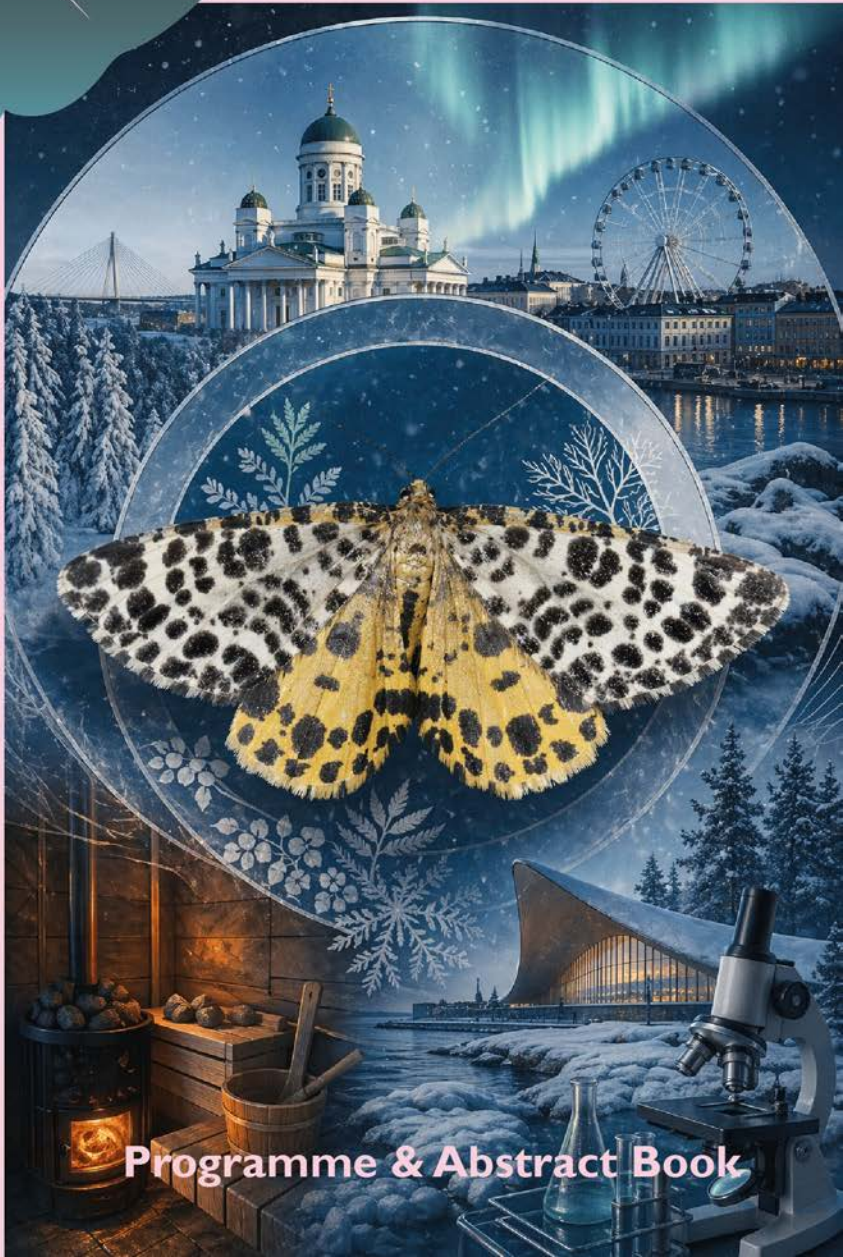


Forum
Herbulot

XIII INTERNATIONAL CONGRESS OF FORUM HERBULOT

29 June - 2 July 2026

Espoo, Finland



Programme & Abstract Book



**PROGRAMME AND
ABSTRACT BOOK**

XIII International congress of Forum Herbulot

29 June - 2 July 2026
Espoo, Finland

ORGANISED BY

Forum Herbulot

Finnish Museum of Natural History, University of Helsinki, Finland

State Museum of Natural History, Stuttgart, Germany

ORGANISING COMMITTEE

Pasi Sihvonen, Maria Heikkilä, Mikael Englund, Kyung Min Lee, Elena Kochanova
& Hossein Rajaei

Sponsored by

Federation of Finnish Learned Societies, Lepidopterological Society of Finland,
Pentti Tuomikoski fund, Entolight Systems, Tibiale Ltd, Entomological Society of
Finland

EDITORS & DESIGNERS

Hossein Rajaei & Pasi Sihvonen

VENUE

Hotel Lepolampi, Kivilammentie 1, 02820 Espoo, Finland

phone +358 10 3244840, <https://www.lepolampi.fi/>, myynti@lepolampi.fi

HOME PAGES

<http://www.herbulot.de/>

<https://geometroidea.smns-bw.org/>

CONTACT DETAILS FOR ORGANIZING COMMITTEE

PASI SIHVONEN (PASI.SIHVONEN@HELSINKI.FI; TEL. & WHATSAPP: +358 50 415 0236)

MIKAEL ENGLUND (MIKAEL.ENGLUND@HELSINKI.FI; TEL. +358 40 751 4952)

COVER PHOTO

Arichanna melanaria (Linnaeus, 1758) is a widespread Eurasian species that is genetically fairly uniform but locally adapted. In northern Europe it is active both day and night, overwinters as a caterpillar, and inhabits wetlands. In central Europe it is nocturnal and overwinters as an egg, while in South Korea it is common in mountainous areas. The caterpillar is oligophagous on *Vaccinium uliginosum* and *Rhododendron*. The species will probably be observed during the congress.

PREFERRED CITATION:

Sihvonen P. & Rajaei H. (ed.) 2026. *Proceedings of the 13th International Congress of Forum Herbulot. 29 June 29 - July 2, 2026, Finland. 53 pp. DOI 10.5281/zenodo.20025223.*

TABLE OF CONTENTS

PROGRAMME, SHORT GLANCE.....	4
PROGRAMME, DETAILS.....	5
THINGS TO DO AND SEE FOR ACCOMPANYING PERSONS.....	9
ABSTRACTS.....	10
GENERAL INFORMATION.....	45
PROGRAMME FOR ACCOMPANYING PERSONS.....	41
ALPHABETIC LIST OF PARTICIPANTS.....	48
SPONSORS.....	51
VENUE AND PUBLIC TRANSPORTATION.....	53



Sunday, 28.6.2026

Arrival, accommodation, light trapping

Monday, 29.6.2026

Opening & welcome message

Presentations

Sauna, dinner, light trapping

Tuesday, 30.6.2026

Presentations

Sauna, dinner, light trapping

Wednesday, 1.7.2026

Visit to the Haltia Nature Centre in Nuuksio National Park, Espoo

Visit to the Finnish Museum of Natural History, Helsinki

Visit to the Entomological store Tibiale, Helsinki

Dinner, sauna, light trapping

Thursday, 2.7.2026

Presentations

Closure

Gala dinner, sauna, light trapping

Friday, 3.7.2026

Departure

PROGRAMME, details

Sunday, 28.6.2026

Arrival (rooms are available from 15.00 onwards)

The hotel restaurant is open and food is available

17:00- Setting up traps for moth collecting

Monday, 29.6.2026

Note: Only presenting author is given here (full list of authors are available on the abstract pages)

06:00-09:00 BREAKFAST

09:40-10:00 Pasi Sihvonen and Organizing Committee

Welcome Message, acknowledgments and overview of congress

10:00-10:10 Lepolampi staff

Practicalities

10:10-10:50 Sille Holm (PLENARY LECTURE)

Tracing hostplant specialisation in declining tropical forests

10:50-11:20 BREAK

11:20-11:40 Axel Hausmann

Lepidoptera collected during Forum Herbulot in South Africa and identified via DNA barcoding

11:40-12:00 Feza Can

Contribution to the knowledge of the Geometridae (Lepidoptera) in north-eastern Türkiye

12:00-12:20 Anne Duploux

The hidden microbial diversity associated with Lepidoptera

12:30-14:00 LUNCH, PREPARING SPECIMENS & NETWORKING

14:00-14:20 Paola Ancajima Georgette

A little-explored synapomorphy in Lepidoptera: the epiphyses and their variations in Sphingidae

14:20-14:40 Gyula Laszlo

Integrative taxonomic revision of the genus *Rhodophthitus* Butler, 1880 (Lepidoptera, Geometridae, Ennominae)

14:40-15:00 Mikael Englund

Quantitative image analysis in geometrid taxonomy

15:00-15:40 COFFEE / TEA BREAK

15:40-16:00 Markus Rantala

Comparison of different LED light systems and how they attract geometrid moths

16:00-16:30 Pasi Sihvonen

Overview of Finnish Lepidoptera: diversity, conservation, and research

16:30-18:00 Sauna for women

18:00-19:00 BUFFET DINNER

19:00-20:30 Sauna for men

Setting up traps for moth collecting

Tuesday, 30.6.2026	
06:00-09:00	BREAKFAST
09:00-10:00	PREPARING SPECIMENS
10:00-10:40	Pritha Dey (Plenary Lecture) Traits and Tactics: How moth traits influence their ecology
10:40-11:00	Giada Zucco Plantations of the non-native <i>Pseudotsuga menziesii</i> as surrogate of <i>Abies alba</i> forests for Geometrids in Southern Italy
11:00-11:20	Hermann Staude The Lisima Wilderness Project, exploring geometrid moths in the highlands of Angola
11:20-11:40	COFFEE / TEA BREAK
11:40-12:00	Chang-Gyu Park Different responses of moths to environmental changes- a review at the family or subfamily levels
12:00-12:20	Anssi Vähätalo Defining the seasonal window of artificial light at night impacts on moths using 1.4 million records across Northern Europe
12:30-13:45	LUNCH & PREPARING SPECIMENS & NETWORKING
13:45-14:00	CONFERENCE PHOTO
14:00-14:20	Simeão Souza Moraes Unveiling cryptic diversity: integrative taxonomy discovers eight new species of <i>Eois</i> moths and exposes biodiversity shortfalls in a Neotropical region
14:20-14:40	Wendy Zhang How can curiosity change the way we see insects? Creative approaches to insect outreach
14:40-15:20	SURPRISE!
15:20-15:50	COFFEE BREAK
15:50-16:10	Reima Leinonen The Lepidopterological Society of Finland
16:10-16:30	Ida-Maria Huikkonen Finnish moth monitoring scheme – national results regarding Geometroidea
16:30-18:00	Sauna for women
18:00-19:00	BUFFET DINNER
19:00-20:30	Sauna for men Setting up traps for moth collecting

