



# THE PYRALOID PLANET

Volume 18 – December 13, 2024

A Newsletter for Pyraloidea Fans

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## Editorial

This issue includes contributions on a variety of topics by pyraloid enthusiasts worldwide. Bernard Landry shares his collecting adventure in the Dominican Republic, Théo Léger highlights scopariine and crambine diversity of the Philippines, and Koen Maes reports on new spilomelines from Africa. I briefly touch on various pyraloid projects I was involved in and research on *Diatraea* and Costa Rican Acentropinae with two students who visited me this year.

In the “About Pyraloidologists” section, Stephen Sutton, author of *Pyralid Moths of Borneo*, and Herb Neunzig, notable phycitine researcher, passed away recently and are commemorated. Both contributed greatly to knowledge about pyraloids in their own way. Yuki Matsui, a postdoctoral researcher at

Kyushu University of Japan, introduces himself to the pyraloid community, and writes about his recent pyraloid research.

I enjoyed going to two meetings this year because there were multiple pyraloid presentations. At the July Lepidopterists’ Society Meeting in Ithaca, New York, I presented on Costa Rican midilines and Bernard Landry presented on Galapagos crambines. At the November Entomological Society of America Meeting in Phoenix, Arizona, I presented on Mexican phycitines, Jim Hayden on lathrotelines, and Jacob Bethin on acenotropines.

Matthias Nuss provides an update to **GlobIZ** as always. Richard Mally continues as the major contributor updating the pyraloid database. **Request:** Corrections, inclusions, or questions are welcomed; do not hesitate to contact any of the authors on the website ([www.pyraloidea.org](http://www.pyraloidea.org)). If you describe new pyraloid taxa or publish nomenclatural changes, or if you know about such publications in an unusual publication outlet, please send an email with the citation or the pdf so that it can be included to the database.

Finally, in the last few years I have been reporting on papers announcing new records of *Plodia interpunctella* from stations on is-

lands in the Antarctic. This year I would like to bring to your attention a paper in the Publications section by Benitez et al. (2024) that declares *Plodia interpunctella* “a threat” to Antarctica and its two native chironomid species.

Inspired by Théo’s work on Filipino pyraloids, I share two images on the final page from a collecting trip, in collaboration with the International Rice Research Institute (IRRI), I took to the Philippines in 1992. I thank everyone who was able to send in items for the newsletter on our shared pyraloid passion.

M. Alma Solis

### GlobIZ News 2024

In 2024, there were 27 taxonomic papers that provided descriptions of 89 new pyraloid species, six new genera, and some with nomenclatural changes to established names. Two papers were notable regarding the number of newly described species. Graziano Bassi described 19 new species of *Ancylolomia* from the Afrotropical region, and Théo Léger described 32 new species of Crambinae and Scopariinae from the Philippines. Most new species were added to Crambinae (48 spp.), followed by Spilomelinae (13 spp.), and Scopariinae (12 spp.). Of the six new genera described, four were in Spilomelinae (*Chalcibotys* Maes, *Cristabotys* Maes, *Parathrausta* Seizmair, *Purpurata* Xue et al.), one in Musotiminae (*Pacifimusotima* Ko & Solis), and one in Phycitinae (*Suailia* G. Leraut).

The Global Information System on Pyraloidea (GlobIZ) now comprises 27,063 pyraloid names for 2,118 genera (+ 1,467 synonyms) and **16,842** species (+ 6,636 synonyms). The updated table on the right provides an overview by subfamily.

Matthias Nuss & Richard Mally

	genera		species	
	valid synonyms		valid synonyms	
Chrysauginae	130	61	402	129
Epipaschiinae	95	69	737	174
Galleriinae	64	60	270	112
Phycitinae	666	422	3,542	1,579
Pyralinae	136	108	1,321	401
Acentropinae	69	38	794	216
Crambinae	177	123	2,131	1,102
Erupinae	3	4	36	5
Glaphyriinae	75	58	537	206
Heliothelinae	3	3	29	14
Hoploscopinae	2	4	46	2
Lathrotelinae	6	7	46	11
Linostinae	1	0	4	2
Midilinae	11	4	60	11
Musotiminae	24	8	208	26
Odontiinae	87	39	387	147
Pyraustinae	171	106	1,281	648
Schoenobiinae	29	17	239	97
Scopariinae	20	24	600	209
Spilomelinae	349	312	4,172	1,545
	2,118	1,467	16,842	6,636

### NEWS FROM.....

#### Bernard Landry

#### A new collecting effort for Pyraloidea in the Dominican Republic, and other news

In May and June 2024, I spent almost a month in the Dominican Republic collecting specimens of Pyraloidea and related groups. This trip was aimed at the beginning of the rainy season to complement my 2022 trip in November-December.

