu

Dear Society members,
A very happy New Year to everyone! I hope you had an enjoyable holiday break.

As ICO2026 is approaching, we are currently engaged in organizing the congress and ensuring a smooth transition of leadership in our Society. At the congress, my term as President will come to an end and I will be passing the "President's Hat" on to Fernando Montealegre-Zapata. At the end of last year, we had the election for the new President-Elect and it is my pleasure to extend the warmest congratulations to Rohini Balakrishnan on her election. Her appointment is a testament to her longstanding contributions to orthopteran research and her dedicated service to the Society, particularly in her role as South Asia Regional Representative. I wish her every success as she undertakes this significant leadership responsibility.

I also would like to thank Dragan Chobanov and Mohamed Abdellahi Ebbe for their willingness to run for the presidency and for their sustained commitment to serving our Society. Their engagement exemplifies the spirit of collegiality and scientific dedication that strengthens our community. The Society is fortunate to have such a strong candidate pool. Mohamed Abdellahi Ould BABA EBBE has served as Executive Director of our Society since 2019 and has now decided to step down from this role as



he has served for two consecutive terms. Therefore, I would like to express my deep gratitude for his service. It was always a pleasure to collaborate with him!

After the last congress in Mexico, we made some significant changes to the membership management, which has been led by Mira Ries, project coordinator at the Global Locust Initiative at Arizona State University. Mira established a modern membership database, a new online registration form, and streamlined the work with our treasurer, Pamm Mihm. She also helped me to organize the election of our new President-Elect. My sincere thanks, therefore, also go to Mira. Based upon all these changes, the Society's governing board has agreed that the position of Executive Director may no longer be necessary. Obviously, this needs some changes to our bylaws

TABLE OF CONTENTS

(Clicking on an article's title will take you to the desired page)

[1] PRESIDENT'S MESSAGE

[2] SOCIETY NEWS

[2] *15th International Congress of Orthopterology Countdown* by M.E. POCCO

[4] *Update on the Singing Insects of North America (SINA) Website* by T. YAWN

[4] *Updates from the Global Locust Initiative* by M. RIES

[5] REGIONAL REPORTS

[5] *North America* by K. KING

[7] T.J. COHN GRANT REPORTS

[7] *The Effect of Juvenile Acoustic Environment on Male Gryllus pennsylvanicus Calling Song* by T.A. BOWERS & S.N. GERSHMAN

[9] *Phylogeography of a Recently Discovered Genus of Melanoplinae (Orthoptera: Acrididae) from Mexico* by J.D. GÓMEZ TAPIA

[11] CONTRIBUTED ARTICLES

[11] *Taxonomy, distribution and phylogeography of short-winged Orthoptera in the Aegean* by J. TILMANS

[12] *A Hidden Lineage Revealed: Forty Years of Research Uncover a New African Grasshopper Family* by C. HEMP

[14] *Training in Biology and Identification of Neotropical Grasshoppers (Orthoptera: Caelifera) at Universidade Federal de Uberlândia, Minas Gerais, Brazil* by D. SANTOS MARTINS SILVA & A. NILO DA COSTA

[15] *Book Review: Distribution Atlas of Grasshoppers and Praying Mantises in Germany* Edited by Thomas Fartmann and Dominik Poniatowski by Z. KENYERES & N. BAUER

[17] *Fifteen Years of the Theodore J. Cohn Research Grants (2011–2025): Outcomes, Equity, and Perspectives* by M. LECOQ

[19] TREASURER'S REPORT

[20] EDITORIAL

and the board has already started drafting a new version. The old version is more than 25 years old and several parts are outdated. We plan to share these proposed changes with members soon for a vote.

Orthoptera and their relatives are arguably the most exciting insect group on the planet. They sing, they dance, and they are full of surprises. Each and every species is unique and we know very little about most of them. Many species are still to be scientifically described, but even among those that already have names, there are numerous species that lack any information about their biology, ecology, behaviour, population trends, or threats. When I started my work for my diploma thesis more than 30 years ago, I was aware that nearly everything I would observe on the grasshoppers in Tanzania would be completely new to science. Documenting the behaviour of Orthoptera is very exciting, but it requires a lot of patience. Jeff Lockwood once described this very well in his book “Grasshopper Dreaming,” because most of the time grasshoppers do simply nothing at all - resting is their most common behaviour.

However, when you are patient or lucky and see their courtship or mating behaviour, it can be truly stunning. I remember when I saw the visual courtship behaviour of *Parepistaurus pygmaeus*, which is waving

with its red hind tibiae during courtship. I also observed a male *Heteracris coeruleipes* fluttering its red hind wings while approaching the female and drumming with its white antennae on the dorsum of the female, which showed no interest at all and just kicked the male away. On the Canary Islands, I saw the amazing courtship flights of *Sphingonotus savignyi*, a band-winged grasshopper that produces a sharp whistle when approaching the female and a loud, interrupted wing crepitation during courtship flight.

Orthoptera courtship displays are as diverse as the number of species and their songs are very useful for identification or bioacoustic monitoring. When I started my first conservation project for the European field cricket (*Gryllus campestris*) in northern Germany, I just walked across the study sites and counted the singing males. This method is still being used to monitor the species and the success of a translocation project. With the improving technological advances of AI, it will become feasible to automatically identify Orthoptera from audio recordings. However, this requires a robust database of correctly identified recordings to train the system. The largest database for animal sound recordings is xeno-canto.org, which already covers numerous Orthoptera songs. This database is linked to the [Orthoptera Species File \(OSF\)](#), so that we can

directly search for songs of species on OSF if you use the “external links to websites” section in the lower right.

My Dutch colleagues, Baudewijn Odé and Vincent Kalkman, have recently led the writing of a paper in the German Orthopterological Journal “Articulata,” documenting the sound recordings of 556 European Orthoptera species, which are currently available on xeno-canto. This impressive number will help to facilitate research on Orthoptera, as well as bioacoustic monitoring, which is crucial for their conservation. I, therefore, would like to encourage you to upload your own song recordings on xeno-canto. Even low-quality recordings are valuable as they help to train automated identification systems and get simple phone recordings identified in the future. Obviously, it is important that the uploaded recordings are correctly identified.

It has been my pleasure to serve as President and I am confident that Fernando will continue to build on the success of our Society. From my positive experience during the last years, I also would like to express my thanks to the governing board who always responded fast when we had to make decisions.

I wish everyone success in their work for the coming year - all the best for 2026, and I hope to see many of you in Argentina!

15th International Congress of Orthopterology: Countdown!

Patagonia, Argentina | March 8–12, 2026

By **MARTINA E. POCCO**

CEPAVE, CONICET - UNLP

División Entomología, Museo de La Plata, UNLP

La Plata, ARGENTINA

martinapocco@fcnym.unlp.edu.ar

The 15th International Congress of Orthopterology (ICO2026) is just over a month away! Orthopterists from around the world will gather to

exchange ideas, celebrate 50 years of the Orthopterists’ Society, and advance research on Orthoptera.

Program Highlights

- **Scientific Sessions:** 6 plenary lectures, 10 symposia, 5 workshops, 30+ oral presentations and 35+ posters — over 150 presentations in total. Sessions run **8:30–18:00** at **Centro Cultural Cotesma**.
- **Social Events:** Welcome cocktail



Speakers

 <p>Yanina Mariottini Universidad del Centro, CONICET, Argentina.</p> <p>Theme Population structure and dynamics of grasshoppers in the Pampas and Patagonia regions of Argentina</p>	 <p>Nathan Bailey University of St Andrews, Scotland.</p> <p>Theme Evolutionary biology, genomics, social behaviour in Crickets</p>	 <p>Koutaro Ould Maeno Japan International Research Center for Agricultural Sciences, Kyoto, Japan.</p> <p>Theme Insights into the reproductive ecology of desert locusts.</p>
 <p>Martin Husemann Martin Luther Universität Halle Wittenberg, Germany.</p> <p>Theme Grasshopper species diversification</p>	 <p>Cyril Piou Desert Locust Information Service, FAO, Rome, Italy.</p> <p>Theme Modeling of gregarization risk and population dynamics of locusts</p>	 <p>Daniel Otte The Academy of Natural Sciences of Drexel University, Philadelphia, USA.</p> <p>Theme Stories and memories of places, people, and events from his journey as one of the founders of the Orthopterists' Society and a systematist of crickets and grasshoppers</p>

on Sunday, March 8 at **Le Village Hotel** (also hosting daily lunches) and a gala dinner on Thursday, March 12 at **El Segundo Remanso Hall**, including awards and live entertainment.

• **Plenary Speakers:**

- **Yanina Mariottini** (Argentina) – Long-term dynamics of grasshopper communities in the Pampas grasslands: diversity patterns, pest species, and effects of agricultural intensification
- **Nathan Bailey** (Scotland) – Orthopteran comparative genomics: progress and prospects
- **Koutaro Ould Maeno** (Japan) – Adaptive coupling reproductive behavior, heat management, and egg provisioning in the desert locust
- **Martin Husemann** (Germany) – Evolution of band-winged grasshoppers – scratching the surface
- **Cyril Piou** (Italy) – Modeling of gregarization risk and population dynamics of locusts
- **Daniel Otte** (USA) – Stories and memories of places, people, and events from his journey as one of the founders of the Orthopterists' Society, and a systematist of crickets and grasshoppers

Registration

Over **160 participants from ~30 countries** have already registered! **Late registration** is open until the start of the congress. Members of the

Orthopterists' Society receive discount rates. Details: <https://ico2026.com.ar/registration>

Travel & Accommodation

Information on flights, lodging, and logistics in **San Martín de los Andes** is available on the website <https://ico2026.com.ar/>. Personalized assistance: contact **Argentina Trips** at team@argentina-trips.com and experience@argentina-trips.com.

Excursions

- **During the congress - For Accompanying Persons:** 1) Hua Hum & Chachín Waterfall; 2) Villa Meliquina, Chapelco & Casa de Piedra
- **Post-Congress (March 13–16):** 1) Volcán Lanín & Lago Hue-

chulafquen; 2) Ruta de los Siete Lagos & Bosque de Arrayanes; 3) Villa Pehuena. Participants may choose to join all three excursions or select one or two.

Contact **Argentina Trips** for details!

Stay Connected

Follow ICO2026 on **Instagram**, **Facebook**, and **LinkedIn** for updates and community highlights.

For questions, contact icorthopterology2026@gmail.com

Looking forward to welcoming you to Argentina!