Wednesday, 1.7.2026 Excursion day	
06:00-09:00	BREAKFAST
09:50	Get together at parking lot
10:00	Bus leaves
10:15-11:15	Visiting Haltia Nature Center https://haltia.com/ Nuuksiontie 84, 02820 Espoo
12:00-13:00	LUNCH AT FINNISH MUSEUM OF NATURAL HISTORY
13:00-15:00	Visit to the collections Visit to the public exhibition
15:00-15:30	COFFEE BREAK
15:30	Bus leaves
16:00	Visiting Helsinki Cathedral and National Library
17:00	Bus leaves
17:30	Visiting Entomological Store Tibiale https://www.tibiale.fi/
18:30	Bus leaves
19:00	Arrival at Lepolampi Hotel
19:00-20:00	BUFFET DINNER Setting up traps for moth collecting

Thursday, 2.7.2026	
06:00-09:00	BREAKFAST
09:40-10:20	Marianne Espeland (PLENARY LECTURE) High-throughput sequencing and museomics: A new era for Lepidoptera systematics
10:20-10:40	Da-Hee Jin A Phylogenetic Study of Korean Epipleminae (Lepidoptera: Uraniidae)
10:40-11:20	COFFEE BREAK
11:20-12:20	Elena Kochanova and Kyung Min Lee Workshop: The hitchhiker's guide to phylogeny: a practical workshop of DNA barcodes analysis
12:30-13:40	LUNCH & PREPARING SPECIMENS & NETWORKING
13:40-14:00	Paola Ancajima Georgette Filling gaps on the biodiversity knowledge in the genus <i>Agylla</i> Walker, 1854 (Lithosiini, Arctiinae, Erebiidae)
14:00-14:20	Leo Vähätalo 101 new species of Coleophora (Gelechioidea: Coleophoridae) to Georgia (Caucasus) – what about Geometridae?
14:20-14:40	Claude Tautel Redefining Desmobathrinae and Epidesmiinae on a morphological basis (Geometridae)
14:40-15:20	COFFEE BREAK

15.20–16.00	Leidys Murillo Ramos (PLENARY LECTURE) The structure of geometrid moth diversity
16.00–16.20	Robyn Crowther Unlocking a Global Resource: Digitising the NHMUK Geometridae Collection through DiSSCo UK
16.20–16.40	Hossein Rajaei The second edition of the world catalogue of the Geometrid moths is now online
16.40–17.00	Final words and plans for Forum Herbulot 2028
(16:00-18:00)	Sauna for women)
(18:00-20:00)	Sauna for men)
19:00	GALA DINNER

Friday, 3.7.2026

06:00-09:00	BREAKFAST
12:00	CHECK-OUT



THINGS TO DO AND SEE FOR ACCOMPANYING PERSONS

The Organizing Committee will not arrange a program for accompanying persons. The congress venue is close to Helsinki and the capital region, it is accessible by public transport, and it is safe wonder around anywhere in Finland. We encourage the accompanying persons to get together and plan their own activities.

Potential places to see include the city center of Helsinki, including the Market place (see photo), Helsinki cathedral (Evangelical Lutheran church), Uspenski cathedral (Orthodox church), numerous art exhibitions (e.g. Ateneum Art Museum, Museum of Contemporary Art Kiasma, Amos Rex Art Museum), shopping (e.g. Kamppi shopping centre, Aleksanterinkatu and nearby shopping streets, Stockmann department store, Old Market Hall (Kauppahalli), flea markets), or World Heritage Site Suomenlinna, a sea fortress accessible by ferry from the Market place.



Kauppatori (Market place) is a vivid place in the city center of Helsinki, filled with a variety of local delicacies, handcraft and season's specialties such as berries and fish. Uspenski Cathedral is visible in the background.



TRACING HOSTPLANT SPECIALISATION IN DECLINING TROPICAL FORESTS**Sille Holm***Department of Ecology, Swedish University of Agricultural Sciences, Ulls väg 18B, 75651, Uppsala, Sweden**E-mail: sille.holm@slu.se*

Abstract. For the past fifteen years, I have had the privilege of studying tropical Lepidoptera in some of the world's most biodiverse yet vulnerable ecosystems in the Afrotropical forests of Uganda and the Neotropical Atlantic forests of Brazil. These experiences have offered insights into the ecological and social complexity of tropical forest ecosystems, the drivers behind forest decline, and the ongoing restoration efforts. This work has brought moments of profound wonder and scientific inspiration, but also deep helplessness as a biologist witnessing biodiversity loss first-hand. I will offer a humble personal perspective on how each of us can continue the fight for biodiversity. Secondly, I will present current advances from the SPECTRO project, which investigates the causes and consequences of higher hostplant specialisation in tropical butterflies. We aim to evaluate whether the perceived higher specialisation in the tropics holds true or is partly an artefact of data scarcity. By identifying host-associated gene modules, we assess whether tropical species have more specialised "tools" than their temperate relatives. In parallel, we are compiling data on the fundamental and realised host repertoires (Braga and Janz 2021) of tropical Nymphalini and Melitaeini species. Finally, I will introduce plans for the project GHost. Building on previous (Holm et al. 2018; Holm et al. 2019) and ongoing work, GHost aims to map geometrid moth host repertoires and study the level of specialization in the tropical vs temperate regions. Both SPECTRO and GHost forecast the future of the species in the face of continued tropical forest loss.



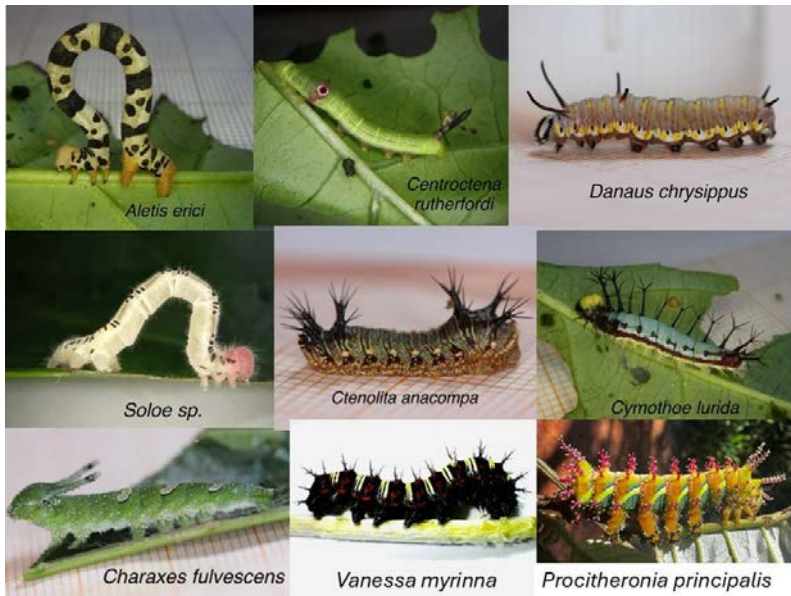
Keywords. plant herbivore co-evolution, host-plant specificity, diet breadth.

References.

- Braga, M.P. and Janz, N. 2021. Host repertoires and changing insect–plant interactions. *Ecological Entomology*, 46: 1241-1253.
- Holm, S., Javoiš, J., Molleman, F., Davis, R.B., Ōunap, E., Roininen, H. and Tammaru, T. 2019. No Indication of High Host-Plant Specificity in Afrotropical Geometrid Moths. *Journal of Insect Science*, 19 (3): 1–16.



Holm, S., Javoiš, J., Ūnap, E., Davis, R.B., Kaasik, A., Molleman, F., Tasane, T. and Tammaru, T. 2018. Reproductive behaviour indicates specificity in resource use: phylogenetic examples from temperate and tropical insects. *Oikos*, 127: 1113-1124.



The colourful world of caterpillars: Caterpillars have received far less attention than adult butterflies and moths, a knowledge gap that is especially pronounced for tropical species. Yet knowledge on caterpillars and their hostplants is essential for understanding species ecology and continuing the fight to conserve these species.

LEPIDOPTERA COLLECTED DURING FORUM HERBULOT IN SOUTH AFRICA AND IDENTIFIED VIA DNA BARCODING

Axel Hausmann¹ & Hermann S. Staudé²

¹ SNSB – Bavarian State Collection of Zoology; ² National Geographic Okavango Wilderness Project, Wild Bird Trust, South Africa

E-Mail: hausmann.a@snsb.de

Abstract: During two conferences of Forum Herbulot, in the years of 2012 (Mogale's Gate Biodiversity Centre) and 2025 (Conclave Country Lodge), some 9000 moths were collected by the authors. In 2012 some additional samples were obtained from Malaise traps. Altogether, tissues from 4969 moths were submitted to DNA barcoding. The best-represented groups were Erebidae (20%), Geometridae (17%), Noctuidae (11%) and Crambidae (6%). We obtained 4894 successful sequences (98.5%), belonging to 1221 genetic clusters (barcode index numbers; BINs = proxy for species numbers). Based on the reference library on BOLD, we were able to identify 'ad hoc' 656 BINs (54%) to a Linnean species name. When considering also some sequenced moths from other Forum Herbulot collectings in Tasmania, Chile and Honduras (strongly biased towards Geometridae), a total of 6291 sequences and 1722 BINs is resulting for these five conference collectings. As a "spin-off" of South African Forum Herbulot, the authors performed together three additional collection tours in South Africa (2013; 2017; 2019/2020; each one for 5-7 days only). From all five South African collecting tours 10220 lepidopteran specimens were submitted to DNA barcoding, resulting in 2829 South African BINs.



Keywords DNA barcoding, South Africa, Forum Herbulot, Lepidoptera, fauna exploration.