I travelled with Carlos De Soto and Maribel Armenteros, two dedicated naturalists and photographers. We visited the Samaná Peninsula in the north for coastal habitats at Las Galeras up to 130 m in elevation, then to Baharona province in the west, collecting around Polo between 830 to 1420 m in eleva-



tion, then, as in 2022, we went to Villa Pajon in Valle Nuevo National Park, collecting between 2110 to 2250 m, and finishing our trip at Arroyo Frío and Reserva Ebano Verde, at elevations between 1105-1120 m.

Collecting was much more productive this year than in 2022. I collected 20 species of Crambinae, which is 10 more than in 2022, and 105 species of Spilomelinae, which is 30 more than in 2022. All the species of Crambinae collected in 2022 were also collected in 2024, but a dozen spilomeline species collected in 2022 were not found this year. In 2024 I also collected Odontiinae and Schoenobiinae for the first time, the former subfamily represented by the two species of *Cliniodes* known from the island, and the latter by one species of as yet undetermined to genus, but most likely *Donacaula*. All of the other subfamilies of Crambidae were found on the island, except Heliorthelinae, Hoploscopinae, Linostinae, and Midilinae. A few of our collecting localities (Figs. 1-3) as well as some of the more striking taxa collected are illustrated here in Figs. 4-7. Anyone interested in this material is welcome to contact me!



**Fig. 1. Behind Playa Rincón, Las Galeras, with Carlos De Soto.**



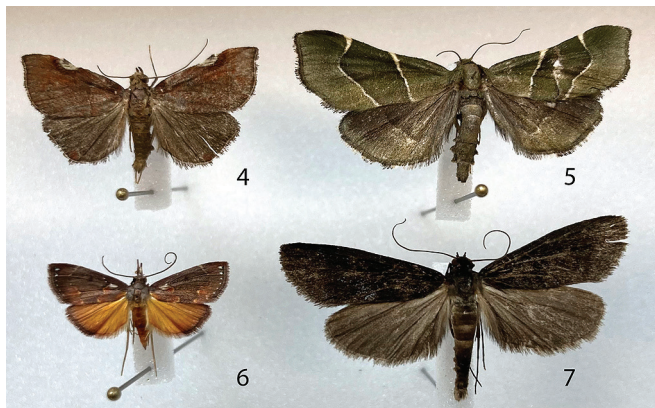
**Fig. 2. Reserva Bosque de Las Nubes, 1420 m, Barahona Province.**



**Fig. 3. Savana Quéliz, Parque Nacional Valle Nuevo, 2250 m.**

**With respect to publications:** My latest work on Galápagos moths was published (Landry & Léger, 2024), a review of the Crambinae with seven new species. I spoke about this study at the Lepidopterists' Society meeting in July. Among the new species there is a radiation of five species of the genus *La*

Bleszyński, which more than doubles the number of species of that genus (from 4 to 9). The endemism in Crambinae is 80%, the highest among Pyraloidea in the archipelago except for Musotiminae, which is known from a single endemic species.



**Figs 4-7. (4) *Thermotesia* sp. (5) *Penthesilea? difficilis* (Felder & Rogenhofer) (6) *Parachmidia fervidalis* (Walker) (7) Undetermined to subfamily. Identifications were provided by Vitor Becker.**

**News of a personal nature:** I have decided to retire from the Muséum de Genève in March next year, although I plan to keep on publishing research in association with the Muséum and to curate the collection.