Update on the Singing Insects of North America (SINA) Website

By **TERESA YAWN**
Editor/Webmaster, SINA
teresamarieyawn@gmail.com

All of the species from the *Aglaothorax* revision (Cole et al. 2025) are now on SINA and available online. At present, for each new species, there is a species page and a map page. The species pages contain a link to the map page, a song with waveform, references (links to Cole et al. 2025, extracted pages for the Group species, and extracted pages about the species), and a link to the Orthoptera Species File for a given species. I am in the process of adding further information, such as song description, identification, habitat, notable remarks, and more, to the species pages. The map pages are completed. The map pages contain a SINA distribution map, the locality map from Cole et al. 2025, a list of the localities, a summary of the species' distribution, a list of states and counties, and a link to map data extracted from Cole et al. 2025. I will also be adding image pages for each species. For the five

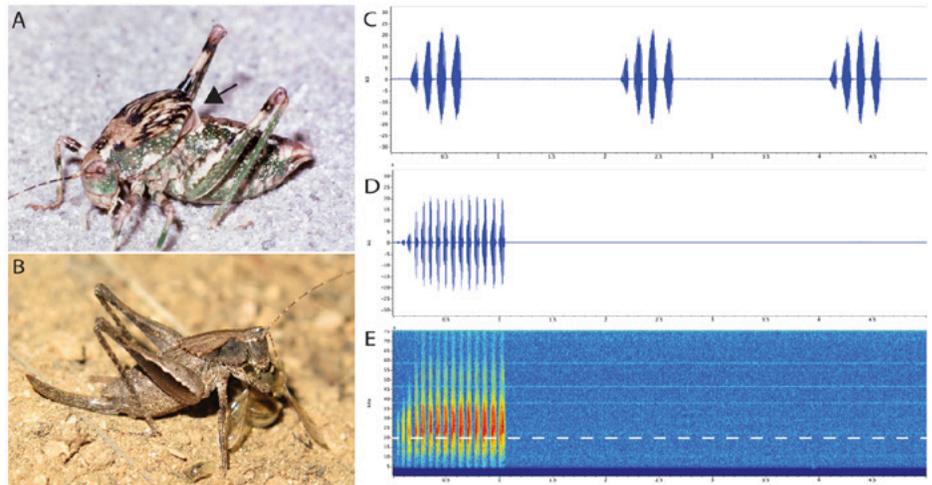


Figure 1. A. Habitus of *Aglaothorax giganteus* male, white tegmina (arrow) used in sound production visible below pronotum; B. *A. morsei* female scavenging a dead honeybee; C. Calling song of *A. ovatus*, Los Angeles County, California, 5 s oscillogram window showing three echemes consisting of four pulse trains each; D. Calling song of *A. morsei*, Los Angeles County, California, 5 s window showing one echeme consisting of 15 pulse trains; E. spectrogram of D: ultrasonic frequencies beyond human hearing range lie above white dashed line, warmer colors indicate higher sound energy, most of which is ultrasonic. (taken from Cole et al. 2025)

species that were already on SINA (*A. diminutiva*, *A. gurneyi*, *A. longipennis*, *A. morsei*, and *A. ovatus*), I am updating the species pages and map pages with new information from the revision and adding new image pages. There is an announcement about this

on SINA's home page <https://orthsoc.org/sina/index.htm#aglaothorax-revision> that links to *Aglaothorax* on the katydid checklist or you can go directly to the checklist at <https://orthsoc.org/sina/katylist.htm#aglaothorax>.

Updates from the Global Locust Initiative

By **MIRA RIES**
Project Coordinator, GLI, MiraRies@asu.edu
Arizona State University, USA

With the start of the new year, we wanted to wish you all a Happy New Year filled with peace, joy, health,

and success!

As 2025 wraps up, we'd love to hear what you've been working on this year—whether field research, lab work, community engagement, or other Orthoptera-related projects. Please share your key insights and milestones on [HopperLink](#), so colleagues can learn from and connect

with your work.

If you haven't joined HopperLink yet, it is a great time to do so! HopperLink is a private, easy-to-use online platform for people working on Orthoptera to connect and collaborate. It functions much like a focused social network, where members from research, field operations, NGOs, government agencies, and international organizations share updates, events, news, and resources.

Your contributions on HopperLink help spark collaboration and strengthen the community. **Now more**

than ever, it is important for us to continue to work together, across boundaries, cultures, sectors, and disciplines. Locusts in particular, and orthopterans broadly, require regional to global approaches for advancing their research, sustainable pest management, and conservation.

Along with successes, 2025 has brought some bumps. The USA's Federally funded organization known as USAID has historically contributed funding support for locust monitoring and management. The agency's dismantling in early 2025 has left gaps

and far-reaching impacts well beyond locust management. Other USA Federal agencies have faced closures and uncertainties. Many regions that span our Orthopterists' Society community are facing greater challenges.

Here at the GLI, we have been able to pivot funding strategies and are committed to supporting the Orthopterists' community through continuing to grow HopperLink and HopperWiki.

- [HopperLink](#) has become a steady force, connecting over 260 members from 46 countries.
- [HopperWiki](#) continues to grow as a global, open-access hub for Orthoptera. Check out the updated [species](#) profiles which have tighter species-level integration with the [Orthoptera Species File](#) to keep taxonomy current and easy to navigate. Explore the new [United States Rangeland Community Management Portal](#), a comprehensive hub created by the GLI and USDA APHIS's Insect Management and Molecular Diagnostics Laboratory in Arizona, featuring an interactive state-by-state map, detailed species profiles, and over 800 historical documents that translate decades of dispersed materials into an accessible archive resource.

At ASU in 2025, we valued the opportunity to host our long-time collaborator Mamour Touré from



GLI team photo at Arizona State University during Mamour's visit and welcoming the Song Lab (from left to right: Mehreen, Jackson, Emily, Neema, Sydney, Hojun, Arianne, Rick, Mamour)

[Université Gaston Berger](#) in October. We were delighted to welcome Hojun Song who joined ASU in August as a Professor and Director of [ASU's Biocollections](#), and who will strengthen the GLI leadership team. We are looking forward to contributing two workshops and seeing many of you at the upcoming [2026 International Congress of Orthopterology](#) in March!



GLI Project Coordinator, Mira Ries, her budding naturalist explorer Alden, and dog Rey enjoying the Montana winter

Regional Reports - What's happening around the world?

North America

By **KATHLEEN KING**
 USDA APHIS PPQ in Cheyenne, Wyoming
Kathleen.M.King@usda.gov

Robert Srygley of the United States Department of Agriculture (USDA) Agricultural Research Service (ARS) in Montana published a research article titled "Effects of parental

photoperiod and elevation on egg diapause, mortality, and synchronous hatching of Mormon crickets *Anabrus simplex*" in *Journal of Insect Physiology*. An interpretative summary of the abstract, which is also on the ARS website, is below:

Mormon cricket eggs are unusual in that they can arrest development (diapause) and remain in the soil for multiple years without forming an embryo. Females are hypothesized

to play a large role in determining the duration of egg diapause through adult photoperiod and selection of the egg laying environment, but no comparison of the effects of the parental and egg environment on diapause have been made. ARS scientists manipulated a mid-summer and late-summer light environment to the parents and buried eggs from these two genetic stocks at high (2400 m), mid (1600 m), and low (1300 m) elevations in

the Bighorn Mountains. At high elevation, Mormon cricket eggs required six to eight years for 50% of them to develop and hatch, whereas the same genetic stock only required two to three years on average at the low elevation sites. Consequently, soil temperature is a critical factor in determining the persistence of Mormon cricket eggs in egg banks. Photoperiod, in contrast, only affected egg diapause at lower elevations with the eggs from late-summer parents developing faster than those of the mid-summer parents. Egg mortality was greater in eggs from late-summer parents at all sites, whereas fungal infection of eggs was only observed at high elevations. Because mountains provide a patchy thermal environment, multiple generations of eggs are likely to be banked in the soil in these regions, but egg banking at high elevations came at a cost of greater egg mortality. This research improves forecasting of Mormon cricket outbreaks to assist land managers in preparations for control efforts. It also points to the need to find new methods to locate and control Mormon cricket populations in egg banks to reduce the risk of synchronous hatching and migration of nymphs to arable lands.

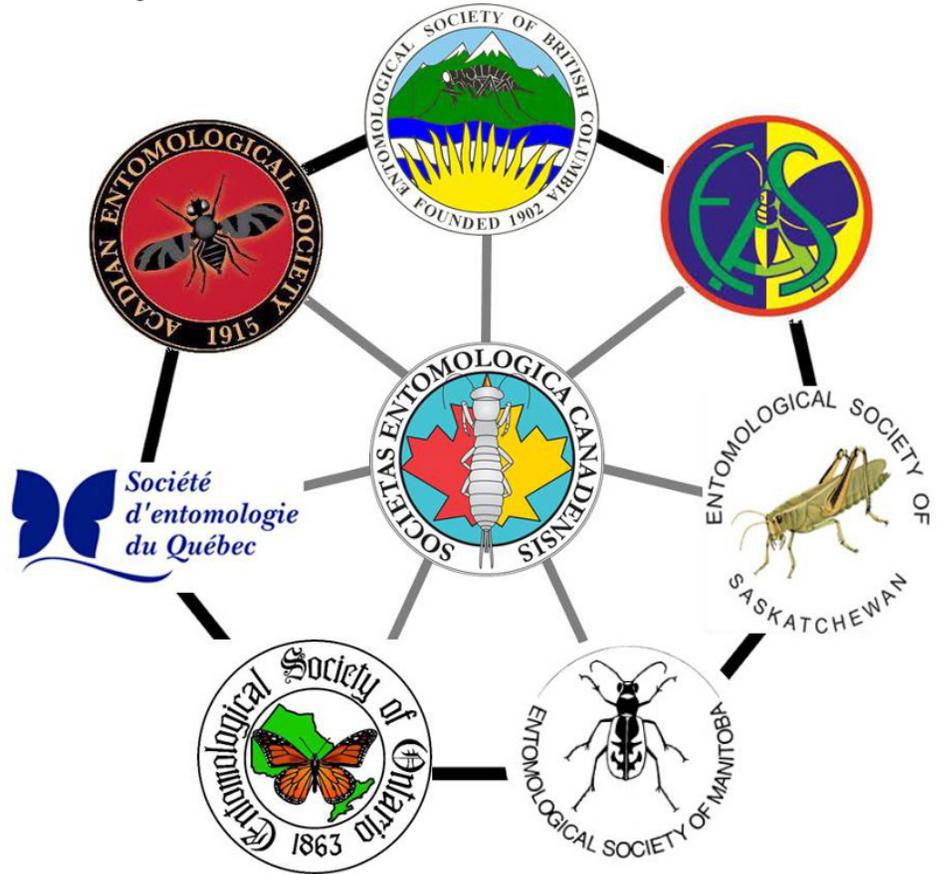
- [Full article on USDA ARS website](#)
- [Full article at Journal of Insect Physiology](#)
- [More information on USDA-ARS](#)

Save the Dates! for the following upcoming opportunities to present and engage in entomology.