CONTRIBUTION TO THE KNOWLEDGE OF THE GEOMETRIDAE (LEPIDOPTERA) IN NORTH-EASTERN TÜRKİYE

Feza Can¹ & Serdar Akar²

¹ Hatay Mustafa Kemal University, Faculty of Agriculture, Department of Plant Protection, Hatay, Türkiye; ² B. Gerdelli No: 256 Süloğlu, Edirne, Türkiye
E-Mail: fezacan@mku.edu.tr

Abstract. Some studies have been conducted to determine the Geometridae species in the central and western Black Sea region of Türkiye; however, the eastern part, except for some of the provinces included in the present study, was analysed by Can (2008). The aim of this study is to contribute to the knowledge of the flight periods and distribution areas of Geometridae species occurring in habitats with different geographical characteristics in north-eastern Türkiye, a region that has previously been insufficiently studied. The species were recorded using light traps during fieldwork conducted in July 2025, and some were collected by netting. So far, a total of 58 species have been identified. The study area covers the Eastern Black Sea and Çoruh basins, ranging from the humid coastal zones along the Black Sea to mountainous habitats reaching up to 3050 m in elevation. Samples were collected from six different provinces (Trabzon, Artvin, Rize, Giresun, Bayburt, and Gümüşhane) at altitudes ranging from sea level to 2491 m above sea level. Although the region has not been thoroughly investigated, it plays an important role in understanding the distribution patterns of species in the Caucasus, the Black Sea region, and north-eastern Asia. The results indicate high biodiversity influenced by different biogeographical regions. For a considerable number of species, the records represent an extension of their previously known distribution range in Asia Minor.



Keywords. Faunistic, Türkiye, Black Sea, Geometridae, Minor Asia.

Reference.

Can, F., 2008. The Geometrid Moths (Lepidoptera) from the Middle and Eastern Black Sea Regions of Turkey. Turkish Journal of Zoology 32, 351-358.

THE HIDDEN MICROBIAL DIVERSITY ASSOCIATED WITH LEPIDOPTERA

Anne Duploux¹, Victoria Twort², Pasi Sihvonen² & Mikael Englund²

¹*Faculty of Biological and Environmental Sciences, University of Helsinki, Finland;*

²*Finnish Museum of Natural History, University of Helsinki, Finland*

E-Mail: anne.duploux@helsinki.fi

Abstract. Maternally inherited bacterial symbionts promote their own transmission through various manipulations of their hosts' life-histories. These microscopic organisms however often go undetected, and their effects on the host ecology and evolution remain ignored. We show that already available data, ranging from whole genome sequencing projects to species rarity point score systems, can offer easy to access preliminary evidence for hidden symbiotic infections with diverse endosymbionts, such as the widespread bacteria *Wolbachia* and *Spiroplasma*.



Keywords. Ecology, evolution insect symbiosis, *Spiroplasma*, *Wolbachia*.

A LITTLE-EXPLORED SYNAPOMORPHY IN LEPIDOPTERA: THE EPIPHYSES AND THEIR VARIATIONS IN SPHINGIDAE

Georgette Paola Ancajima¹ & Marcelo Duarte²

¹Universidade Estadual de Campinas, Brasil; ²Museu de Zoologia da Universidade de São Paulo, Brasil

E-Mail: paolancajima@gmail.com

Abstract. The presence of epiphysis is a synapomorphy for Lepidoptera, with secondary losses in some lineages. Whether present or reduced, it is located on the inner surface of each foretibia. This articulated structure is covered with cuticular protuberances called acanthae. The main function of the epiphyses is to keep the antennae clean. The epiphyses vary in shape, size, and insertion point on the foretibia among families, genera, species and even between sexes. These variations could be phylogenetically informative but are rarely used by taxonomists, mainly because of the very few detailed descriptions of this structure available in the literature. Hawkmoths (Sphingidae) have well-developed epiphyses with stiff spines on the margin of the tibial inner surface but varying in shape, size and other features. Here, we describe the variation of the epiphyses and discuss the importance of these structures for the understanding of the evolution of lepidopteran epiphyses, using as examples some species of Sphingidae.



Keywords. Antennal cleaner, Sexual dimorphism, Shape.

References.

- Ancajima, G. P., Duarte, M. 2023. Morphological variation of the epiphyses in some Ambulycini hawkmoths (Lepidoptera, Sphingidae, Smerinthinae). *Zoologischer Anzeiger*, 304, 1–9. <https://doi.org/10.1016/j.jcz.2023.02.003>
- Ancajima, G. P.; Eloi, I., Duarte, M. 2025. Sexual dimorphism and allometric patterns in hawkmoth epiphyses (Lepidoptera: Sphingidae). *Scientific Reports*, 15, 11405. <https://doi.org/10.1038/s41598-025-86837-8>
- Philpott, A. 1924. The tibial strigil of the Lepidoptera. *Transactions and Proceedings of the Royal Society of New Zealand*, 55, 215–224. <https://paperspast.natlib.govt.nz/periodicals/TPRSNZ1924-55.2.10.1.15>

INTEGRATIVE TAXONOMIC REVISION OF THE GENUS *RHODOPHTHITUS* BUTLER, 1880 (LEPIDOPTERA, GEOMETRIDAE, ENNOMINAE)

Gyula M. László¹ & Axel Hausmann²

¹ Natural History Museum, Insects Division, Cromwell Road, London, SW7 5BD, UK; ² SNSB-Zoologische Staatssammlung München, Münchhausenstr. 21, Munich, Germany
E-mail: gyula.laszlo1@nhm.ac.uk

Abstract. This study presents an integrative taxonomic revision of the Afrotropical ennomine genus *Rhodophthitus* Butler, 1880. Combined morphological evidence and Maximum Likelihood analysis of COI-5P DNA barcodes show that *Rhodophthitus* is restricted to two Madagascan endemics, *R. formosus* and *R. betsileanus*. All mainland African species previously assigned to the genus are reassigned based on clear phylogenetic and diagnostic morphological differences. The genus *Nothabraxas* Warren, 1897, is reinstated and expanded to include 11 previously described species, alongside 12 newly recognized species-group taxa. Two additional genera are established: *Proutabraxas* gen. nov., comprising two species formerly placed in *Rhodophthitus*; and *Rhodochanna* gen. nov., which includes two reclassified species and three newly described taxa. Together, these results substantially restructure the taxonomy of this lineage, clarify long-standing misplacements, and highlight previously unrecognized diversity within the Afrotropical Ennominae.



Keywords. Afrotropics, cryptic taxa, DNA barcode, new taxa.

References.

- Butler, A.G. 1880. On a collection of Lepidoptera from Madagascar with descriptions of new genera and species. *Annals and Magazine of Natural History*, (5) 5(28), 333–344.
- Prout, L.B. 1915. New genera and species of African Geometridae. *Novitates Zoologicae*, 22, 311–385.
- Warren, W. 1897. New genera and species of moths from the Old-World regions in the Tring Museum. *Novitates Zoologicae*, 4, 12–130.

QUANTITATIVE IMAGE ANALYSIS IN GEOMETRID TAXONOMY

Mikael Englund¹; George Hancock²; Elina Laiho¹; Johanna Mappes³; Pasi Sihvonen¹; Max Söderholm¹; Alpo Turunen⁴ & Kyung Min Lee¹

¹Zoology Unit, Finnish Museum of Natural History, University of Helsinki, Helsinki, Finland;

²Centre for Ecology & Conservation, University of Exeter, Penryn, United Kingdom;

³Organismal and Evolutionary Biology Research Programme, Faculty of Biological and Environmental Sciences, University of Helsinki, Helsinki, Finland;

⁴Biodiversity Information Facility, Finnish Museum of Natural History, University of Helsinki, Finland.

E-Mail: mikael.englund@helsinki.fi

Abstract. The shoulder stripe moth *Earophila badiata* (Denis & Schiffermüller, 1775) has recently colonized southern Finland, bridging a formerly unoccupied zone between the southwestern population (*E. badiata* ssp. *badiata*) and the eastern population (*E. badiata* ssp. *fennokarelica*). To clarify the origin of the colonizers and assess potential hybridization, we first undertook a comprehensive revision of the *E. badiata* species group across the Palearctic region. We analysed 111 specimens using an integrative approach combining quantitative wing image analysis, genitalia morphology including micro-CT imaging, and mtCOI phylogeny. Material comprised the *E. badiata* species group, including *E. badiata* subspecific taxa ssp. *badiata*, ssp. *fennokarelica*, and ssp. *tellensis*, and specific taxa *E. kolomietsi* and *E. pseudobadiata*. Wing image analyses revealed pronounced sexual dimorphism but only weak divergence between the two Finnish subspecies. Scale loss significantly affected forewing appearance. Comparisons of genitalia showed no consistent diagnostic differences among the subspecies or the closely related taxa. Molecular analyses supported monophyly of the *E. badiata* group and revealed shallow genetic divergence ($\leq 0.63\%$) among ssp. *badiata*, ssp. *fennokarelica*, and *E. kolomietsi*. Overall, our results do not support species- or subspecies-level distinctions among the examined Eurasian taxa. We conclude (Englund et al. 2026) that the recognized subspecies likely represent geographic morphotypes rather than distinct taxonomic entities. Accordingly, we treat *E. badiata* as a single variable species and propose synonymizing *E. badiata* ssp. *fennokarelica*, *E. kolomietsi*, and *E. pseudobadiata* with *E. badiata*. Our results render the original research questions unanswered, since we could not confirm any consistent criteria for delimiting the taxon *E. badiata* taxon *fennokarelica* from the nominate form of *E. badiata*.



Keywords. Quantitative image analysis, integrative taxonomy, taxa delimitation, wing pattern variation, population genetics.

References.

Englund M, Hancock G, Laiho E, Mappes J, Sihvonen P, Söderholm M, Turunen A, Lee KM. 2026.

Quantitative image analysis applied to revise the taxonomy of the Palearctic *Earophila badiata* species group (Lepidoptera: Geometridae: Larentiinae). PeerJ 14:e20620.

<https://doi.org/10.7717/peerj.20620>

COMPARISON OF DIFFERENT LED LIGHT SYSTEMS AND HOW THEY ATTRACT GEOMETRID MOTHS

Markus P. Rantala

EntoLight Systems, Taikatie 11 c 12, 04230 Kerava

E-mail: entolight@gmail.com

Abstract. Light sources with a high proportion of ultraviolet (UV) radiation are known to attract a greater number of insect individuals and more taxa than other light sources. Recently, LED lights have become increasingly common in insect collecting due to their attractive capacity, and because the lights are durable, light to carry, and consume less energy than other light sources. In this presentation I will cover the technical details of LED lights developed by EntoLight Systems <https://www.entolight.fi/> including Twincolor and Multicolor models. I will share insights on how to use LED lights in general to maximize their attractiveness and provide practical advice on LED light collecting. The presentation also summarises the results from my experimental work comparing the attractiveness of family Geometridae and other nocturnal Lepidoptera families to LED light sources.



LED lights developed by EntoLight Systems. Left: Multicolor (5V 7W). Right: Twincolor trap.