**Email address:** Last June my email address changed to [bernard.landry@geneve.ch](mailto:bernard.landry@geneve.ch).

**Bernard Landry**



***Crambus ainslieellus* Klots (type specimen)**

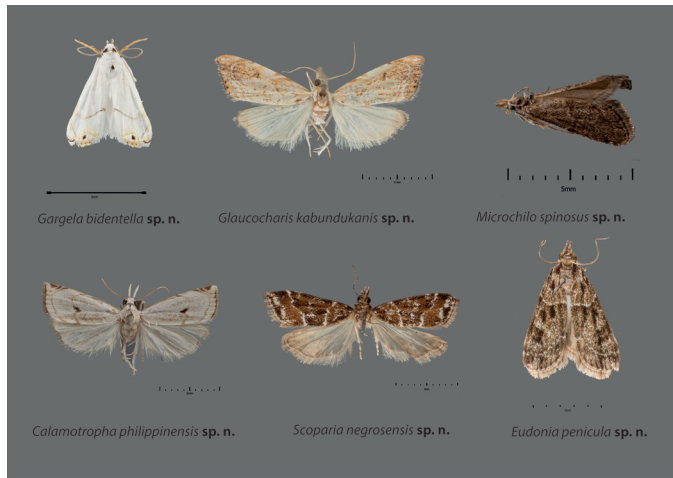
## **Théo Léger**

### **32 new scopariine and crambine species and revealing high cryptic diversity in the Philippines**

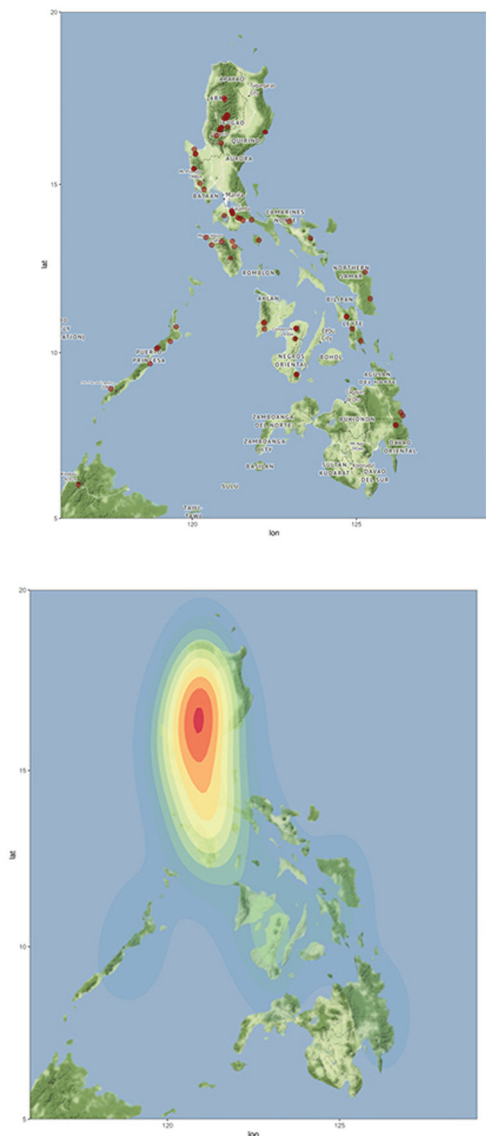
The Philippines form an archipelago with over 7,600 islands comprised of some volcanic, out-of-the-sea islands and other islands that drifted from the Asian continental crust. Although comprehensive studies have been conducted for butterflies and some groups of nocturnal moths, very few authors have focused on the pyraloids of this archipelago. In volume two of the series “Reisen im Archipel der Philippinen”, Semper (1896-1902) described 139 pyraloid species from the Philippines providing the most important contribution to date about these moths. Others, such as Guenée, Schaus, Walker, and West, also contributed to knowledge about pyraloids from this region. Despite sharing many species with the neighboring Sundaland (a larger biogeographical region including Bali, Borneo, Java, the Malay Peninsula and Sumatra), only 235 species of pyraloid moths have been described from the Philippines.

I recently published a revision of Crambinae and Scopariinae for the Philippines (Léger, 2024) (Fig. 1). The Museum für Naturkunde Berlin has good holdings of Philippine material from repeated visits in the late 90's by Wolfram Mey, a former curator, to the archipelago (Fig. 2). Morphology and DNA barcoding revealed 62 species of Crambinae and Scopariinae, of which 32 are described as new. DNA barcodes were obtained for 88% of the 491 specimens investigated, and revealed cryptic diversity associated with geographical distribution in one third of the species. Of note are *Scoparia philippinensis* (Hampson, 1919) and *Metaeuchromius micralis* (Hampson, 1919) that are split into six different Operational Taxonomic Units (“OTUs”, i.e.,