- The National Grasshopper Management Board (NGMB) Meeting will be held February 3-5, 2026. This will be a virtual and free admission meeting. If you wish to attend, please register, so meeting links can be sent to you on February 2nd. The agenda is still being determined, so be sure to check the [webpage](#) for updates.
- The Entomological Society of

America (ESA) Branches host meetings annually in various locations within their territories. Here is the list of upcoming Branch meeting locations:

Branch	Dates	Location
Eastern	March 14-17	Saratoga Springs, NY
International	April 27-29	Virtual
North Central	April 19-22	Des Moines, IA
Pacific	April 12-15	Spokane, WA
Southeastern	March 8-11	Hilton Head, SC
Southwestern	March 29-April 1	Amarillo, TX



- The Entomological Society of Canada is affiliated with seven regional entomological societies who host annual meetings at various locations within their territories. Below is a list of upcoming Canadian regional society meetings:

1. Entomological Society of British Columbia—annual meeting is usually in October; check the website for more details here: <https://entsocbc.ca/meetings/>
2. Entomological Society of Alberta—annual meeting is usually in fall; check the website for more details here: <https://entsocalberta.ca/>
3. Entomological Society of Saskatchewan—meetings typically in spring and fall; check the website for more details here: <https://>

4. Entomological society of Manitoba—the 2026 ESC-ESM Annual General Meeting will be held October 4-7 in Winnipeg; check the website for more details here: <https://entsocmb.ca/>
5. Entomological Society of Ontario—meetings typically in fall; check the website for more details here: <https://www.entsocont.ca/>
6. Entomological Society of Quebec—meetings typically in fall; check the website for more details here: <https://seq.ca/>
7. The Acadian Entomological Society—next AES meeting will take place June 18-20 at St. Francis Xavier University, Antigonish, Nova Scotia; check the website for more details here: <https://www.acadianes.ca/>

Theodore J. Cohn Research Fund Reports

The Effect of Juvenile Acoustic Environment on Male *Gryllus pennsylvanicus* Calling Song

By TROY A. BOWERS¹ AND SUSAN N. GERSHMAN^{1,2}

¹Department of Evolution, Ecology, and Organismal Biology
The Ohio State University
Columbus, OH, USA
bowers.545@osu.edu

²Department of Evolution, Ecology, and Organismal Biology
The Ohio State University at Marion
Marion, OH, USA

In insects that use acoustic signals for mate attraction, novel sources of noise, such as traffic and introduced species, are potentially disruptive to the communication of male sexually selected signals. Male *Oecanthus pellucens* tree crickets reduce calling effort in the presence of traffic noise (Orci et al., 2016). Other *Oecanthus* tree cricket species demonstrate a reluctance to begin singing when exposed to traffic noise (Costello & Symes, 2014). Field crickets, tree crickets, and sword-tail crickets all show pauses in singing activity during periods of high anthropogenic noise (Duarte et al., 2019). Such reductions in singing may be a way to adaptively regulate energy expenditure in a noisy environment (Orci et al., 2016).

The effect of introduced species on male song has not been previously studied in insects but has been examined in vertebrates. In the white-banded tree frog, the introduction of the American bullfrog, an acoustic competitor, caused the native frog to modify its calling song (Both & Grant, 2012). The introduction of the invasive cane toad and other anthropogenic noises caused fluctuations in native marbled frog calling rate and changes to other song characteristics (Bleach et al., 2015). Black-throated finches reduce calling effort when exposed to song of the invasive common myna (Hopkins et al., 2021). Changes to song frequency or effort with novel noise can allow signaling males to avoid wasting energy in the presence of possible masking noise sources.

However, such modifications may result in reduced fitness for signalers that depend on the clarity or attractiveness of their normal signal.

Previous studies have demonstrated that nymphal crickets may use acoustic cues in their environment as an indicator of adult environment and modify life-history traits or behaviors adaptively (Bailey et al., 2010; Kasumovic et al., 2011, 2012). *Teleogryllus oceanicus* field crickets raised with conspecific song developed more reproductive tissue mass and higher immune defense, traits that could be beneficial in a high-density environment (Bailey et al., 2010, 2011). Male *Teleogryllus commodus* field crickets raised in acoustic environments simulating low conspecific competition demonstrated increased calling effort as adults (Kasumovic et al., 2011).

Anthropogenic noise during development has been found to cause changes to life history traits, and female mate-searching behaviors (Gurule-Small & Tinghitella, 2018; Gurule-Small & Tinghitella, 2019 but see Welsh et al., 2023). These non-adaptive changes include reduced adult lifespan, increased development time, and a reduction in the ability of females to locate calling males (Gurule-Small & Tinghitella, 2018; Gurule-Small &

Tinghitella, 2019). By examining male signalers in addition to the previously studied female receivers, we can better understand how developing under anthropogenic noise affects cricket behaviors and fitness.

With support from the Theodore J. Cohn Research Fund we investigated how novel noise during juvenile development modifies the singing behaviors of adult male crickets. *Gryllus pennsylvanicus*, the fall field cricket, is commonly found near roadways and also shares habitats with the recently introduced Japanese burrowing cricket, *Velarifictorus micado*. In order to test the effects of juvenile exposure to these novel noises, we reared juvenile *G. pennsylvanicus* in one of four sound treatments: conspecific *G. pennsylvanicus* song, heterospecific *Velarifictorus micado* song, traffic noise, and a silent control. At adulthood, we recorded overall male calling effort (Figure 1), defined as the total amount of time spent singing, as well as proportion of males that



Figure 1. Overall male calling effort

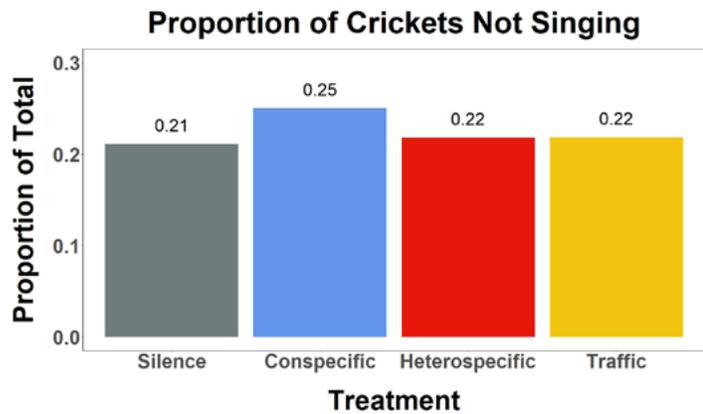


Figure 2. Proportion of crickets not singing

did not sing at all (Figure 2). We then analyzed these song characteristics using a linear mixed-effects model, with body size (pronotum width) as a covariate and replicate as a random effect.

To test the effect of conspecific exposure during development we compared individuals raised with conspecific song to those raised under silence. We found no effect of treatment on calling effort (LME Estimate = -532.85, SE = 293.21, $t(100.97) = -1.817$, $p = 0.0721$) or proportion of individuals singing (LME Estimate = -0.1923, SE = 0.4139, $z = -0.464$, $p = 0.642$). We compared juveniles raised with traffic noise to juveniles from the silence treatment to examine how exposure to anthropogenic sound effected adult singing behavior and we again found that there was no difference in effort (LME Estimate = -312, SE = 276.7, $t(103) = -1.128$, $p = 0.262$) or likelihood to sing (LME Estimate = -0.023, SE = 0.423, $z = -0.055$, $p = 0.9564$). Finally, to investigate how the presence of an introduced signaler affected developing crickets we compared individuals from the *V. micado* treatment and our silent treatment. Similarly to our previous results, we found that there was no difference in calling effort (LME Estimate = -390.86, SE = 278.34, $t(108.72) = -1.404$, $p = 0.163$) or singing proportion between the two treatments (LME Estimate = -0.0047, SE = 0.408, $z = -0.012$, $p = 0.991$).

Our results suggest that neither the

presence of anthropogenic noise, conspecific song, or introduced species song during development affects the adult singing behavior of *G. pennsylvanicus* males. It is possible that juvenile *G. pennsylvanicus* may not use conspecific signals as indicators of future adult environment. Alternatively, exposure to sexual signals as an adult may be more influential to male calling behavior than exposure as a juvenile. Swanger and Zuk (2015) found that signals experienced as an adult were more influential to female *Teleogryllus oceanicus* behaviors than signals experienced as a juvenile (Swanger & Zuk, 2015). The lack of response to either heterospecific song or traffic sound may be maladaptive to male fitness. However, it is also possible that we have overestimated the impact of heterospecifics and traffic sound on fitness in *G. pennsylvanicus*. In the wild, *G. pennsylvanicus* adults can be found singing near both heavily trafficked roadways as well as in close proximity to calling *V. micado*. This indicates that *G. pennsylvanicus* are able to persist in the presence of these disturbances. If these sounds do not negatively affect the clarity of male song or the ability of females to locate signaling males, then there is little adaptive benefit to changing song characteristics in response to these novel sounds. Our work starts to address the question of how acoustically signaling insects respond to introduced orthopterans in their environment. We plan to build upon our research in this system to better understand how these species interact with each other, and how heterospecific song affects female behavior.

Acknowledgements

This material is based upon work suppor-

ted by the National Science Foundation Graduate Research Fellowship Program under Grant No. DGE-1343012. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the authors and do not necessarily reflect the views of the National Science Foundation. Additional funding was provided by the Theodore J. Cohn Research Fund from the Orthopterists' Society. We would also like to thank undergraduate researchers Alyssa Zeno, Hannah Geyer, Christina Barba, and Anne Pan.