Keywords. EntoLight Systems, UV radiation, LED light, Geometridae, nocturnal Lepidoptera.

OVERVIEW OF FINNISH LEPIDOPTERA: DIVERSITY, CONSERVATION, AND RESEARCH

Pasi Sihvonen

Finnish Museum of Natural History, University of Helsinki, Helsinki, Finland

E-mail: pasi.sihvonen@helsinki.fi

Abstract. The presentation provides an overview of Finnish Lepidoptera, which currently includes 2,695 species, of which approximately 2,300 are considered established residents (FinBIF 2025). This fauna is among the best studied in the world: for the majority of species life history, phenology, distribution, and abundance are known, extensive literature and online sources cover the fauna and DNA barcodes are available for all species. The largest families in terms of species richness are Noctuidae (441 species), Tortricidae (417), and Geometridae (332). In total, the fauna is classified into 69 families. More than 90% of the Lepidoptera fauna (2,362 taxa in 2019) has been assessed using the IUCN Red List Categories and Criteria. In that assessment, 716 species (30.3%) were classified as threatened or near threatened (Nupponen et al. 2019). The most important causes of population declines include the overgrowth of open habitats, the reduction of fire-affected areas and other early successional habitats, large population fluctuations and weather conditions, construction, and, increasingly, climate change. The presentation will also cover the zoogeography of Finnish Lepidoptera and illustrate examples of different habitat types and notable species, particularly geometrid moths. In addition, it will discuss the reasons why the fauna is so well known, highlighting the importance of citizen scientists, long-term monitoring programs, data curation (notably the Finnish Biodiversity Info Facility <https://laji.fi/>), and gives examples of Lepidoptera research led by Finnish researchers.



Keywords Lepidoptera, fauna, overview, Finland.

References.

- FinBIF, 2025. The FinBIF checklist of Finnish species 2024. Finnish Biodiversity Information Facility, Finnish Museum of Natural History, University of Helsinki, Helsinki. <https://laji.fi/en/about/2569>
- Nupponen K, Nieminen M, Kaitila J-P et al. 2019. Perhoset – butterflies and moths (Lepidoptera). pp. 472–508 in: Hyvärinen E, Juslén A, Kemppainen E, Uddström A, Liukko U-M (eds.), The 2019 Red List of Finnish Species. Ministry of the Environment & Finnish Environment Institute, Helsinki. <https://punainenkirja.laji.fi/en>

TRAITS AND TACTICS: HOW MOTH TRAITS INFLUENCE THEIR ECOLOGY***Pritha Dey¹, Rohini Balakrishnan², Max Söderholm³ & Pasi Sihvonen³****¹National Centre for Biological Sciences, India; ²Indian Institute of Science, India; ³Finnish Museum of Natural History, University of Helsinki, Finland
E-mail: prithadey@ncbs.res.in*

Abstract. Trait-based approaches provide a powerful framework for understanding how ecological interactions and environmental gradients shape community structure and evolutionary responses. Here, we integrate morphological, functional, and sensory traits to examine how species interactions and environmental variation influence biodiversity patterns. Along a 1500 m elevational gradient in the western Himalayas, 697 specimens representing 120 geometrid species were analyzed to assess species diversity, turnover, and traits associated with thermoregulation and flight performance. Although species diversity declined with elevation and turnover was pronounced, assemblage-level traits linked to thermal sensitivity (body size) and flight capability (wing loading and manoeuvrability) remained consistent. The absence of significant niche differentiation suggests functional redundancy across elevations, where species with similar ecological roles replace one another, maintaining stable trait distributions despite compositional shifts. These findings demonstrate how trait-based analyses can reveal underlying functional stability that is not apparent from species richness patterns alone. To further explore how traits mediate ecological interactions, predator–prey dynamics were examined through a three-year dietary analysis of the lesser false vampire bat alongside seasonal sampling of moth communities in the Western Ghats. Selective predation was evident: larger moths with lower flight manoeuvrability, particularly members of Hepialidae and Sphingidae were disproportionately consumed, especially during the wet season. Extending the trait-based framework to sensory ecology, micro-CT imaging of 19 geometrid species revealed that diurnal moths possessed relatively larger tympanal organs than nocturnal species, challenging assumptions about bat-driven selection. Tympanal size showed no clear scaling with body size, and ansa morphology exhibited limited divergence, suggesting functional constraints in auditory evolution. Together, these studies highlight how trait-based approaches can uncover the mechanisms linking environmental gradients, species interactions, and sensory evolution, offering predictive insights into moth community resilience under environmental change.



Keywords. Morphology, prey-predator interaction, community ecology.

PLANTATIONS OF THE NON-NATIVE *PSEUDOTSUGA MENZIESII* AS SURROGATE OF *ABIES ALBA* FORESTS FOR GEOMETRID IN SOUTHERN ITALY

Giada Zucco¹, Carlo Di Marco², Lorenzo Di Marco², Sara La Cava³ & Stefano Scalercio²

¹ University Mediterranea of Reggio Calabria; ²Council for Agricultural Research and Economics, Research Centre for Forestry and Wood; ³University of Calabria

E-mail: giada.zucco@unirc.it

Abstract. Reforestation has long been used to restore degraded mountain landscapes across the Mediterranean region. In many areas, this process has relied on non-native conifers, raising concerns about their ecological consequences, particularly for forest biodiversity and ecosystem functioning. Lepidoptera, such as Geometridae, are sensitive indicators of forest structure and composition, and can provide insights into the ecological outcomes of reforestation practices. This study explores whether plantations of non-native *Pseudotsuga menziesii* in the Aspromonte National Park (southern Italy) may support moth assemblages comparable to those in native *Abies alba* forests.

Geometrid communities were sampled using light traps in silver fir stands, Douglas fir plantations, and pine forests. Community patterns were analysed through non-metric multidimensional scaling (NMDS) and species-level association tests, considering both the entire assemblage and the subset of species trophically associated with conifers. The analyses indicate a differentiation of moth assemblages according to forest type. When the entire community is considered, Douglas fir stands occupy an intermediate position between silver fir and pine forests. When analyses are restricted to conifer-feeding species, assemblages in Douglas fir appear more similar to those of native silver fir. However, some fir-associated species are absent or less represented, suggesting only partial functional equivalence. These findings suggest that Douglas fir can maintain a substantial portion of moth assemblages linked to native fir forests, although it does not fully replicate their ecological role, and should be considered a great compromise for reforestation practices. Evaluating whether introduced tree species can support native faunal communities is therefore essential for informing forest management strategies.

Keywords. conifers, moths, community ecology, reforestation.



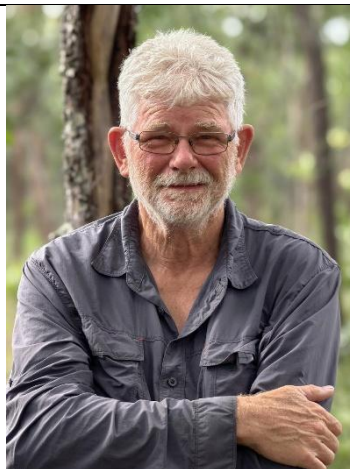
THE LISIMA WILDERNESS PROJECT, EXPLORING GEOMETRID MOTHS IN THE HIGHLANDS OF ANGOLA

Hermann S. Staudé¹, Reinier F. Terblanche² & Rob W. Taylor¹

¹National Geographic Okavango Wilderness Project, Wild Bird Trust, South Africa; ²Unit for Environmental Sciences and Management, North West University, Potchefstroom, South Africa

E-mail: staudhehermann@gmail.com

Abstract. The National Geographic Okavango Wilderness Project, together with The Wilderness Project, aims to document the biodiversity of Lisima Lya Mwono, the eastern Angolan plateau, a critical catchment for several major rivers and a recently designated Ramsar Wetland of International Importance—the first in Angola (Miceli 2026). Despite its ecological significance, the region has remained largely understudied because decades of war and its remoteness have limited scientific access. We present some results and first impressions from two expeditions to the area recording the diversity of Geometridae (October/November 2024 and February 2026). We found elements of both Congolese tropical and Cape fynbos temperate geometrid fauna intermixed with typical Miombo woodland fauna. First impressions indicate a remarkable β -diversity over short distances, especially across the northern (Congo catchment) and southern (Okavango and Zambezi catchment) watersheds. Through rearing from larvae, found in the wild, we thus far recorded host associations for 25 geometrid species feeding on 19 plant species belonging to 13 plant families. Eight of these reared geometrids seem to be undescribed. Of the 19 host plant species, 10 can be regarded as typical to Miombo, five typical to Cape fynbos and four typical to Congolese forests. The 2024 survey yielded 155 geometrid species, 11 probably undescribed (23 Sterrhinae; three Larentiinae; 39 Geometrinae; one Desmobathrinae; 89 Ennominae). The results from the 2026 survey are not yet available.



Keywords. Angola, Biodiversity, Geometridae, Biogeography, Ecology.

Reference.

Miceli S., 2026. Angola Designates First Ever Wetland of International Importance.
<https://share.google/JR4aOuWyLHMeTxo6Q>

DIFFERENT RESPONSES OF MOTHS TO ENVIRONMENTAL CHANGES - A REVIEW AT THE FAMILY OR SUBFAMILY LEVELS

Chang-Gyu Park & Sei-Woong Choi

Mokpo National University, Mokpo, South Korea

E-mail: ckdrb9809@naver.com

Abstract. We investigated how different moth taxa respond to environmental disturbances such as logging and wildfire during forest regrowth in southern Korea. Moth assemblages varied significantly among forest types, with four taxa—Erebinae, Ennominae, Noctuidae, and Bryophilinae—showing particularly strong differences. Although overall species richness within major moth families is broadly comparable at a global scale, responses at the family and subfamily levels differed markedly depending on forest type and disturbance history. Geometridae richness was highest in mature forests, consistent with their strong association with structurally complex vegetation and sensitivity to habitat disturbance. In contrast, Erebidae and Noctuidae richness peaked in early post-logging stages, likely reflecting the high proportion of generalist species within these groups that can exploit a wide range of vegetation types. Bryophilinae (Noctuidae) were nearly absent from early-stage plantations but were abundant in mature forests, a pattern consistent with their ecological traits, as larvae of many species primarily feed on lichens and algal substrates. Our findings highlight the potential of diverse moth families and subfamilies as indicator groups for assessing environmental change and forest succession dynamics.