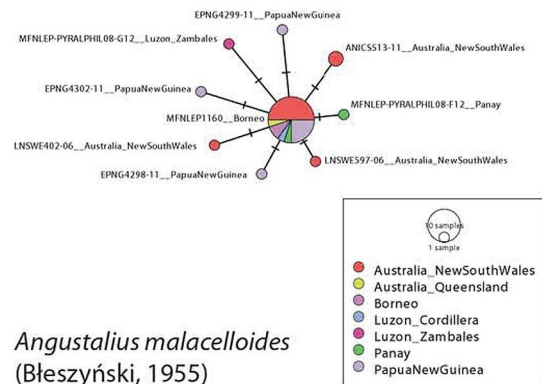
**Fig. 1. Six of the 32 new species illustrated.**



**Fig 2. Maps of the collecting effort in the Philippines by Wolfram Mey.**

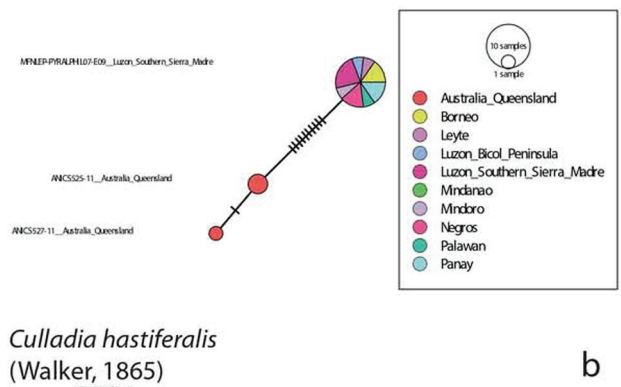
the proxy for a species, based on a distance threshold of 2.7% here) with each lineage being restricted to a given island, but with no evident morphological characters to separate them.

Furthermore, DNA barcodes provided information about population dynamics. Little or no variation was observed in two lowland crambine species, *Angustalius malacelloides* (Błeszyński, 1955) (Fig. a, below) and *Culladia hastiferalis* (Walker, 1865) (Fig. b, below), a pattern that implies a recent, rapid spread over the archipelago. Potential colonization routes used by these small moths can also be inferred from DNA barcodes. For example, in *Glaucocharis lathonia* (Błeszyński, 1962) the haplotype of Borneo is more closely related to that of Luzon than to that of Mindanao, suggesting a colonization route through the Palawan Strait.



*Angustalius malacelloides*  
(Błeszyński, 1955)

a



*Culladia hastiferalis*  
(Walker, 1865)

b

In *Gargela minuta* Song, Chen & Wu, 2009, the haplotype found in Luzon and Mindoro differs from that of Taiwan by only two bases, suggesting a recent oversea dispersal to or from Taiwan.

In total, slightly over half of the species diversity was represented by new species. An endemism rate of 95% was recovered in the mountain-dwelling Scopariinae, while half of the Crambinae species currently represent endemics. Forty OTUs were represented by unique female specimens and were hence not described, suggesting that the males of many species remain to be discovered. Mapping the sampled localities revealed a strong bias towards Luzon, the largest island of the Philippines. On Mindanao, the second largest island, only two localities were visited by Wolfram Mey, presumably due to safety issues in the remaining regions of the island, such as Zamboanga Peninsula. Higher mountain ranges on Palawan, Panay, and Eastern Luzon remain poorly explored and will surely reveal additional species for these groups.

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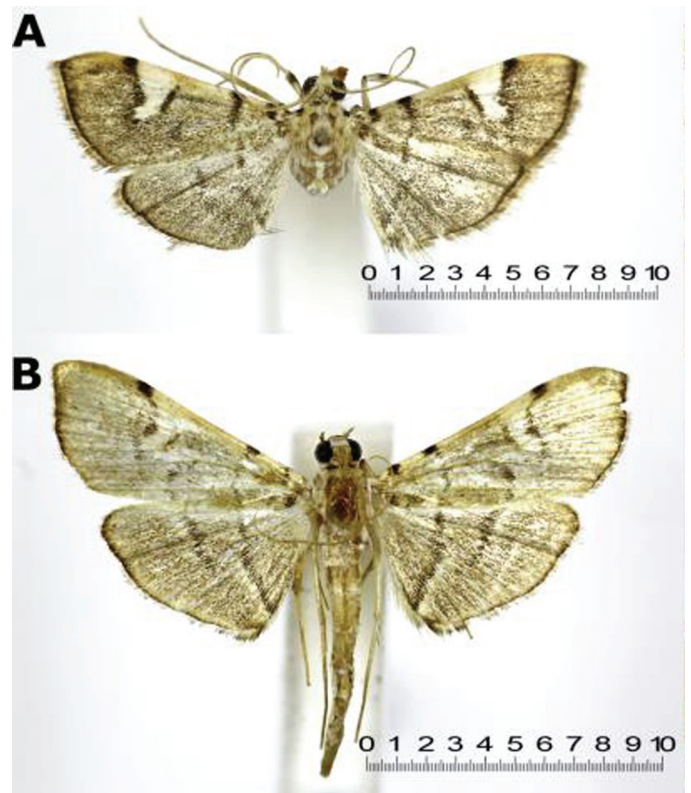
Léger, T. 2024. Half of the diversity undescribed: integrative taxonomy reveals 32 new species and a high cryptic diversity in the Scopariinae and Crambinae of the Philippines (Lepidoptera: Crambidae). Bulletin of the Society of Systematic Biologists. <https://doi.org/10.18061/bssb.v3i2.9527>