References

Bailey, N. W., Gray, B., & Zuk, M. (2010). Acoustic Experience Shapes Alternative Mating Tactics and Reproductive Investment in Male Field Crickets. *Current Biology*, 20(9), 845–849. <https://doi.org/10.1016/j.cub.2010.02.063>

Bailey, N. W., Gray, B., & Zuk, M. (2011). Exposure to sexual signals during rearing increases immune defence in adult field crickets. *Biology Letters*, 7(2), 217–220. <https://doi.org/10.1098/rsbl.2010.0659>

Bleach, I. T., Beckmann, C., Both, C., Brown, G. P., & Shine, R. (2015). Noisy neighbours at the frog pond: Effects of invasive cane toads on the calling behaviour of native Australian frogs. *Behavioral Ecology and Sociobiology*, 69(4), 675–683. <https://doi.org/10.1007/s00265-015-1879-z>

Both, C., & Grant, T. (2012). Biological invasions and the acoustic niche: The effect of bullfrog calls on the acoustic signals of white-banded tree frogs. *Biology Letters*, 8, 714–716. <https://doi.org/10.1098/rsbl.2012.0412>

Costello, R. A., & Symes, L. B. (2014). Effects of anthropogenic noise on male signaling behaviour and female phonotaxis in *Oecanthus* tree crickets. *Animal Behaviour*, 95, 15–22. <https://doi.org/10.1016/j.anbehav.2014.05.009>

Duarte, M. H. L., Caliani, E. P., Scarpelli, M. D. A., Lobregat, G. O., Young, R. J., & Sousa-Lima, R. S. (2019). Effects of mining truck traffic on cricket calling activity. *The Journal of the Acoustical Society of America*, 146(1), 656–664. <https://doi.org/10.1121/1.5119125>

Gurule-Small, G. A., & Tinghitella, R. M. (2018). Developmental experience with anthropogenic noise hinders adult mate location in an acoustically signalling invertebrate. *Biology Letters*, 14(2), 20170714. <https://doi.org/10.1098/rsbl.2017.0714>

Gurule-Small, G. A., & Tinghitella, R. M. (2019). Life history consequences of developing in anthropogenic noise. *Global Change Biology*, 25(6), 1957–1966. <https://doi.org/10.1111/gcb.14610>

Hopkins, J. M., Edwards, W., Laguna, J. M., & Schwarzkopf, L. (2021). An endangered bird calls less when invasive birds are calling. *Journal of Avian Biology*, 52(1). <https://doi.org/10.1111/jav.02642>

Kasumovic, M. M., Hall, M. D., & Brooks, R. C. (2012). The juvenile social environment introduces variation in the choice and expression of sexually selected traits: Socially Induced Variation in Traits. *Ecology and Evolution*, 2(5), 1036–1047. <https://doi.org/10.1002/ece3.230>

Kasumovic, M. M., Hall, M. D., Try, H., & Brooks, R. C. (2011). The importance of listening: Juvenile allocation shifts in response to acoustic cues of the social environment. *Journal of Evolutionary Biology*, 24(6), 1325–1334. <https://doi.org/10.1111/j.1420-9101.2011.02267.x>

Orci, K. M., Petróczki, K., & Barta, Z. (2016). Instantaneous song modification in response to fluctuating traffic noise in the tree crick-

et *Oecanthus pellucens*. *Animal Behaviour*, 112, 187–194. <https://doi.org/10.1016/j.anbehav.2015.12.008>

Swanger, E., & Zuk, M. (2015). Cricket Responses to Sexual Signals are Influenced More by Adult than Juvenile Experiences. *Journal of Insect Behavior*, 28(3), 328–337. <https://doi.org/10.1007/s10905-015-9504-6>

Phylogeography of a Recently Discovered Genus of Melanoplinae (Orthoptera: Acrididae) from Mexico

By JOSÉ DAVID GÓMEZ TAPIA

Laboratory of Ecology, UBIPRO, Faculty of Higher Studies
Iztacala National Autonomous University of Mexico
Tlalnepantla, Edo. Mex, MEXICO
418096112@iztacala.unam.mx

O*axaca* is a genus of grasshoppers belonging to the subfamily Melanoplinae, recently discovered and endemic to the southwestern region of Mexico. It comprises a diversity of six described species (Fontana et al., 2011; Aguilar-Roldán et al., 2024).

The species within the *Oaxaca* genus are distributed across the biogeographical provinces of the Pacific Coast and the Sierra Madre del Sur, spanning the states of Jalisco and Oaxaca, across an altitudinal gradient ranging from sea level to 1,337 meters above sea level. They inhabit dry tropical forests, montane forests, and pine-oak woodlands (Aguilar-Roldán et al., 2024). Due to the genus's recent discovery, there are few studies concerning its evolutionary history (Gómez-Tapia, 2023; Sanabria-Urban & Gómez-Tapia, in review). Consequently, it remains unknown whether *Oaxaca* constitutes a monophyletic group, as well as the evolutionary relationships among its species, their divergence times, and the phenomena associated with their diversification. Given the limited knowledge of the evolutionary history of the genus, it presents an excellent model for investigating how climatic and geological history have influenced speciation processes in Orthoptera of southwestern Mexico, especially considering the region's

rich biodiversity and high endemism rates among various organismal groups (Pringle et al., 2012; Johnson et al., 2017; De-Nova et al., 2011).

What we did

Thanks to the financial support provided by The Orthopterists Society through the Theodore J. Cohn Research Fund, several objectives of this research endeavor were successfully accomplished.

Taxon Sampling

Due to adverse climatic conditions over the past two years, sampling in the southwestern region of Mexico has been a challenging endeavor. Nonetheless, thanks to the support provided, two collecting expeditions were financed to the states of Guerrero, Michoacán, Jalisco, and Colima (Figure 1). These expeditions resulted in an increase in the number of recorded populations for the six recognized species of *Oaxaca* (Figure 2), as well as the discovery of four novel taxa tentatively proposed

as new species within the genus.

Molecular work

On the other hand, a part of the financial resources was allocated toward acquiring genetic data from a subset of the collected specimens. To date, a total of 179 nucleotide sequences have been successfully obtained, encompassing the genomic regions CO1, CO2, 16S, and ITS1, which have been extensively employed in past phylogenetic analysis of various groups of Orthoptera (Amedegnato

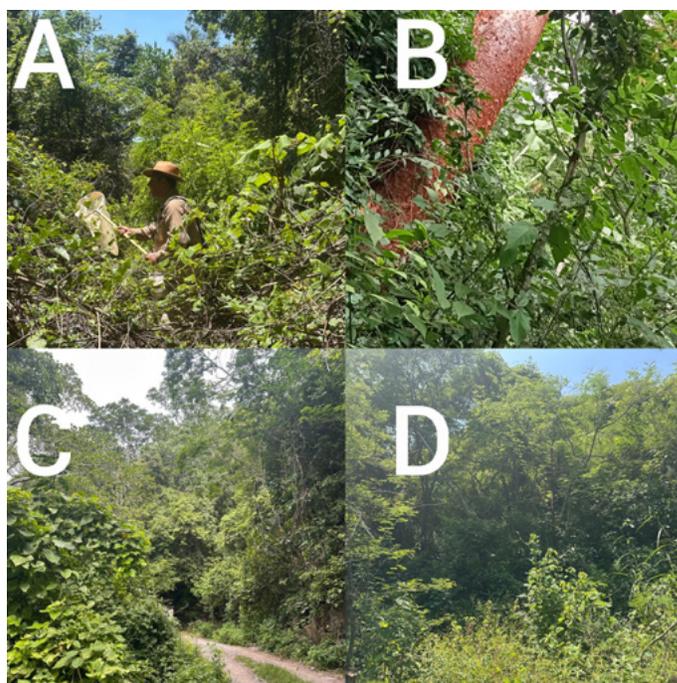


Figure 1. Field trips to seasonal tropical deciduous forests. A) Michoacán State; B) Colima State C) Jalisco State; D) Guerrero State.



Figure 2. Specimens of subgenus *Paraoxaca* collected during the field trips.

et al., 2003; Knowles, 2001; Chintahuan-Marquier et al., 2011). From these sequences, a total genetic evidence database was created, comprising a total length of 2,422 bp.

Phylogenetic analysis

Based on the Maximum Likelihood

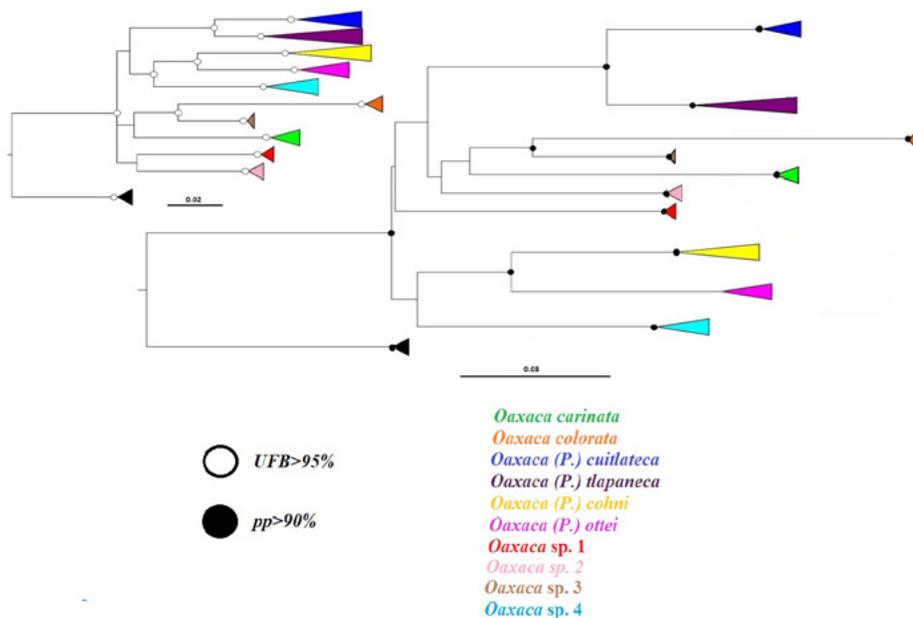


Figure 3. Preliminary phylogenetic reconstructions among species of the genus *Oaxaca* inferred from the genetic evidence matrix. The phylogeny based on the IB method is presented in a condensed form, with the principal clades aggregated at the upper left corner; conversely, the phylogeny derived from the ML method is displayed in an expanded layout. Each species is distinguished by a unique color, consistent for both phylogenies. Black and white circles indicates nodes with high support values—UFB 95% and posterior probability surpassing 90%, respectively. Horizontal bars represent the number of substitutions per site

and Bayesian Inference analyses applied to the data matrix, a pair of preliminary phylogenies were obtained (Figure 3). These phylogenies have begun to shed light on the evolutionary relationships among the species that constitute the genus. These preliminary phylogenies have tentatively validated the monophyly of *Oaxaca*, as well as that of its species. However, the phylogenetic relationships inferred within the genus remain unresolved.

Although the results of this investigation are still in an early stage, they hold significant importance for advancing the understanding of the evolutionary history of the genus *Oaxaca*. As the most robust phylogeny developed for this genus to date, these findings seem to suggest a classification

scheme that differs from the one proposed by Aguilar-Roldán et al. (2024). Moreover, the obtained phylogenies highlight the necessity for more rigorous analyses to produce a fully resolved phylogeny in order to accurately estimate divergence times among the species within the genus. Such estimations could be achieved by analyzing mitochondrial mutation rates estimated for orthopterans (Shapiro et al., 2006; Chang et al., 2020) through Bayesian coalescent methods, thereby enabling the correlation of past geological events with divergence processes within the species of the genus *Oaxaca*.

References Cited

Aguilar-Roldán, C. A., Gómez-Tapia, J. D., Marino-Perez, R., Song, H., Vázquez-Reyes, L. D., & Sanabria-Urbán, S. (2024). Studies in Mexican grasshoppers: four new species of the genus *Oaxaca* Fontana, Buzzetti & Mariño-Pérez, 2011 with the erection of the subgenus *Paraoxaca* (Caelifera: Acrididae: Melanoplinae). *Zootaxa*, 5486(4), 499-538.