Keywords. Ecology, Family, Disturbance, Plantation.

References.

- Kitching, R. L., Orr, A. G., Thalib, L., Mitchell, H., Hopkins, M. S., & Graham, A. W. (2000). Moth assemblages as indicators of environmental quality in remnants of upland Australian rain forest. *Journal of applied Ecology*, 37(2), 284-297.
- Hilt, N., & Fiedler, K. (2005). Diversity and composition of Arctiidae moth ensembles along a successional gradient in the Ecuadorian Andes. *Diversity and Distributions*, 11(5), 387-398.
- Summerville, K. S., Ritter, L. M., & Crist, T. O. (2004). Forest moth taxa as indicators of lepidopteran richness and habitat disturbance: a preliminary assessment. *Biological Conservation*, 116(1), 9-18.

DEFINING THE SEASONAL WINDOW OF ARTIFICIAL LIGHT AT NIGHT IMPACTS ON MOTHS USING 1.4 MILLION RECORDS ACROSS NORTHERN EUROPE

Anssi V. Vähätalo¹, Anna Suuronen² & Ida-Maria Huikkonen³

¹University of Jyväskylä; ²Finnish Environment Institute; ³Finnish Environment Institute

E-mail: anssi.vahtalo@jyu.fi

Abstract. Artificial light at night (ALAN) attracts moths and disrupts essential behaviors such as pollination and reproduction (Jägerbrand & Bouroussis 2021). These impacts can be mitigated through adaptive outdoor lighting strategies, including part-night lighting, dimming profiles, and seasonal summer shutdowns at northern latitudes (Jägerbrand & Bouroussis 2021). We assessed the seasonal timing of ALAN impacts on moths and identified when mitigation measures are most needed across latitudes 59–69°N. We analyzed 1.4 million records of 10 million moths collected with standardized light traps at 291 sites in the Finnish



Moth Monitoring Scheme during 1993–2024 (Huikkonen et al. 2024). Seasonal vulnerability to ALAN was quantified as the mean number of specimens per trap per night (CPUE) for each day of year. The ALAN impact season was defined by the 1st and 99th percentiles of the cumulative CPUE distribution. In the southernmost latitude band (59–61°N), the impact season extended from early April to early November. Season length decreased progressively northwards and was approximately two months shorter in the northernmost band (67–69°N). Southern bands exhibited two abundance peaks, in spring and late summer, whereas the spring peak was negligible in the north, where a single peak occurred later in the season. Our results indicate that in northernmost regions, light pollution impacts are low before mid-summer, supporting an extended summer lighting break followed by part-night lighting until mid-September. In southern regions, mitigation should begin earlier in spring and extend into late autumn to effectively reduce ecological impacts.

Keywords. Conservation, light pollution, phenology.

References.

- Huikkonen, I.-M., Pöry, J., Korhonen, P., Leinonen, R. & Suuronen, A. 2024. The Finnish moth monitoring scheme of 30 years (1993–2022). Suomen ympäristökeskuksen raportteja 26, 124 p.
- Jägerbrand, A.K., Bouroussis, C.A. 2021. Ecological impact of artificial light at night: Effective strategies and measures to deal with protected species and habitats. Sustainability, 13, 5991, <https://doi.org/10.3390/su13115991>.

UNVEILING CRYPTIC DIVERSITY: INTEGRATIVE TAXONOMY DISCOVERS EIGHT NEW SPECIES OF *EOIS* MOTHS AND EXPOSES BIODIVERSITY SHORTFALLS IN A NEOTROPICAL REGION

Simeão Moraes¹, Patrícia Machado¹, Mariana Stanton², Georgette Paola Ancajima¹, Lydia Yamaguchi³, Luiza Magaldi¹, Massuo Kato² & André Freitas¹

¹Universidade Estadual de Campinas, Brazil, ²Universidade de São Paulo, Brazil ³Nutabes, Instituto de Pesquisas Tecnológica, Brazil

E-mail: simeao_moraes@yahoo.com.br

Abstract. The Neotropical moth genus *Eois* Hübner (Geometridae: Larentiinae) comprises 257 valid species but has never been comprehensively revised, and the true diversity is likely underestimated. Previous studies show that wing polymorphism in several nominal taxa often hides cryptic species, a pattern also revealed by COI data, host plant records, and genitalia morphology. Among these, the *Eois russearia* complex stands out for including the genus type species, characterized by a yellow wing background with reddish bands, although the type specimen is reportedly lost. In this study, we investigated the *E. russearia* complex using an integrative taxonomy approach. We employed the ASAP (Assemble Species by Automatic Partitioning) species delimitation method on COI sequences to generate primary species hypotheses. These molecular clusters were subsequently tested and corroborated with independent evidence from comparative morphology (male and female genitalia, wing pattern), host plant associations, and geographic distribution. This approach revealed eight distinct lineages, which we describe as new species: *Eois iemanja* sp. nov., *Eois nanan* sp. nov., *Eois ibeji* sp. nov., *Eois oxumare* sp. nov., *Eois logunede* sp. nov., *Eois orumila* sp. nov., *Eois iroco* sp. nov., and *Eois stantonae* sp. nov. Our findings show that cryptic lineages can co-occur in sympatry across lowland biomes such as the Amazon and Pantanal, driven by specialized host-plant interactions. This study highlights how the lack of morphological, ecological, and distributional data collectively underestimates Neotropical biodiversity. By integrating multiple lines of evidence, we demonstrate that integrative taxonomy is crucial not only for uncovering cryptic diversity but also for providing a robust foundation for ecological studies and conservation policies in hyperdiverse groups. →



Keywords. biodiversity shortfalls, integrative taxonomy, morphology, host-plant, species delimitation.

References.

- Brehm, G., Bodner, F., Strutzenberger, P., Hünefeld, F. & Fiedler, K. 2011. Neotropical *Eois* (Lepidoptera: Geometridae): checklist, biogeography, diversity and description patterns. *Ann. Entomol. Soc. Am.* 104, 1091–1107.
- Hortal, J. et al. 2015. Seven shortfalls that beset large-scale knowledge of biodiversity. *Annu. Rev. Ecol. Evol. Syst.* 46, 523–549.
- Moraes, S. S. et al. 2021. A double-edged sword: unrecognized cryptic diversity and taxonomic impediment in *Eois* (Lepidoptera: Geometridae). *Zool. Scr.* 50, 633–646.

HOW CAN CURIOSITY CHANGE THE WAY WE SEE INSECTS? CREATIVE APPROACHES TO INSECT OUTREACH

Wendy Zhang

Singapore

E-mail: wz.yuhui@gmail.com

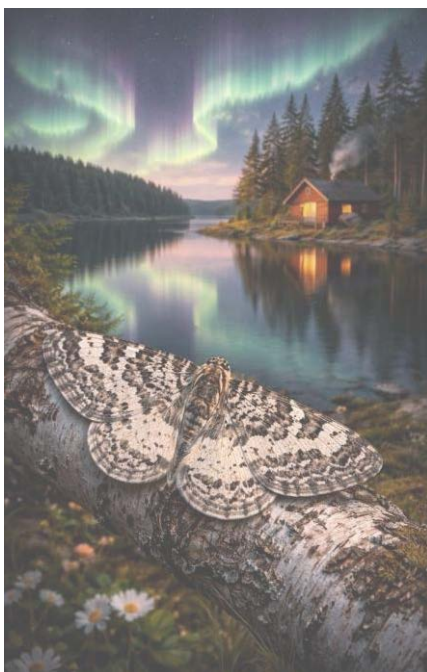
Abstract. Wendy Zhang is a Singapore-based artist and researcher whose work focuses on fostering active learning in insect outreach. This talk explores how active learning and creative engagement can shift public perceptions of insects from disgust and indifference to interest and appreciation. Drawing from outreach programmes across workshops, exhibitions, and public platforms, it examines how art, cultural narratives, and hands-on approaches can make insect-related topics more accessible and engaging.

Keywords. Insects, art, public engagement, science communication.



SURPRISE!

Abstract. Forum Herbulot XIII includes an interactive, participatory session for all participants, including accompanying persons. There is no need to prepare anything in advance, just have an open mind for different kind of activity.



THE LEPIDOPTEROLOGICAL SOCIETY OF FINLAND

Reima Leinonen

Lepidopterological Society of Finland, Lämmittäjänkatu 2 A, 00880 Helsinki, Finland

E-mail: reima.leinonen@lrv.fi

Abstract. The Lepidopterological Society of Finland is the largest entomological society in Finland, with nearly 1,000 members. Established in 1955, its main objectives are to increase overall knowledge of Finnish Lepidoptera and to promote their conservation. Society brings together both professional and citizen scientists who share an interest in Lepidoptera, forming a kind of continuous network through which information flows in both directions. As a result, the Finnish lepidopteran fauna—including the Microlepidoptera—is among the best known in the world. The society also coordinates, or serves as a key partner in, several monitoring programmes in Finland, such as the National Butterfly Recording Scheme in Finland (NAFI), the Monitoring of Arctic Lepidoptera in northernmost Finland (Tunturiperhosseuranta), and the Finnish moth monitoring scheme (Nocturna). Through these programmes, voluntary work produces valuable data for scientific studies, giving Lepidoptera an important role in multidisciplinary research. In the field of conservation, the society's Conservation Committee acts as an official expert group for the Finnish Ministry of the Environment. In this role, the committee prepares the lepidopteran section of the Finnish Red List and provides various forms of advice to environmental authorities. In addition, the committee conducts its own research on endangered species. For many years, one of Society's main activities has been the brokerage of entomological supplies. Starting with only a few items, the range has expanded considerably. Most recently, the society—together with the Entomological Society of Finland—established a company, Tibiale Ltd., which offers a wide range of supplies needed for entomological studies. Members also have access to a library with a large collection of lepidopterological literature. To support these services, the society maintains its own office in Helsinki.



Keywords. non-profit organization, overview, objectives.