Semper, G. 1896–1902: Die Schmetterlinge der philippinischen Inseln. Beitrag zur Indo-Malayischen Lepidopteren-Fauna. 2.: Die Nachtfalter – Heterocera. Pp. 381–728, pls C–V, 60–66. – In: Semper, C., Reisen im Archipel der Philippinen. 2. Theil: Wissenschaftliche Resultate. 6. Band 2 (6). – C. W. Kreidel, Wiesbaden.

## Koen Maes

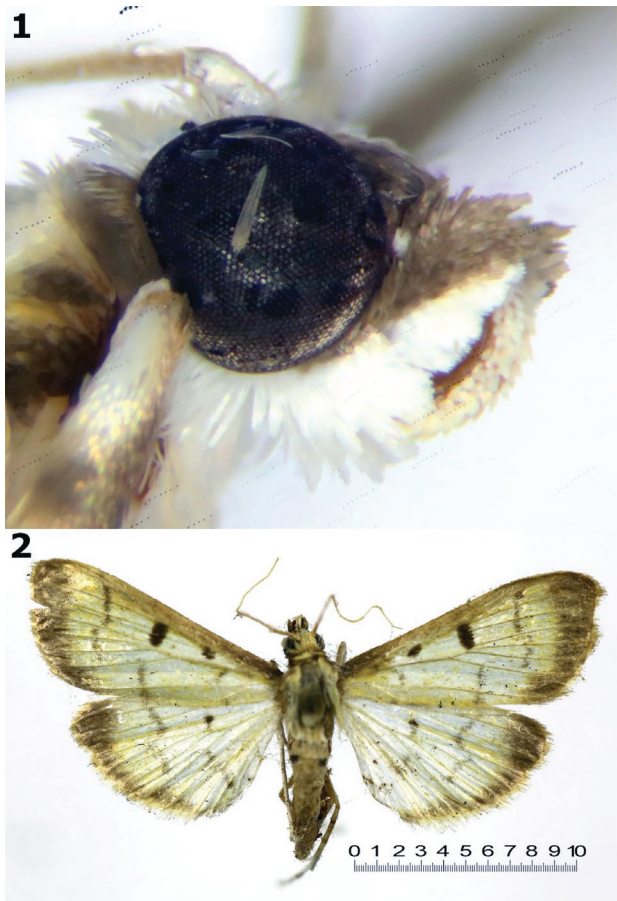
Besides some collecting in Africa, Colombia, and Vietnam, I published two papers in the Spilomelinae. I described a new genus and two new species, *Chalcibotys alboreniiformis* Maes (Fig. 1A) from Cameroon, and *C. massasiensis* Maes (Fig. 1B) from Mozambique and Tanzania (Maes, 2024a).

I described another new genus, *Cristabotys*, for *Pyrausta pastrinalis* Guenée (Fig. 2) (Maes, 2024b) originally described from Réunion Island (the type is probably lost), and found it has a much broader distribution, including Cameroon and Kenya. A previously reported food plant is *Bidens pilosa* (Asteraceae) (Bippus, 2019).