Amedegnato, C., Chapco, W., Litzenberger, G. (2003). Out of South America? Additional evidence for a southern origin of melanopline grasshoppers. *Molecular Phylogenetics and Evolution*, 29(1), 115-119.

Chang, H., Qiu, Z., Yuan, H., Wang, X., Li, X., Sun, H., ... & Huang, Y. (2020). Evolutionary rates of and selective constraints on the mitochondrial genomes of Orthoptera insects with different wing types. *Molecular Phylogenetics and Evolution*, 145, 106734.

Chintahuan-Marquier I. C., Jordan S., Berthier P., Amédégnato C. & Pompanon, F. 2011. Evolutionary history and taxonomy of a short-horned grasshopper subfamily: The Melanoplinae (Orthoptera, Acrididae). *Molecular Phylogenetics and Evolution* 58(1): 22–32

De-Nova, J. A., Medina, R., Montero, J. C., Weeks, A., Rosell, J. A., Olson, M. E., ... & Magallón, S. (2011). Insights into the historical construction of species-rich Mesoamerican seasonally dry tropical forests: the diversification of *Bursera* (Burseraceae, Sapindales). *New Phytologist*, 193(1), 276-287.

Fontana, P., Buzzetti, F. M., & Marino-Perez, R. (2011). New acrididae from Oaxaca state in Mexico (Orthoptera: caelifera: acrididae: Ommatolampinae, Melanoplinae). *Zootaxa*, 2862(1), 39-55.

Gándara, E., Specht, C. D., & Sosa, V. (2014). Origin and diversification of the Milla Clade

(Brodiaeoideae, Asparagaceae): a Neotropical group of six geophytic genera. *Molecular Phylogenetics and Evolution*, 75, 118-125.

Gómez-Tapia J. D. (2023) Relaciones filogenéticas de los Chapulines Melanoplinos Mexicanos. Tesis de Licenciatura. Universidad

Nacional Autónoma de México. México.

Knowles, L. L. (2001). Did the Pleistocene glaciations promote divergence? Tests of explicit refugial models in montane grasshoppers. *Molecular Ecology*, 10(3), 691-701.

Shapiro, L. H., Strazanac, J. S., & Roderick, G.

K. (2006). Molecular phylogeny of Banza (Orthoptera: Tettigoniidae), the endemic katydid of the Hawaiian Archipelago. *Molecular Phylogenetics and Evolution*, 41(1), 53-63.

Contributed Articles

Taxonomy, distribution and phylogeography of short-winged Orthoptera in the Aegean

By **JOS TILMANS**

Member of the Survey Programme short-winged Orthoptera in the Aegean
jos.tilmans@adactio.nl

Research on Orthoptera in the Aegean area has a long history of taxonomic and faunistic publications already, starting in the 19th century with authors like Brunner von Wattenwyl, Fieber, Fischer, and Lucas. In the first half of the last century the number of taxa described from the Aegean rapidly increased by publications from Werner, Ramme, Menozzi, Salfi, Jannone, Chopard, and Kuthy. During the second half of that century the number of new authors specialising in Orthoptera of the Mediterranean area grew considerably: Harz, Heller, Nadig, Bacetti, Massa, Soltani, Karabağ, and Fer Willemse. This led to the description of many new, often endemic, species. Over the last 25 years this development didn't stop and with the use of DNA techniques and bioacoustic analyses our studies got an extra boost towards trying to obtain a clearer view on systematics and phylogeography of the Orthoptera present on the islands in this particular part of the Mediterranean.

However, our knowledge of distribution patterns and taxonomy of some genera, mostly short-winged, is still poor due to insufficient data, combined with the fact that several taxa are described from only a few, sometimes nymphal, specimens, often nearly 100 years old and therefore not fit for accurate DNA analysis. This brought the present author (independent research-

er), Dragan Chobanov, Simeon Borissov, and Nefeli Kotitsa (members of the Institute of Biodiversity and Ecosystem Research, Bulgarian Academy of Sciences), Apostolos Trichas (Natural History Museum of Crete, University of Crete), and Baudewijn Odé (independent bioacoustics researcher) to the idea to start a survey programme on short-winged Orthoptera to fill in the present gaps by collecting new material in the Aegean and bring together the morphological, molecular, and bioacoustical disciplines for new analyses. The Directorate of Forest Management of the Greek Ministry for Environment and Energy generously granted a permit for 2025 and 2026 to collect Orthoptera material on the Greek islands in the Aegean and the neighbouring parts of continental Greece, while the KP-

-06-N81/5-04.12.2024 by the National Science Fund (MES) of Bulgaria to Dragan Chobanov is partly funding the DNA-analyses.

In the year 2025 the author visited most of the Greek islands in the eastern part of the Aegean area to collect orthopterans with a special focus on material of *Rhacocleis* that is in most need for a thorough study, even more because any DNA analysis on this genus is lacking for the Aegean. On most of the visited islands *Rhacocleis* nymphs were collected, and then taken home and reared to adulthood; many of them were still alive by Christmas 2025. Song recordings, DNA-samples, and macro- and microscope photographs were taken and will be analysed in the first half of 2026. Furthermore, the 2026 season will be used to collect material on the



Figure. Male of the *Saga* species found on Samos in 2025

islands situated in the western part of the Aegean in order to be able to carry out a complete research on all taxa of this genus present in this region. As in 2025, *Rhacocleis* specimens were collected on the islands of Limnos and Kalimnos, and it is most likely that conclusions can now be drawn on the true systematic status of *Rhacocleis agiostratica* Werner, 1937, and *Rhacocleis uvarovi* Ramme, 1939, both currently listed as data-deficient taxa on the IUCN-redlist for Orthoptera. With the material and data available

by the end 2026 we plan to prepare a manuscript with the results and conclusions in 2027. But we invite members of the Orthopterists' Society who possess additional information on *Rhacocleis* of the Aegean to share their data with us in enriching the new knowledge even more.

At this moment, an interesting result can already be reported. During the collecting trip to the Greek islands in the eastern part of the Aegean in 2025, a male and female nymph of a *Saga* species (Tettigoniidae: Saginae)

were collected on Samos. *Saga nato-liae* Serville, 1838, is known from this island, but when both nymphs became fully grown they showed a quite small body size and do not actually belong to that taxon based on morphological traits. The specimens are still being studied, via DNA analysis and bioacoustics (article is in preparation), but most likely belong to *Saga puella* Werner, 1901, an endemic taxon described from neighbouring Turkey.

A Hidden Lineage Revealed: Forty Years of Research Uncover a New African Grasshopper Family

By **CLAUDIA HEMP**

Department of Plant Systematics, University of Bayreuth
Bayreuth, GERMANY
claudia.hemp@uni-bayreuth.de

The discovery of a new grasshopper family from Africa, the Ixalidiidae Hemp, Song & Ritchie, 2025, marks the culmination of over four decades of research stretching from the laboratories of the UK to the forests of East Africa.

The study, the most comprehensive molecular phylogeny of the Acridomorpha ever produced, shows that several African genera previously assigned to the widespread family *Acrididae* actually form a distinct, previously unrecognized lineage. This new family, comprising the genera *Mazaea*, *Barombia*, *Ixalidium*, *Tangana*, and *Rowellacris* Ritchie & Hemp, 2025 (Fig. 1), inhabits the montane and coastal forests of Tanzania and Kenya, as well as the tropical forests of West and Central Africa.

From early fieldwork to modern genomics

The roots of this discovery reach back to the 1980s, when Nicholas D. Jago at the UK's Natural Resources Institute (NRI) led a long-term effort to revise the Acridoidea of East and Northeast Africa. His goal: to produce an identification handbook for the



Figure 1. *Rowellacris usambaricum* pair from the type locality, the former Muafa in the West Usambara Mountains. Rediscovering this historic site was a strenuous and time-consuming process, relying on local knowledge of old place names to accurately identify the area where the type specimens originated. Ixalidiidae are generally dull-colored and well-camouflaged in leaf litter, their preferred habitat in forests and plantations, where they can also persist in human-altered environments.

region's grasshopper fauna. After Jago's retirement in 1996, acridological research at NRI ceased, and a detailed morphotaxonomic study of the enigmatic forest genus *Ixalidium* (Fig. 2) by Mark Ritchie had to be suspended.

Meanwhile, from 1989-onward, Claudia and Andreas Hemp at Bayreuth University began extensive

ecological studies on Orthoptera of Mt. Kilimanjaro. Their work yielded many Ixalidiidae specimens from inland volcanoes, such as Kilimanjaro, Meru, and Mt. Kenya, but also from the Eastern Arc Mountains and coastal Kenya and Tanzania: small, flightless species that were notoriously difficult to tell apart due to their uniform,



Figure 2. Unusually colored female of *Ixalidium haematocelis* from the Taita Hills, Kenya, with a striking yellow dorsal surface.



Figure 3. Unusually colored female of *Tangana asymmetrica* from Kazimzumbwi Forest near Dar es Salaam, Tanzania, showing a red-brown coloration on the anterior part of the body and light brown on the abdomen.



Figure 4. *Rowellacris obscuripes* males and females in a container used to study mating behavior. Both males and females of the genera *Rowellacris* and *Tangana* perform rhythmic “drumming” by striking their hind legs on the ground to attract partners. This drumming behavior was not observed in species of the genus *Ixalidium*.

nymph-like appearance.

By 2010, the advent of molecular techniques opened new doors. Encouraged by earlier success with East African Lentulidae and other groups, Claudia Hemp began collecting fresh Ixalidiidae material for genomic sequencing by Hojun Song in the United States. Their collaboration laid the foundation for the current phylogenomic study, which integrates molecular data (Hojun Song, Jackson Linde, Onur Uluar) with morphology (Mark Ritchie, Maria Marta Cigliano), cytogenetics (Elzbieta Warchalowska-Sliwa, Beata Grzywacz), and bioacoustics (Klaus-Gerhard Heller).

Museums, Grants, and the Power of Old Collections

Natural history museums have proven invaluable in resolving long-standing taxonomic problems, such as those involving the Ixalidiidae. Historical collections provide unique records of past distributions, including many

species that have since become rare or possibly extinct. Recent advances in molecular techniques now allow the extraction of DNA from old, dry specimens, making it possible to test phylogenetic hypotheses even when fresh material is unavailable.

Large parts of the historical *Ixalidium* material are housed in major European museums. The Muséum National d’Histoire Naturelle (MNHN) in Paris holds the most complete collection of Ixalidiidae from West and Central Africa, while significant material, especially from East Africa, is also preserved at the Natural History Museum (NHM), London, where a research team led by Dr. Ben Price is currently working on the molecular systematics of Orthoptera, including Ixalidiidae. Ongoing work at the NHM offers the exciting prospect that yet-unstudied African species could help complete the phylogenetic framework and clarify biogeographical relationships within the group.