FINNISH MOTH MONITORING SCHEME – NATIONAL RESULTS REGARDING GEOMETROIDEA

Ida-Maria Huikkonen¹, Juha Pöyry² & Anna Suuronen³

¹Finnish Environment Institute; ²Helsinki, Finland; ³Finnish Environment Institute

E-mail: ida-maria.huikkonen@syke.fi

Abstract. The Finnish moth monitoring scheme (Nocturna) has been operating since 1993 and has produced a remarkable dataset of the macromoth fauna (Lepidoptera, Heterocera) in Finland (Huikkonen et al. 2024). The monitoring scheme relies largely on the work of volunteer skilled amateur lepidopterists, making the scale and precision of the monitoring scheme possible. In this talk I will explore the geometrid moth data produced by the monitoring scheme. Abundance trends in general as well as for individual species of geometrid moths will be presented. Additionally, I will present examples of species from different groups delineated by species traits and distributions. These include species with typically southern and northern distributions that have expanded and contracted their ranges, respectively, as well as some species with particular nutritional preferences that have experienced changes in abundance. These examples are used to highlight the larger-scale changes detected in the Finnish moth fauna during more than 30 years of monitoring.



Keywords. Abundance, Geometridae, indicator, monitoring, trend.

References.

Huikkonen, I., Pöyry, J., Korhonen, P., Leinonen, R. & Suuronen, A. 2024. The Finnish moth monitoring scheme of 30 years (1993–2022). Reports of the Finnish Environment Institute 26/2024.

HIGH-THROUGHPUT SEQUENCING AND MUSEOMICS: A NEW ERA FOR LEPIDOPTERA SYSTEMATICS

Marianne Espeland

Leibniz Institute for the Analysis of Biodiversity Change, Museum Alexander Koenig, Bonn, Germany

E-mail: m.espeland@leibniz-lib.de

Abstract. During the last few years there has been a rampant development in molecular techniques and consequently, Lepidoptera phylogeny. Most molecular phylogenies produced not even ten years ago were usually based on no more than a handful of genes, and dried museum material was very difficult to include due to the often low quantity and quality of DNA. Recently, dataset sizes have increased dramatically and phylogenies based on hundreds or thousands of genes are now becoming the norm. Furthermore, including museum material is now easier than ever since current methods are less sensitive to DNA quality and quantity. I will here give an overview over past and current methods and provide several examples on what can currently be done in Lepidoptera phylogenomics.



Keywords. Phylogenomics, high throughput sequencing.

A PHYLOGENETIC STUDY OF KOREAN EPIPLEMINAE (LEPIDOPTERA: URANIIDAE)

Da-Hee Jin¹ & Sei-Woong Choi¹

¹Mokpo National University, Mokpo, South Korea

E-mail: da03hi@naver.com

Abstract. Epipleminae is a subfamily of the family Uraniidae, comprising more than 600 species in approximately 70 genera worldwide. However, the species diversity of this group is relatively low in the temperate regions of the Northern Hemisphere. In East Asia, including Korea, taxonomic studies on this subfamily remain insufficient, and the monophyly and phylogenetic relationships among its taxa have not yet been clearly resolved. This study aims to re-examine the taxonomic framework of Epipleminae occurring in Korea by integrating morphological and molecular data. A total of 12 species recorded from Korea were examined, and comparative morphological analyses were conducted based on external morphology and genital structures. In addition, phylogenetic analyses were performed using mitochondrial COI and nuclear gene sequences under the Maximum Likelihood (ML) framework to clarify the phylogenetic positions of Korean populations and their interspecific relationships. This study is expected to provide fundamental taxonomic data on Korean Epipleminae and to contribute to future research on the phylogeny and evolution of the subfamily.



Keywords. Epipleminae, Phylogenetics, Integrative taxonomy.

References.

- Hampson, G.F. 1892. The Fauna of British India, including Ceylon and Burma. Moths. Vol. 1. Taylor & Francis, London, xxii + 527 pp.
- Minet, J. & Scoble, M.J. 1999. The drepanoid/geometroid assemblage. In: Kristensen, N.P. (ed.) Lepidoptera. Volume 1, Handbuch der Zoologie 35, Walter de Gruyter, Berlin, 501 pp.
- Holloway, J.D. 1998. The moths of Borneo: families Castniidae, Callidulidae, Drepanidae and Uraniidae, Malayan Nature Journal 52: 1–155.

THE HITCHHIKER'S GUIDE TO PHYLOGENY: A PRACTICAL WORKSHOP OF DNA BARCODES ANALYSIS

Elena Kochanova¹ & Kyung Min Lee²

Finnish Museum of Natural History, University of Helsinki, Finland

E-mail: ¹elena.kochanova@helsinki.fi; ²kyung.m.lee@helsinki.fi

Abstract. At this workshop, we will present a practical demonstration illustrating how DNA barcode data can be analysed using commonly used phylogenetic tools. The session will guide participants through a basic analytical workflow, beginning with the retrieval of publicly available sequences and all related information from the BOLD Systems (Ratnasingham et al. 2024). Using the sequences, we will first generate a test neighbour-joining (NJ) tree within the BOLD Workbench to provide a rapid overview of sequence relationships. The same dataset will be analysed using a more robust maximum likelihood (ML) phylogenetic approach implemented in IQ-TREE (Trifinopoulos et al. 2016), which is more suitable for publication-quality analyses. Finally, genetic distances, both intra- and interspecific variation among sequences, will be calculated using MEGA X program (Kumar et al. 2018). This demonstration aims to provide a clear and accessible introduction to the phylogenetic analysis of DNA barcode datasets that can be applied in taxonomy, biodiversity, and evolutionary studies.

Keywords. DNA barcodes, BOLD Systems, Phylogenetic analysis, IQ-Tree, MEGA.

References.

- Ratnasingham et al. 2024. "BOLD v4: A centralized bioinformatics platform for DNA-based biodiversity data." *DNA barcoding: methods and protocols*. New York, NY: Springer US. 403-441.
- Trifinopoulos, Jana, et al. 2016. "W-IQ-TREE: a fast online phylogenetic tool for maximum likelihood analysis." *Nucleic acids research* 44.W1: W232-W235.
- Kumar et al. 2018. "MEGA X: molecular evolutionary genetics analysis across computing platforms." *Molecular biology and evolution* 35.6: 1547-1549.



FILLING GAPS ON THE BIODIVERSITY KNOWLEDGE IN THE GENUS *AGYLLA* WALKER, 1854 (LITHOSIINI, ARCTIINAE, EREBIDAE)

Georgette Paola Ancajima¹, Luíza de Moraes Magaldi¹, Simeão de Souza Moraes¹

¹Universidade Estadual de Campinas, Sao Paulo, Brazil.

E-mail: paolancajima@gmail.com

Abstract. Moths represent 75-85% of Lepidoptera diversity of Lepidoptera, but they are less studied than butterflies. One of the groups of moths with ecological importance are the Lithosiini, called lichen moths due they consume/sequester chemical compounds from lichens. This group has 3,150 described species, 105 of which are included in *Agylla*, one of the most speciose genera and is distributed mainly in the Neotropical region. The phylogenetic relationships between *Agylla* species have not yet been explored and the few studies on the tribe have highlighted taxonomic (Linnean shortfall), phylogenetic (Darwinian shortfall) and biogeographic (Wallacean shortfall) gaps. In this context, our work aims to fill these gaps using an integrative approach connecting taxonomy, molecular and biogeographical data. In this study, a catalog by *Agylla* is presented comprising 105 species with information on type locality, institutions where the types are deposited, and occurrence data by country and biogeographical areas. Also, we present the first phylogenetic hypothesis for the genus using molecular markers (13 markers) with 100 species of Lithosiini, including 65 species of *Agylla*. New occurrence records are presented for species of this genus, totaling 4,000 records so far. Our results corroborate that *Agylla* is not a monophyletic group, being divided into four clades. Additionally, species from other genera were allocated among *Agylla* species. We present hypotheses about phylogenetic relationships and possible taxonomic and nomenclatural changes in the genus *Agylla*, and we also discuss morphological characteristics in different species.



Keywords. phylogenetics, diversity, mitochondrial and nuclear DNA, knowledge shortfalls.

101 NEW SPECIES OF *COLEOPHORA* (GELECHIOIDEA: COLEOPHORIDAE) TO GEORGIA (CAUCASUS) – WHAT ABOUT GEOMETRIDAE?

Leo Vähätalo¹, Jukka Tabel², Maka Murvanidze³ & Anssi Vähätalo⁴

¹Finnish Museum of Natural History, University of Helsinki, Finland; ²Independent Researcher, Finland; ³Tbilisi State University, Georgia; ⁴Department of Forest Sciences, University of Helsinki, Finland; Department of Biological and Environmental Science, University of Jyväskylä, Finland

E-mail: leo.vahatalo@helsinki.fi

Abstract. Coleophoridae (Gelechioidea) is a globally widespread family of small moths, comprising over 1550 species. The majority of known species are distributed throughout the Palearctic region, particularly in arid environments of Europe and Central Asia. Despite being situated between these regions, surprisingly few coleophorids have been reported from the Caucasus ecoregion, which is a biodiversity hotspot. From Georgia, a country comprising a myriad of diverse biotopes, only 13 species were known until 2023, when the total number was increased to 32.

To investigate the true number of species, several excursions to Georgia were conducted between 2019 and 2024. Locations were chosen to represent various biotopes from all cardinal directions, particularly arid ones. Sampling was conducted with portable battery powered LED-traps and manually. The results revealed an unprecedented richness of coleophorids: by employing integrative methods, combining both morphology and DNA barcoding, over a hundred morphospecies were discovered. Species-level identifications comprised 101 new *Coleophora* species to Georgia, ten of which are being described as new to science, supported by morphology and/or DNA barcodes. Approximately 30 additional species require identification and further study. Our results thus present a 289% increase in the known Coleophoridae of Georgia, highlighting the extent of undiscovered microlepidopteran diversity in Georgia, a pattern likely applicable to much of the Caucasus region. Although Macrolepidoptera are generally better studied than Microlepidoptera, our results raise the question: if over a hundred new species of *Coleophora* can be found in just a few years in Georgia, how many Macrolepidoptera, including Geometridae, are left undiscovered throughout the entire Caucasus?



Keywords. Caucasus, biodiversity hotspot, Coleophoridae, new species, hidden diversity.

References.

- Anikin, V.V. & Shchurov, V.I. (2001) Casebearers from Caucasus (Lepidoptera: Coleophoridae). *Zoosystematica Rossica*, 10 (1), 171–179.
- Sinev, S.Yu., Anikin, V.V., Piskunov, V.I., Streltsov, A.N., Ustjuzhanin, P.Y. & Yakovlev, R.V. (2023) Lepidoptera of South Ossetia (Northern Transcaucasia). Part IV. Microlepidoptera: Adelidae to Choreutidae. *Acta Biologica Sibirica*, 9, 1061–1072.
<https://doi.org/10.5281/ZENODO.10213217>
- Tabell, J., Siloaho, R. & Sippola, L. (2024) The casebearer moths (Coleophoridae) of Northern Europe: genitalia. *Tibiale Insect Equipment Ltd., Helsinki*, 248 pp.