**Fig. 1. (A) *Chalcibotys alboreniiformis* Maes (B) *Chalcibotys massasiensis* Maes.**





**Fig. 2. *Cristabotys pastrinalis* Guenée (1) labial palpus (2) adult.**

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## Alma Solis

I had another year of collaborative research in a diversity of subfamilies. The paper with the most distinctive pyraloids was a new musotimine genus and species, *Pacifimusotima kosrena* Ko & Solis, from the Federated States of Micronesia (Fig. 1) (Ko et al., 2024). Jack Clarke, a lepidopterist at the NMNH (National Museum of Natural History, Washington, D.C.), who conducted extensive fieldwork in the Pacific in the early part of the last century, collected some of the specimens, and, based on determination labels, it is clear that he showed them to E.L. Martin and Tams, previous curators at the Natural History Museum, London (NHMUK), and E. G. Munroe, previous curator at the Canadian National Collection (CNC). The specimens were identified and misplaced in *Parthenodes* sp. for over a hundred years. We also transferred two other Old World species that had been placed in *Parthenodes* and figured the New World type species of *Parthenodes* to show that the new genus is not congeneric.



**Fig. 1. *Pacifimusotima kosrena* Ko & Solis.**

In the Spilomelinae, I collaborated on the first report and control measures for *Neoleucinodes elegantalis*, the tomato fruit borer, a devastating pest of Solanaceae in the

Western Hemisphere (Palacios et al., 2024), and with Jim Hayden, I reported a new U.S. continental record based on a specimen discovered in Florida that had barcoded with *Herpetogramma stramineata* (Hampson, 1912) in the Janzen & Hallwachs ACG collection from Costa Rica at the NMNH. I dissected a specimen of this species from the ACG collection and compared a photo of the type species to that of the specimen intercepted in Florida (Hayden et al., 2024). I published a short note on the expanded distribution of *Udea profundalis* discovered in Idaho, U.S.A. (Solis & Thomas, 2024). *Udea* is a speciose, morphologically intriguing genus that needs more taxonomic work in the Neotropics. Matthew Cock suggested that I study more closely a synonym, *Orphanostigma futilalis* (described from Texas), of *O. haemorrhoidalis* which was introduced worldwide to combat the noxious weed lantana. I reviewed *Orphanostigma* in the New World (Solis et al. 2024) as a prelude to another paper by Cock et al. (in press) regarding the establishment and spread of



**Fig. 2. Left to right: Daniel Janzen, Jenny Phillips, and Alma Solis. We are presenting an image of the new Costa Rican species, *O. eugeniephillipsia* Solis, named in Jenny's honor.**

*O. haemorrhoidalis* worldwide. I removed *O. futilalis* from synonymy, and described a new species in honor of Eugenie (Jenny) Phillips, who has contributed to science and conservation in Costa Rica (Fig. 2).

In the Crambinae, I collaborated with Rafael Robles, who is working on his PhD at the University of Nayarit, Mexico, on the identity and control of *Diatraea* sugarcane borers. Previously, I had confirmed the identity of *D. impersonatella* on sugarcane in Honduras, a new country record, that Rafael discovered (Robles et al., 2024a). In April/May this year, he was in residence at the NMNH to work on the morphological delineation and description of a new species from Nayarit that was hypothesized from COI results and larval behavior (Fig. 3) (Robles & Solis, 2024b).



**Fig. 3. Rafael Robles in a sugarcane field in Nayarit, Mexico.**

In the Phycitinae, we reported *Ficus carica* as the first known host for *Euzophera vinnulella* Neunzig from California (Solis &



Gyawaly, 2024). I described the larva which bears a strong resemblance to *Ectomyelois ceratoniae*, but found that *Euzophera* pupae are clearly dissimilar to those of *E. ceratoniae*.

In the Acentropinae, Jacob Bethin (Fig. 4), who finished his Master's thesis research on a phylogenetic analysis of Acentropinae at the University of Florida earlier in 2024, was funded by my lab at the NMNH for a couple of months (August 15 to October 15) to work on Costa Rican Acentropinae, the genus *Aulacodes*, and the first description of a *Cryptocosma* larva. He presented Costa Rican results in context to his unpublished thesis research at the Entomological Society of America meeting in Phoenix, Arizona in November.



Fig. 4. Jacob Bethin in the NMNH Acentropinae collection.

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*Euzophera vinnulella* larva

## About Pyraloidologists

### *Herb H. Neunzig*

Herb H. Neunzig, prolific phycitine (Pyralidae) worker of the Western Hemisphere and an Emeritus North Carolina State Professor of Entomology, passed away on October 31, 2024, at the age of 97 years. He is survived by his wife, Carolyn Neunzig, and his son Kurt Miller Neunzig. He received his BS (1953), MS (1955), and PhD (1957) from Cornell University, joined the Entomology Department at North Carolina State University, and retired after 35 years with the university.