This study was supported by the SYNTHESYS+ Project (<https://www.synthesys.info>), an EU-funded initiative providing researchers access to European natural history collections. In addition, two grants from the Orthoptera Species File considerably supported Claudia Hemp’s fieldwork in East Africa, enabling intensive and targeted sampling of Ixalidiidae across multiple habitats. A one-month research stay at the MNHN in Paris, generously offered by Laure Desutter-Grandcolas and the Museum, allowed Claudia Hemp to study the exceptional collections in detail. She expressed her deep gratitude for this invitation and for the invaluable opportunity to examine such a wealth of historical material firsthand. Supplementary fresh material from Cameroon, collected by Charly Oumarou Ngoute, further strengthened the molecular dataset.

Completing Jago’s unfinished legacy

Following Jago’s death in 2005, Hugh Rowell and Claudia Hemp took

up the task of finishing his handbook project, now titled *Jago's Grasshoppers of East and Northeast Africa*. Five volumes have already been published, with the sixth awaiting this now-published paper to provide the missing phylogenetic framework for the new family, Ixalidiidae.

Results and Phylogenetic Implications

The combined data allowed a comprehensive phylogenetic reconstruc-

tion, confirming that *Mazaea*, *Ixalidium*, *Tangana* (Fig. 3), and *Rowellacris* (Fig. 4) form a monophyletic, family-level group, here described as Ixalidiidae, to which *Barombia* Karsch is added on morphological grounds. This represents the first new caeliferan family primarily supported by molecular phylogenetic evidence, complemented by morphology.

The inclusion of newly generated molecular data and museum specimens revealed that West African taxa

occupy the basal positions within Ixalidiidae, a pattern consistent with a Gondwanan biogeographical link to South American relatives, such as the Tristiridae Rehn, 1906, which appear as the potential sister lineage. This highlights not only the evolutionary significance of the family but also the indispensable role of historical collections and collaborative research networks in uncovering hidden biodiversity.

Training in Biology and Identification of Neotropical Grasshoppers (Orthoptera: Caelifera) at Universidade Federal de Uberlândia, Minas Gerais, Brazil

By DANIELA SANTOS MARTINS SILVA^{1*} & ALAN NILO DA COSTA²

¹Departamento de Biologia Geral, Universidade Federal de Viçosa, Viçosa, Minas Gerais, BRAZIL
danielasantos.biology@gmail.com

*Grasshoppers from Brazil Project

²Instituto de Biologia, Universidade Federal de Uberlândia Uberlândia, Minas Gerais, BRAZIL

During the spring season in Brazil, we trained undergraduate and graduate students in the **Biology and Identification of Neotropical Grasshoppers (Orthoptera: Caelifera)** from October 14–17, 2025 in a natural area at the city of Uberlândia, Minas Gerais state (Fig. 1A). As part of the **Grasshoppers from Brazil Project**, one of our central goals is to disseminate knowledge about this insect group through classes and training activities offered at different universities and research institutes (Fig. 1B–D). By engaging students, researchers, and professionals across a range of institutions, the project aims to expand awareness of the ecological importance, diversity, and research potential of Brazilian grasshoppers.

This training was offered within the Ecology Postgraduate Degree Program at the Universidade Federal de Uberlândia, where the registered students traditionally have extensive experience working with ants and spiders as their primary model organisms. The main goal of the course

was to introduce grasshoppers, an insect group with significant potential for advancing ecological research, and to provide students with the tools necessary to identify relevant species to their studies. After introducing the training, we taught a lecture on the main characteristics of Polyneoptera, the phylogenetic placement of this group, and its relationship to Orthoptera, specifically to grasshoppers. Building on this topic, the training progressed to the study of both external and internal morphology, as well as the biological, ecological, and diversity-related aspects of Neotropical grasshoppers.

At this stage, students learned to identify the major families and some subfamilies of Neotropical grasshoppers, with an emphasis on species occurring in the Brazilian Cerrado. After this theoretical part, we carried out two days of fieldwork activities at the Panga Ecological Reserve (19°10'54"S, 48°23'26"W; Fig. 1A), surveying different Cerrado vegetation formations. These activities were designed to help students understand the relationship between various gras-

shopper groups and the substrates or habitats where they occur. During these field days, we encountered several species, including *Ommexechea virens* Serville, 1831; *Eujivarus fusiformis* Bruner, 1911; *Abracris dilecta* Walker, 1870; *Abracris flavolineata* (De Geer, 1773); *Eucephalacris borellii* (Giglio-Tos, 1897); *Adimantus ornaticissimus* (Burmeister, 1838); *Zoniopoda tarsata* (Serville, 1831); and *Abila bolivari* Giglio-Tos, 1900.

Beyond providing technical training, the classes also encouraged students to explore new research possibilities using grasshoppers as ecological model organisms. Many attendees expressed curiosity about ecological patterns, species interactions, functional morphology, and applications in environmental monitoring within the Cerrado biome. These capacity-building initiatives are intended to strengthen taxonomic skills, promote the use of grasshoppers in ecological studies, and encourage the development of new research projects focused on Orthoptera.

Through these efforts, the Grasshoppers from Brazil Project contributes

to expanding national expertise while encouraging a collaborative network dedicated to the study of grasshopper diversity in Brazil. Overall, the training served not only as an introduction to grasshopper diversity but also as a valuable opportunity to inspire a new generation of researchers to investigate the rich Neotropical grasshopper fauna. We expect that the experience gained during the laboratory and fieldwork activities will support future research, enhance regional knowledge of grasshopper taxonomy and ecology, and stimulate long-term interest in this often-understudied group.

Acknowledgements

The activities were benefited from facilities provided by Fapemig (Edital Demanda Universal No 001/2018, APQ-03353-18). We especially thank the Universidade Federal de Uberlândia for allowing access to lab facilities, transporting the class and the fieldwork area.

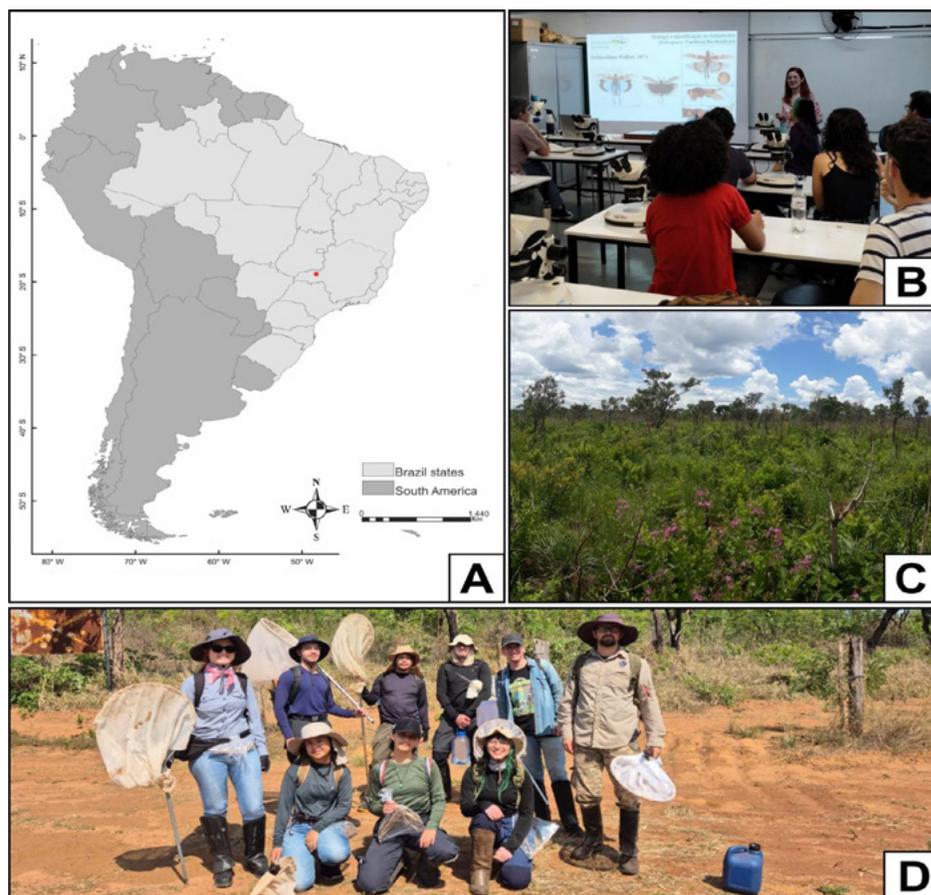


Figure 1. Images of the training in Biology and Identification of Neotropical Grasshoppers (Orthoptera: Caelifera) at the (A) Universidade Federal de Uberlândia, Minas Gerais (red point), with (B) laboratory and (C-D) fieldwork activities.

BOOK REVIEW: Distribution Atlas of Grasshoppers and Praying Mantises in Germany

Edited by Thomas Fartmann and Dominik Poniowski

By **ZOLTÁN KENYERES & NORBERT BAUER**

Acrida Conservational Research L.P., Tapolca, HUNGARY
Department of Botany, Hungarian Natural History Museum, Budapest, HUNGARY
kenyeres@acridabt.hu; bauer.norbert@nhmus.hu

Thomas Fartmann's research team has been conducting extensive studies on the distribution, ecology, and conservation of orthopteran species and communities for many years. With their latest findings, they decided to publish a comprehensive synthesis of the orthopteran fauna of Germany. The richly illustrated and well-edited book provides thorough and concise information, making it a highly valuable resource for any professional interested in this group of insects.

The chapters on Distribution and Habitats are remarkably comprehensive, covering all important aspects and involving a thorough review of the relevant literature. They are sufficiently detailed to familiarize readers with the essential characteristics of this taxon. Given the significant results achieved by the working group associated with the editors, the chapters that explore the main drivers of land use and climate change are especially substantiated.

Orthopterans are known for their close dependence on vegetation and climate. This book stands out by

providing various indicator values for the species examined, including categories such as habitat specificity and mobility (high/low). The Species Farmland Index (SFI) and Species Temperature Index (STI) are based on background data from species distribution maps, and they are crucial for assessing the conservation status and prospects of these species. Further, the authors include Temperature and Moisture values for each species, which describe their microclimate requirements.