Coleophora chalcogrammella Zeller, 1839, male, photo Leo Vähätalo.

REDEFINING DESMOBATHRINAE AND EPIDESMIINAE ON A MORPHOLOGICAL BASIS (GEOMETRIDAE)

Claude Tautel & Joël Minet

Muséum national d'Histoire naturelle, Paris, France

E-mail: tautel.claude@orange.fr

Abstract. Desmobathrinae and two recently proposed subfamilies, the Epidesmiinae and Eumeleinae, include a number of genera long held in the Oenochrominae but with slender-bodied imagines (unlike the stout-bodied ones of true Oenochrominae). Holloway (1996) drew attention to a few imaginal characters enabling the Desmobathrinae to be defined and he compiled a preliminary list of 22 desmobathrine genera (worldwide, but with the inclusion of *Eumelea* within this subfamily). In the Geometrid moths of the world (Scoble 1999), 20 genera were placed in the Desmobathrinae (still with *Eumelea* included) while many slender-bodied moths were provisionally retained in the Oenochrominae. Thanks to several recent molecular phylogenetic studies by Murillo-Ramos and her colleagues (2023), a better knowledge of the subfamily Desmobathrinae is now available (composition, main lineages, and tentative characterisation). After a careful re-examination of various morphological characters and the study of new imaginal characters, we can now add an Indomalayan genus to the Epidesmiinae and include approximately 40 genera in the Desmobathrinae. The geographical distribution of these two subfamilies is clarified and the known hostplants of the latter are reviewed.



Keywords. Systematic, Sub-families, Geometridae, Epidesmiinae, Desmobathrinae.

References.

- Holloway, J.D. (1996) The Moths of Borneo. Part 9. Geometridae. Subfamilies Oenochrominae, Desmobathrinae and Geometrinae. *Malayan Nature Journal*, 49 (3–4): 147–326.
- Murillo-Ramos, L., Twort, V., Wahlberg, N. & Sihvonen, P. (2023) A phylogenomic perspective on the relationships of subfamilies in the family Geometridae (Lepidoptera). *Systematic Entomology*, 48(4), 618–632. <https://doi.org/10.1111/syen.12594>
- Scoble M. J. (ed.) 1999. *Geometrid moths of the world: a catalogue* (Lepidoptera, Geometridae). Stenstrup: Apollo Books.

THE STRUCTURE OF GEOMETRID MOTH DIVERSITY

Leidys Murillo Ramos

University of Sucre, Sincelejo, Colombia

E-mail: leidys.murillo@unisucra.edu.co

Abstract. Understanding species diversification begins with understanding the structure of diversity itself. Geometridae moths constitute an ideal model system for examining how diversity is structured across phylogeny, space and time. Although our knowledge of this family remains taxonomically fragmented, geometrids have successfully colonized all major biogeographical regions except the polar zones (Ghanavi et al., 2025). Despite their remarkable diversity, however, the mechanisms underlying their rapid diversification remain poorly understood. Species richness in Geometridae is highly concentrated in tropical regions, unevenly distributed across the phylogeny, ranging from monotypic clades to genera comprising thousands of species, and from old to relatively young radiations (Brehm et al., 2019; Murillo-Ramos et al., 2019). Recent efforts to assemble a global phylogenetic framework now allow these spatial and temporal patterns to be examined within a unified evolutionary context. In this talk, I present an overview of how the global phylogeny of Geometridae has been assembled and how it serves as a backbone for interpreting large-scale patterns of diversity and biogeography. By providing a global picture of their phylogenetic structure with global distributional data, this synthesis highlights the large-scale structure of the family, gaps, opportunities and provides a comparative framework for future studies of macroevolutionary patterns and classification. I complement this global view with selected case-studies illustrating the possibilities emerging from our long-term effort to compile phylogenomic data across the family.



Keywords. Systematics, diversification, biogeography, richness, evolutionary patterns.

References.

- Brehm, G., Murillo-Ramos, L., Sihvonen, P., Hausmann, A., Schmidt, B.C., Öunap, E., Moser, A., Mötter, R., Boldt, D., Bodner, F., Lindt, A., Parra, L.E., Wahlberg, N., 2019. New World geometrid moths (Lepidoptera: Geometridae): Molecular phylogeny, biogeography, taxonomic updates and description of 11 new tribes. *Arthropod Systematics & Phylogeny* 77, 457-486. →

-
- Ghanavi, H., Chazot, N., Sanmartín, I., Murillo-Ramos, L., Duchene, S., Sihvonen, P., Brehm, G., Wahlberg, N., 2025. Region-specific diversification dynamics and biogeographic history of one of the most diverse families of insects. *Syst Entomol* 50, 206-220.
- Murillo-Ramos, L., Brehm, G., Sihvonen, P., Hausmann, A., Holm, S., Reza Ghanavi, H., Őunap, E., Truuverk, A., Staude, H., Friedrich, E., Tammaru, T., Wahlberg, N., 2019. A comprehensive molecular phylogeny of Geometridae (Lepidoptera) with a focus on enigmatic small subfamilies. *Peerj* 7, e7386.

UNLOCKING A GLOBAL RESOURCE: DIGITISING THE NHMUK GEOMETRIDAE COLLECTION THROUGH DISSCO UK

Robyn Crowther

Natural History Museum, London, United Kingdom

E-mail: r.crowther@nhm.ac.uk

Abstract. The Natural History Museum, London (NHMUK) holds one of the world's largest and most scientifically significant Geometroidea collections, remarkable for its temporal and geographic breadth as well as its exceptional type richness. With over 15,000 Geometridae types alone, this collection represents an unparalleled resource for species discovery, taxonomy, ecology, and conservation research. Demand for access remains consistently high: between April 2022 and March 2025, 844 Geometroidea specimens were loaned to researchers, while visiting scientists spent approximately 137 days working directly with the collection. Unlocking this material through large-scale digitisation will substantially increase accessibility and expand its research impact. As part of DiSSCo UK, NHMUK is undertaking the digitisation of the entire Geometridae collection. DiSSCo (Distributed System of Scientific Collections) aims to transform how natural science collections are accessed and used by creating a unified, standards-driven digital infrastructure across UK institutions. Within this framework, the Geometridae digitisation project is generating high quality specimen images and metadata, enabling global, open access to a dataset of immense scientific value. This presentation will outline the work required to prepare the collection for digitisation, provide an update on progress to date, and demonstrate how researchers can access and use the emerging digital resource. By increasing accessibility, we aim to support and stimulate future research across the Geometridae community.



Keywords. Digitisation, Collections based research, Accessibility, Data mobilization.

THE SECOND EDITION OF THE WORLD CATALOGUE OF THE GEOMETRID MOTHS IS NOW ONLINE

Hossein Rajaei¹, Axel Hausmann² & Pasi Sihvonen³

¹State Museum of Natural History Stuttgart, Germany; ²SNSB – Bavarian State Collection of Zoology, Munich, Germany; ³Finnish Museum of Natural History, University of Helsinki, Finland

E-mail: hossein.rajaei@smns-bw.de

Abstract. The online catalogue of Geometroidea, initially developed as a taxonomic resource for Geometridae (Rajaei et al. 2022) and hosted on the Forum Herbulot platform (geometroidea.smns-bw.org), has undergone a major revision and expansion. A second, comprehensively updated edition of the World Catalogue of Geometrid moths is now available online, incorporating close to thousand taxonomic changes and 487 additional taxa. These updates are the result of an extensive review process, during which numerous issues reported by users—such as overlooked taxa, nomenclatural inconsistencies, duplicate entries, and unresolved synonymies—have been carefully evaluated and corrected. The revised version further enhances the scope of the resource by covering all subfamilies within Geometridae and by integrating enriched datasets. Key information from earlier foundational works (Scoble 1999), including precise type localities, depository details, and full bibliographic references have been reintroduced and standardized. In addition, preliminary tribus classifications have been added and a range of new search functionalities has been implemented, both within the online catalogue and across the Forum Herbulot website, significantly improving accessibility and usability for the scientific community. Finally, the catalogue is now linked to the Geometridae Mundi project, which provides images for nearly half of all known geometrid moth species, representing a major step forward in combining taxonomic and visual data within a single platform. This presentation reviews the main advances of the new version and outlines future directions for this continuously developing resource. →



Keywords. Database, taxonomy, Geometridae, online resource.

References.

- Rajaei, H., Hausmann, A., Scoble, M., Wanke, D., Plotkin, D., Brehm, G., Murillo-Ramos, L. & Sihvonen, P. 2022. An online taxonomic facility of Geometridae (Lepidoptera), with an overview of global species richness and systematics. *Integrative Systematics*, 5 (2): 145-192. <https://doi.org/10.18476/2022.577933>
- Scoble, M. J. 1999. *Geometrid Moths of the World: A Catalogue (Lepidoptera, Geometridae)*. Vols. 1 & 2, 1200 pp. Collingwood (CSIRO Publishing) and Stenstrup (Apollo Books).



GENERAL INFORMATION

Mid-congress excursion (1.7.2026)

I. **The Finnish Nature Centre Haltia** (<https://haltia.com/en/>) is an ecological exhibition and event center located in Espoo, serving as the main gateway to Nuuksio National Park. Opened in 2013, it attracts around 200,000 visitors annually and acts as a hub for nature tourism and environmental education. The center showcases Finland's diverse landscapes through immersive and interactive exhibitions, including seasonal and thematic displays. It offers guided tours, events, and direct access to hiking trails leading into surrounding forests and lakes. Haltia also hosts a Nature School, providing educational programs for students and visitors of all ages. The building, designed by Rainer Mahlamäki, is a notable example of sustainable wooden architecture. Constructed mainly from cross-laminated timber, it blends harmoniously into the natural landscape. Its design draws inspiration from Finnish folklore and the surrounding environment. The center integrates eco-friendly technologies such as geothermal heating, solar energy, and a green roof. Facilities include a restaurant focused on local organic food, a nature shop, and rental services for outdoor activities. Operated by Metsähallitus, Haltia serves as a model for sustainable development and nature conservation. (Address: Nuuksiontie 84, 02820 Espoo).



