

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 nataliae* 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

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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 haematoscellis* 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.

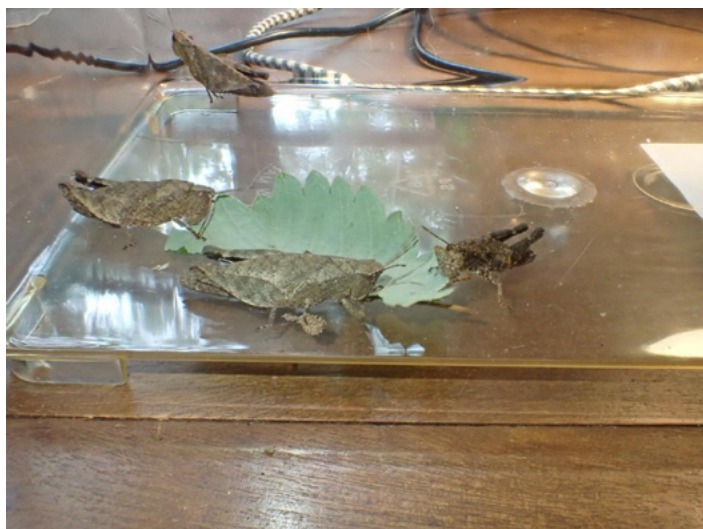


Figure 4. *Rowellacris obscuripes* males and females in a container used to study mating behavior. Both males and females of the genera *Rowellacris* and *Tangana* perform rhythmic “drumming” by striking their hind legs on the ground to attract partners. This drumming behavior was not observed in species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

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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 *Ommexecha 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