Each species is summarized over two pages, featuring a photo of the

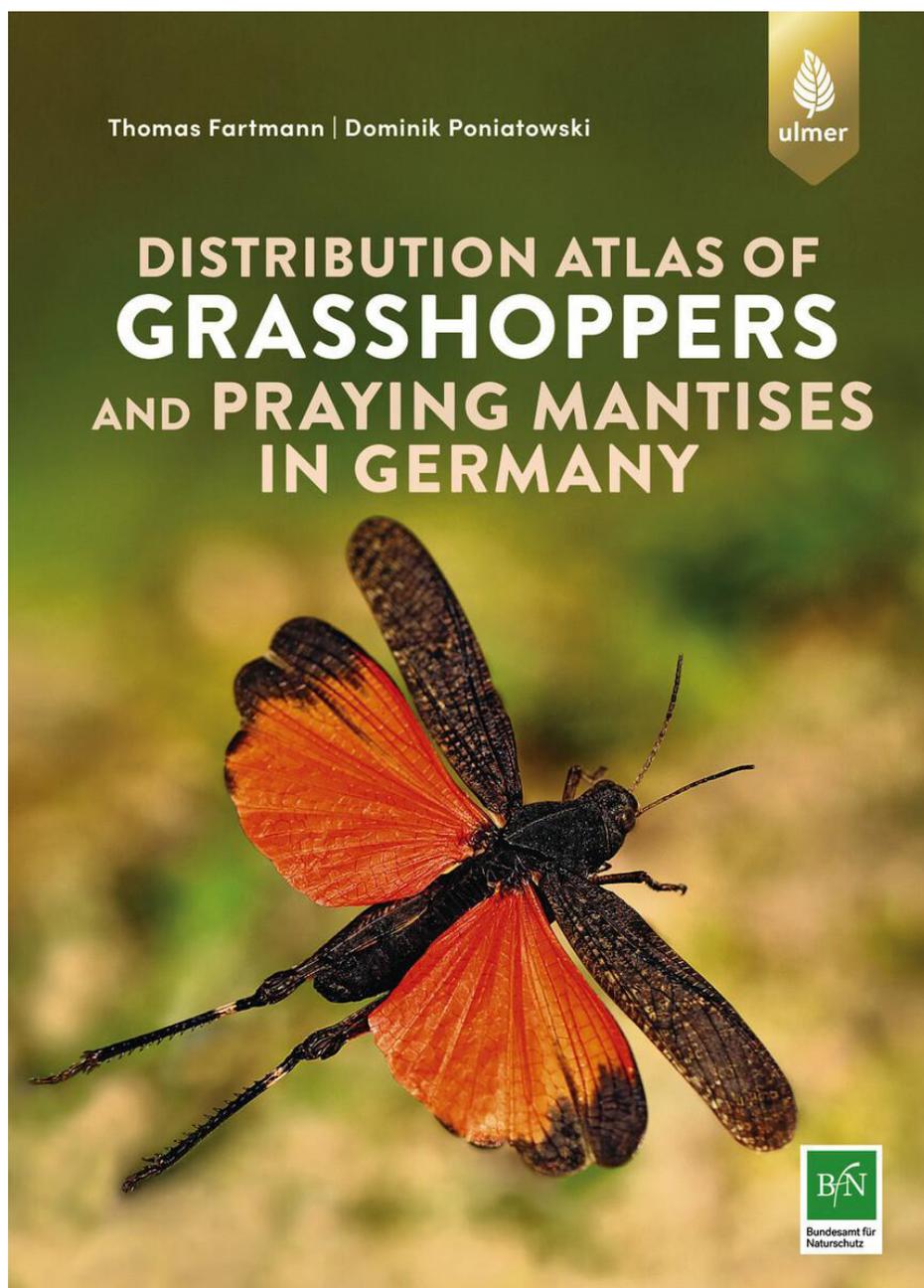
species, a habitat photo, a full-page distribution map, and an icon-based representation of key characteristics (Threat Status, Specificity, Mobility, Trend, STI, SFI). There are also brief descriptions covering Distribution, Habitat, Population Trend, and Threats.

The distribution maps were organized according to the EEA 10×6 geographic minute grid cells. In the species occurrence data, the authors differentiated between the following intervals for each cell: before 1949, 1950–1989, 1990–2009, and since 2010. The chronological presentation illustrates the species' recent range shifts and significantly promotes societal acceptance of nature conservation. The presentation of population trends is informative for attentive readers. This easily understandable information clarifies the concept and effects of climate change, particularly regarding species that are spreading or declining. It underscores the critical role of human land use and emphasizes the social responsibility of land users.

Each species map includes a QR code that links to a live, continuously updated database. The website offers specific data, information about the data reporters, observation times, and additional photos of various species and their habitats.

The book featured contributions from 35 experts and spans 260 pages, illustrated with 201 pictures and 83 distribution maps. The bibliography contains 503 references, supplemented by separate lists of key publications for each species.

The information in the monograph is not only invaluable for developing strategies to conserve orthopteran species in the face of climate change but also modernizes the approach to studying the Orthoptera fauna.



Fartmann, T & Poniatowski D. (ed.) (2025): Distribution Atlas of Grasshoppers and Praying Mantises in Germany, Eugen Ulmer KG, Stuttgart, ISBN: 978-3-8186-25696

Fifteen Years of the Theodore J. Cohn Research Grants (2011–2025): Outcomes, Equity, and Perspectives

By **MICHEL LECOQ**

Manager, The Theodore J. Cohn Research Fund
mlecoq34@gmail.com

Small competitive grants play a disproportionate role in sustaining early-career research in organismal biology, particularly in orthopterology, where fieldwork, taxonomy, and natural history remain fundamental. Within the Orthopterists' Society, the Theodore J. Cohn Research Fund has long served as a key mechanism for supporting students and early career researchers working on Orthoptera and related Polyneoptera. Beyond direct financial support, the Fund contributes to the scientific life of the Society through its close association with *Metaleptea*, which provides a venue for disseminating funded research.

This article presents a retrospective analysis of the Theodore J. Cohn Research Grants from 2011 to 2025. Drawing on application records, award statistics, and publication outcomes, it offers *Metaleptea* readers an overview of the program's achievements, structural limitations, and future prospects.

Overview of the Theodore J. Cohn Research Fund

The Theodore J. Cohn Research Fund supports research projects focusing on Orthoptera and nine additional orders of Polyneoptera (Blattodea, Dermaptera, Embioptera, Grylloblattodea, Mantodea, Mantophasmatodea, Phasmatodea, Plecoptera, and Zoraptera). The program primarily targets Master's and Ph.D. students, although postdoctoral researchers may also be eligible. Applicants must be members in good standing of the Orthopterists' Society.

Throughout the period examined here, the Fund operated with an annual

budget of approximately USD 15,000, with individual awards capped at about USD 1,500. Although modest, these grants are often decisive for enabling fieldwork, travel to collections, or the acquisition of pilot data.

Applications, Awards, and Funding Volume

Between 2011 and 2025, 263 proposals were submitted, of which 144 were funded, corresponding to an overall success rate of approximately 55%. The cumulative financial volume allocated during this period is estimated at around USD 200,000. The maximum individual grant amount has remained largely unchanged over fifteen years, despite inflation and increasing research costs.

Geographic Distribution of Grants

Most awards were allocated in the Americas (88 grants), followed by Europe (23), Asia (15), Oceania (9), and Africa (9). More than 60% of all recipients were therefore based in the Americas. At the national level,

approximately 47% of grants were awarded to U.S.-based universities, although recipients may hold a wide range of nationalities.

Within the United States, awards were unevenly distributed, with a small number of states accounting for a disproportionate share of funded projects, while many states received only a single grant over the entire period.

Socioeconomic Context and Gender Balance

The majority of grant recipients were affiliated with institutions in high income or upper middle income countries. Africa was particularly underrepresented, and no grants were awarded to applicants from low income countries during the period analyzed. These patterns likely reflect broader structural constraints, including limited access to information, institutional support, and international research networks.

With respect to gender, recipients comprise approximately 54.9% men and 45.1% women.

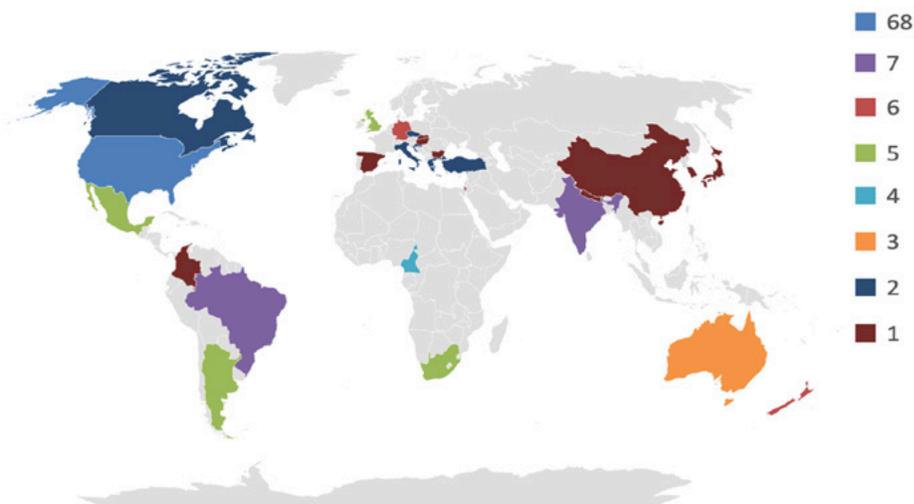


Figure 1. Regional distribution of the T.J. Cohn grants awarded over the period 2011–2025. The color scale indicates the number of grants awarded in each country.

Scientific Output and the Role of *Metaleptea*

A major outcome of the Theodore J. Cohn Research Fund grants is their contribution to *Metaleptea*. Between 2011 and 2025, grant recipients authored 87 articles in the tri-annual newsletter, spanning a wide range of topics, including taxonomy and systematics, bioacoustics, behavioral ecology, sexual selection, conservation biology, physiology, molecular biology, and neuroethology.

This relationship is mutually reinforcing: the grants generate research that feeds directly into *Metaleptea*, while the newsletter enhances the visibility and accessibility of funded work. Together, they support both scientific production and community building within the Orthopterists’ Society. Nevertheless, approximately 40% of funded researchers did not publish an article in *Metaleptea*, despite reminders from the editorial team, indicating the need to strengthen the link between funding and dissemination.

Strengths and Structural Limitations

Over 15 years, the Theodore J. Cohn Research Fund has demonstrated continuity and has supported a substantial number of early career researchers. Its leverage effect is considerable, with relatively small awards enabling projects that yield meaningful scientific outputs. The gender balance among recipients is also more equitable than that observed across the global research community.