Mid-congress excursion (1.7.2026)

II. The Finnish Museum of Natural History (LUOMUS) (<https://www.helsinki.fi/en/luomus>) is part of the University of Helsinki, is a leading research institution and public museum in Helsinki. Located near Parliament House, it is a major destination for biodiversity education and scientific outreach. The museum presents Finnish and global nature through extensive dioramas, thematic exhibitions, and displays on evolution and skeletal biology. Its collections comprise more than 14 million specimens, covering zoology, botany, mycology, minerals, and fossils. LUOMUS plays a central role in taxonomic research, conservation science, and long-term biodiversity monitoring. It also maintains two botanical gardens with diverse living plant collections for research and public education. The exhibitions are designed to engage a wide audience, from families to specialists. The institution actively contributes to international scientific collaboration and data sharing. It serves as Finland's national repository for natural history collections. (Address: Pohjoinen Rautatiekatu 13, 00100 Helsinki).



Mid-congress excursion (1.7.2026)

III. Tibiale Ltd. (<https://www.tibiale.fi/>) supplies high-quality equipment and accessories for insect research and collecting. Its products are aimed at both beginners and professional entomologists. The selection includes insect nets, pins, preparation tools, and storage boxes. The company also offers UV lamps and specialized field and laboratory equipment. Tibiale is known for providing reliable and field-tested materials. In addition to equipment, it publishes entomological literature. It also distributes insect-related books from other publishers. The company is owned by the Lepidopterological Society of Finland and the Entomological Society of Finland. Tibiale supports both amateur and professional research communities. (Address: Lämmittäjänkatu 2 A, 00810 Helsinki).



ALPHABETIC LIST OF PARTICIPANTS

Ancajima, Georgette Paola

*Universidade Estadual de Campinas, São Paulo, Brasil
paolancajima@gmail.com*

Can, Feza

*Mustafa Kemal University, Hatay, Türkiye
cezafan_onurcan@hotmail.com*

Crowther, Robyn

*Natural History Museum, London, United Kingdom
r.crowther@nhm.ac.uk*

Dey, Pritha

*National Centre for Biological Sciences, Bangalore, India
prithadey@ncbs.res.in*

Duplouy, Anne

*Faculty of Biological and Environmental Sciences, University of Helsinki, Helsinki, Finland
anne.duplouy@helsinki.fi*

Englund, Mikael

*Finnish Museum of Natural History, University of Helsinki, Helsinki, Finland
mikael.englund@helsinki.fi*

Espeland, Marianne

*Leibniz Institute for the Analysis of Biodiversity Change, Museum Koenig, Bonn, Germany
m.espeland@leibniz-lib.de*

Guaragna, Silvia

Munich, Germany

Hausmann, Axel

*SNSB-ZSM, Bavarian State Collection of Zoology, Munich, Germany
Axel.Hausmann@zsm.mwn.de*

Heikkilä, Maria

*Finnish Museum of Natural History, University of Helsinki, Helsinki, Finland
maria.heikkila@helsinki.fi*

Holm, Sille

*Swedish University of Agricultural Sciences, Uppsala, Sweden,
sille.holm@slu.se*

Huikkonen, Ida-Maria

*Finnish Environment Institute, Helsinki, Finland
ida-maria.huikkonen@syke.fi*

Jin Da-Hee

*Mokpo National University, Mokpo, South Korea
da03hi@naver.com*

Kaila, Lauri

*Finnish Museum of Natural History, P.O.Box 17, FI-000a4 University of Helsinki, Finland
Lauri.kaila@helsinki.fi*

Kochanova, Elena

*Finnish Museum of Natural History, University of Helsinki, Helsinki, Finland
elena.kochanova@helsinki.fi*

La Cava, Sara

*Council for agricultural research and economics, Research Centre for Forestry and Wood,
Rende, Italy
saralacava94@gmail.com*

László, Gyula M.

*Natural History Museum, London, United Kingdom
gyula.laszlo1@nhm.ac.uk*

Lee, Kyung Min

*Finnish Museum of Natural History, University of Helsinki, Helsinki, Finland
kyung.m.lee@helsinki.fi*

Leinonen, Reima

*Lepidopterological Society of Finland, Helsinki, Finland
reima.leinonen@lvv.fi*

Moraes, Simeão

*Universidade Estadual de Campinas, São Paulo, Brazil
simeao_moraes@yahoo.com.br*

Murillo Ramos, Leidys

*University of Sucre, Sincelejo, Colombia
leidys.murillo@unisucre.edu.co*

Rantala, Markus P.

*EntoLight Systems, Kerava, Finland
entolight@gmail.com*

Park, Chang-Gyu

*Mokpo National University, Mokpo, South Korea
ckdrb9809@naver.com*

Rajaei, Hossein

*State Museum of Natural History, Stuttgart, Germany
hossein.rajaei@smns-bw.de*

Sihvonen, Pasi

*Finnish Museum of Natural History, University of Helsinki, Helsinki, Finland
pasi.sihvonen@helsinki.fi*

Skou, Peder and Lissa

*Vester Skerninge, Denmark
pederskou1@gmail.com*

Staude, Hermann

*National Geographic Okavango Wilderness Project, Wild Bird Trust, South Africa
staudehermann@gmail.com*

Tautel, Claude

*Muséum national d'Histoire naturelle, Paris, France
tautel.claude@orange.fr*

Vähätalo, Anssi V.

*University of Jyväskylä, Jyväskylä, Finland
anssi.vahtalo@jyu.fi*

Vähätalo, Leo

*Finnish Museum of Natural History, University of Helsinki, Helsinki, Finland
leo.vahatalo@helsinki.fi*

Wiessner, Sven

*Dresden, Germany
swiess@web.de*

Zhang, Wendy

*Singapore
wz.yuhui@gmail.com*

Zucco, Giada

*Research Centre for Forestry and Wood, Rende, Italy
giada.zucco1994@libero.it*

SPONSORS

The Organizing Committee wishes to thank and acknowledge the sponsors of Forum Herbulot 2026 (listed below). The support allowed successful organization of the congress.



The Federation of Finnish Learned Societies, established in 1899, is a national co-operative body for learned societies in Finland. It contributes to the co-operation between learned societies, supports and develops scholarly communication and publishing, and promotes awareness and usage of research results. The Federation distributes state subsidies allocated by the Ministry of Education and Science for scholarly publishing and for organising international conferences and national seminars.
<https://tsv.fi>



The Lepidopterological Society of Finland is the largest entomological society in Finland, with nearly 1,000 members. Established in 1955, its main objectives are to increase overall knowledge of Finnish Lepidoptera and to promote their conservation. The society also coordinates, or serves as a key partner in, several monitoring programs in Finland and the society's Conservation Committee acts as an official expert group for the Finnish Ministry of the Environment. The Society publishes the journal *Baptria*, which is issued in four issues per year.
<http://www.perhostutkijainseura.fi/>



Pentti Tuomikoski fund for networking is one of the University of Helsinki Funds. It supports the work of the Finnish Museum of Natural History by covering the costs of networking and collaboration of the museum's researchers via travel grants, conference attendance, inviting an international guest to the Museum, or field work.



Entolight Systems is a Finnish company designing and manufacturing next-generation insect monitoring equipment for scientific field research as well as for professional and amateur use across Europe. It develops innovative, reliable, and energy-efficient solutions that support accurate and effective insect monitoring. The products include low-voltage (DC) LED UV light solutions, power bank solutions, and both immobilizing and live-capture research traps, as well as a comprehensive range of compatible accessories designed to meet the needs of researchers and citizen scientists. www.entolight.fi



Tibiale Ltd. sells high-quality and proven research and collecting equipment and accessories to all insect enthusiasts, from beginners to professionals. The selection includes insect nets, needles, preparation equipment and storage boxes, as well as UV lamps and various research gear. In addition, Tibiale publishes literature and also sells insect-related books from other publishers. The company is owned by the Lepidopterological Society of Finland and Entomological Society of Finland. <https://www.tibiale.fi/>



The Entomological Society of Finland brings together insect enthusiasts and researchers in Finland, aiming to promote understanding, research and protection of Finnish insects. The society's scope also includes arachnids and millipedes. The society organizes monthly meetings and excursions during spring and summer. The society was founded in 1919 in Helsinki and is the oldest and second largest entomological society in Finland. <https://www.hyonteisseura.fi/>

VENUE AND PUBLIC TRANSPORTATION

Congress venue: Hotel Lepolampi

Address: Kivilammentie 1, 02820 Espoo

Reception: +358 (0)10 324 4840;

Sales: E-mail: sales(at)lepolampi.fi,

+358 (0) 10 324 4855 (weekdays from 9:00 to 15:45)

Restaurant opening hours

- Breakfast 6:00-9:00
- Home-cooked buffet and à la carte menu are open Mon – Thu from 5:00 PM to 8:30 PM

Reception opening hours

- Mon 9:00-21:00
- Tue-Thu 6:00-21:00
- Fri 6:00-12:00
- On Saturdays and Sundays, restaurant and reception are closed except for events.

Directions

The hotel is located near Espoo city centre (12 km), Helsinki (30 km) and Helsinki-Vantaa Airport (33 km).

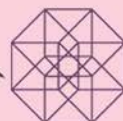
The hotel can be reached by public transportation. Espoon keskus can be reached by train or by bus. Bus # 243 runs from Espoon keskus to the hotel. You can travel the entire journey using ABCD ticket (valid for 90 minutes, cost 5 €). See bus schedules in the [Route](#) Guide.

Taxi from Helsinki-Vantaa Airport is about 80–90 €, and taxi from Espoon keskus is about 40 €.

There are plenty of parking spaces in the hotel yard, also for larger vehicles.



Angerona prunaria (Linnaeus, 1758) is the sole species of the monotypic genus *Angerona* Duponchel, 1829. Commonly known as the orange moth, it is a relatively large and conspicuous geometer moth with a wingspan of 35–45 mm, occasionally reaching 56 mm, and with males typically smaller, but more brightly colored than females. The species is highly variable. Widely distributed across Europe and into Asia, it inhabits open woodlands, gardens, and parks. The caterpillars are twig-mimicking and polyphagous, feeding on a wide range of trees and shrubs, and overwinter before pupating in spring. Adults are mostly active from late May to August and are frequently attracted to light. We are quite optimistic that you may see this species during the congress.



Forum
Herbulot

LUOMUS

NATURAL HISTORY
MUSEUM
STUTTGART