At the same time, several structural limitations are evident. Geographic and institutional concentration remains pronounced, with persistent underrepresentation of Africa and some major European research countries. The lack of financial revaluation has progressively reduced the real value of individual grants. Moreover, current selection criteria, while consistent with conventional academic standards, tend to favor applicants from well-resourced institutions, thereby

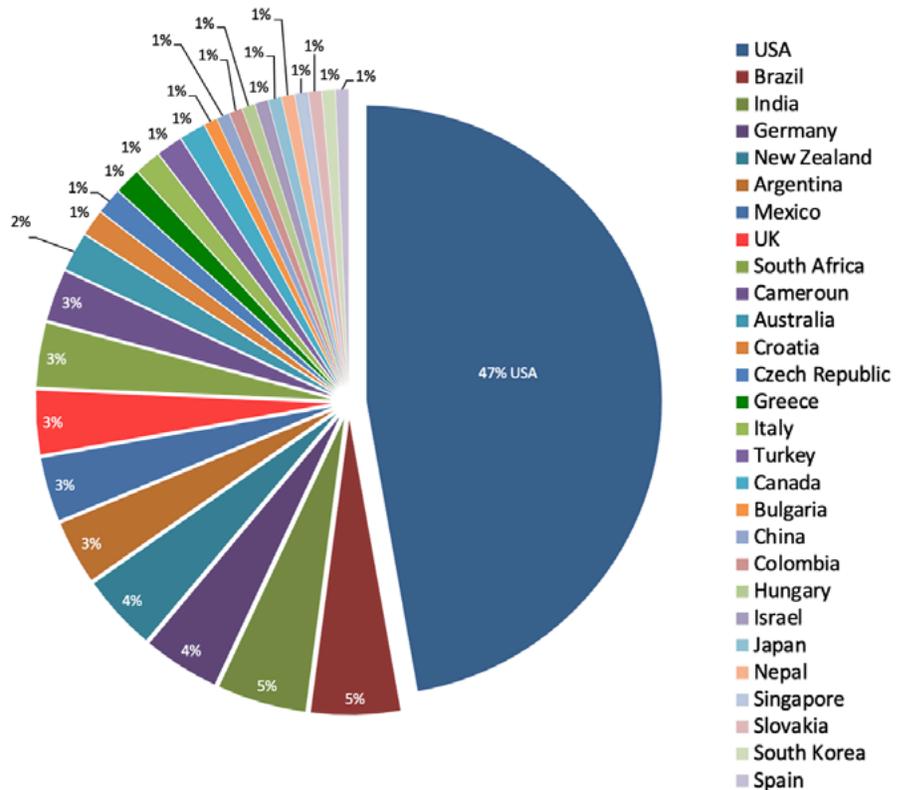


Figure 2. Distribution of the grants per country (2011-2025).

reinforcing existing inequalities. The modest bonus awarded to applicants from developing countries appears insufficient to counterbalance disparities in infrastructure, mentoring, and access to recent techniques. In addition, explicit emphasis on technologically intensive approaches may inadvertently disadvantage high quality field-based, taxonomic, or ecological studies, which remain central to orthopteran research, particularly in understudied regions.

Perspectives and Recommendations

Several measures could enhance the future impact of the Theodore J. Cohn Research Fund. These include increasing the maximum grant amount to preserve purchasing power, strengthening editorial or language support to encourage publication in *Metaleptea*, developing targeted outreach toward underrepresented regions, and revising the evaluation framework to better balance scientific excellence with geographic and socioeconomic equity.

Explicit recognition of the scientific and strategic value of low-cost, field-oriented, and capacity-building

projects, alongside consideration of expected scientific or conservation impact, would further align the Fund with the mission of the Orthopterists’ Society.

Conclusion

The Theodore J. Cohn Research Grants represent a core instrument for supporting early career research on Orthoptera and related Polyneoptera and for sustaining the scientific vitality of the Orthopterists’ Society. While the program has achieved notable successes in terms of continuity and scholarly output, its broader transformative potential is constrained by persistent geographic and institutional imbalances, and by the erosion of grant value over time.

Addressing these challenges through targeted financial adjustments, outreach, and refinement of selection criteria would strengthen the Fund’s role as a more inclusive and globally representative mechanism for advancing orthopteran research. This remains a central challenge for the future of the Theodore J. Cohn Research Fund and the Orthopterists’ Society.

Treasurer's Report

By **PAMELA MIHM**

Treasurer

p.mihm@regency-multifamily.com

The Statement of Assets as of December 31, 2025 and the 2025 Summary of Cash Receipts and Expenditures are shown below. The Orthoptera Species File (funded by an endowment from the University of Illinois) and publishing the *Journal of Orthoptera Research (JOR)* are the two largest uses of resources. The Orthopterists' Society also contributed \$22,425 to running the 2026 ICO, as well as provided travel grants to selected Congress attendees. The Society's total assets increased from \$1.8 million at the end of 2024 to \$1.96 million at the end of 2025. During 2025, the Society's investments were combined at Wells Fargo where they will be actively managed by investment professionals. This move will help ensure the best long term growth and income potential from the investments. If you have any questions, please contact me at p.mihm@regency-multifamily.com.

Orthopterists' Society Statement of Cash Receipts and Expenditures (1/1/25 through 12/31/25)

Cash Receipts

Dues	\$3,205.00
Publications	595.00
Community Foundation endowment	9,234.70
Royalty and revenue sharing	4,627.07
Book reimbursements	75.63
Company of Biologists grant	1,682.35
Transfer cash from Vanguard & Wells Fargo	58,000.00
Proceeds from sale of investments	83,000.00
University of Illinois allocation	<u>269,000.00</u>
Total Cash Receipts	<u>\$429,419.75</u>

Cash Expenditures

Publisher JOR	\$3,528.17
Pensoft Publishers	17,360.72
JOR assistance	12,000.00
Research grants (Ted Cohn)	15,999.00
Executive director remuneration	1,500.00
Ed. Metaleptea remuneration	1,500.00
Assistant Ed. Metaleptea remuneration	1,000.00
Assistant Finance remuneration	1,500.00
Webmaster remuneration	500.00
JOR editor remuneration	3,000.00
Maintenance of Orthoptera Species File	219,000.00
Grants-Orthoptera Species File	50,848.00
Professional fees	7,499.78
(income tax preparation and audit)	
Webmaster SINA site support	3,600.00
Arizona State University shared program support	10,000.00
Accounting	12,000.00
Congress 2026	22,425.00
Congress 2026 travel reimbursement & grants	37,641.59
Airtable database consulting & software	274.59
Other	<u>1,622.12</u>
Total Cash Expenditures	<u>\$422,798.97</u>
Cash Receipts over Cash Expenditures	\$6,620.78
Beginning Cash Balance	<u>11,086.12</u>
Ending Cash Balance	<u>\$17,706.90</u>

Orthopterists' Society Statement of Assets (As of December 31, 2025)

Cash

Paypal cash balance	\$939.84
Chase Bank	<u>16,767.06</u>
	\$17,706.90

Investments at market value

Wells Fargo:	
AAAAI (Note 1)	\$20,766.02
Restricted (Note 2)	168,886.49
Operating (Note 3)	1,255,738.66
Grants (Note 4)	<u>517,776.87</u>
	\$1,963,168.04
Total assets	<u>\$1,980,874.94</u>

Note 1: This fund can only be used for the Uvarov Award made at each int'l meeting.

Note 2: Part of this fund is for grants and part of the income in this account is available for Society expenses; can extract capital but must have a plan for repaying it within 3 years.

Note 3: This fund is nonrestricted.

Note 4: This fund is restricted and can only be used for research grants.

Editorial

By **HOJUN SONG**

Editor, *Metaleptea*
hojun.song@asu.edu

Happy New Year, everyone! In a couple of months, many of us will travel to San Martín de los Andes to attend the International Congress of Orthopterology (ICO). I am so looking forward to meeting old friends and colleagues, as well as new orthopterists of all ages. The ICO is my favorite scientific meeting. In fact, it is more than that. It feels a lot like a big family reunion and I am sure many of us feel the same way. My very first ICO was the Montpellier meeting in 2001, when I was a budding first-year graduate student. I can't believe that it was 25 years ago! This time, I will be traveling with my family, and I am so excited to introduce this wonderful community to my family.

The past few months have been quite challenging for me as I adjust to my new position here at Arizona State University. Because I am wearing several administrative hats, I've been having non-stop meetings, which are quite draining. Several of my students are still at Texas A&M University, so I have been remotely advising them to



finish up their degrees. One student, Jorge Medina-Duran, successfully defended his dissertation and graduated in December, and I traveled back to Texas to hood him (see photo).

I am also having to rebuild my lab, which involves facility renovation, getting new equipment, and making many decisions about my future direction. But one thing that I am very excited about is the fact that I will be building a new locust-rearing facility. The new space, which will probably be completed at the end of summer, will complement the existing locust rearing facility at the Global Locust Initiative (GLI) and represents a major expansion of the GLI. I envision

this new space will not only serve my own research needs, but also become a community resource for locust researchers worldwide.

This issue of *Metaleptea* is another solid issue with several articles and contributions. I want to thank our Associate Editor, Derek A. Woller, for his continued assistance in the editorial process during his busy schedule.

To publish in *Metaleptea*, please send your contribution to hojun.song@asu.edu with a subject line starting with **[Metaleptea]**. The next issue of *Metaleptea* will be published in May 2026, so please send me the content promptly. I look forward to meeting many of you in Argentina!

Officers of the Orthopterists' Society

President: Axel Hochkirch, Musée National d'Histoire Naturelle, Luxembourg, Luxembourg. Axel.HOCHKIRCH@mnhn.lu

President-Elect: Fernando Montealegre-Z, School of Life and Environmental Sciences, University of Lincoln, Lincoln, U.K. fmontealegrez@lincoln.ac.uk

Executive Director: Mohamed Abdellahi Ould Babah EBBE, l'Institut du Sahel (INSAH/CLISS), Bamako, Mali. maouldbabah@yahoo.fr

Financial Advisor: David Hunter, Locust and Grasshopper Control, Unit 24/51 Hicks Street, Red Hill ACT 2603 Australia. davidmhunter100@gmail.com

Treasurer: Pamm Mihm, 2417 Fields South Drive, Champaign, IL 61822 U.S.A. p.mihm@regencyapartments.com

Managing Editor, JOR: Tony Robillard, Institut Systématique Evolution Biodiversité (ISYEB), Muséum national d'Histoire naturelle, CNRS, Sorbonne Université, EPHE, Paris, France. tony.robillard@mnhn.fr

Editorial Assistant, JOR: Nancy Morris, North Buxton, Ontario, Canada. jor@utm.utoronto.ca

Editor, Metaleptea: Hojun Song, School of Life Sciences, Arizona State University, Tempe, AZ, U.S.A. hojun.song@asu.edu

Associate Editor, Metaleptea: Derek A. Woller, USDA-APHIS-PPQ-Pest Exclusion and Import Programs, Nicholasville, KY, U.S.A. asilid@gmail.com

Officer, Orthoptera Species File: María Marta Cigliano, División Entomología, Museo de La Plata, Universidad Nacional de la Plata, La Plata, Argentina. cigliano@fcnym.unlp.edu.ar

Manager, The Theodore J. Cohn Research Fund: Michel Lecoq, Montpellier, France. mlecoq34@gmail.com

Webmaster, Orthopterists' Society Website: Derek A. Woller, USDA-APHIS-PPQ-Pest Exclusion and Import Programs, Lexington, KY, U.S.A. asilid@gmail.com

Global Locust Initiative Representative: Arianne Cease, Schools of Sustainability & Life Sciences, Arizona State University, Tempe, AZ, U.S.A. acease@asu.edu