Herb was most interested in the biology and morphology of Phycitinae immatures, and later expanded his studies to phycitine adults and larvae in other Lepidoptera groups. In 1986, with L.R. Grimes, he published two papers on the comparative morphology of final instar larval maxillae, one on the mesal lobes and the other on the palpi, of the Suborder Ditrysia (Lepidoptera). Despite considerable research done on electrophysiology and feeding behavior of larvae, little was known about these structures' morphology in Lepidoptera. Herb is best known for four MONA (*Moths of America North of Mexico*) fascicles 15.2-5 (1986, 1990, 1997, 2003) and was working on the final MONA fascicle 15.1. He contributed two chapters, Pyraloidea and Pterophoridae, to Stehr's *Immature Insects* (1987) book on Lepidoptera. His major monographs include *Taxonomy of Acrobasis Larvae and Pupae in Eastern North America* (1972), *Systematics of Immature Phycitines Associated with Leguminous Plants in the Southern United States* (1979), *A Taxonomic Study of the Genus Salebriaria in America North of Mexico* (1988), *Taxonomic Revision of the Genera Homoeosoma Curtis and Patagonia Ragonot in America North of Mexico* (1993) (with R.L. Goodson),

and *The Phycitinae of Belize* (1993) (with L.C. Dow).



**Fig. 1. Herb Neunzig examines a tree fern for caterpillars in Costa Rica.**

Herb described 28 phycitine genera (all valid) and 173 species (including one synonym) (from GlobIZ via Richard Mally). He published many research papers some with students and/or collaborators, and many with immature morphology and host plant data from caterpillars he or his students had reared. He was a talented illustrator and made his ink drawings of larvae, pupae, and genitalia for his research papers. In 1994, Herb spent a month in residence at the NMNH (National Museum of Natural History, Washington, D.C.) curating the Nearctic Phycitinae collection funded by the Smithsonian Institution Collection Improvement Fund.

I had the honor of working with him on 11 papers on a broad array of phycitine genera, mostly from Costa Rica. In December 2004, we conducted fieldwork in Costa Rica's Cordillera de Talamanca on the border with Panama (Figs. 1, 2). In 2023, I published our final collaborative paper on the Phycitinae of the Sierra Tarahumara region in northwestern



Mexico. Herb was a quiet man with few, but well chosen, words, and a giant in the diversity, morphology, and biology of New World Phycitinae.

### **Alma Solis**



**Fig. 2. Herb Neunzig marvels at the size of a tree in Costa Rica.**

### ***Stephen Lawrence Sutton***

**21 July 1938 - 31 December 2023**

Stephen was born in Oxford, England; the eldest son of Leslie Enest Sutton FRS, a noted chemist and academic of Oxford University. During the Second World War, Stephen and his elder sister were evacuated to the woods of rural Connecticut (U.S.A.) to stay with the family of his American mother. This was the start of his lifelong interest in natural

history and wild places.

On his return to Oxford after the war, he escaped the restrictive private school regime by roaming the countryside on his bicycle studying and collecting butterflies and moths. In 1959, before going on to university, he was called up for National Service in the Royal Navy, but somehow he managed to include moth trapping and lepidopteran observation as part of his duties at the Isle of Portland Naval Base.

In 1960, he was admitted as an undergraduate to Oxford University, where he was involved in the organisation of the first of the many expeditions of his life (Fig. 1). With six other undergraduates, he drove overland to Persia [Iran] in the summer of 1961. Here, Stephen undertook entomological studies near the Caspian Sea coast. On receiving his



**Fig. 1. Stephen Sutton as a young man.**



degree, he started a DPhil at the Bureau of Animal Populations, Oxford, under Charles Elton, a pioneering biologist who turned natural history into the science of ecology by applying the scientific method to study the lives of animals in their natural habitats and their interactions with the environment. The project was to study population dynamics of the isopods *Philoscia muscorum* and *Trichoniscus pusillus*, which was the first study on any species of woodlice in the United Kingdom.

Appointed as a Lecturer in Zoology at the University of Leeds in 1966, Stephen began to establish a small postgraduate isopod research team. His associates and a growing number of postgraduate students expanded research into other groups of invertebrates which resulted in the setting up of the British Myriapod & Isopod Group and many other original distributional and ecological studies. Paul Harding summarised much of this work and publications (Harding 2018, 2024) so here I concentrate on Lepidoptera.

Despite his other invertebrate studies, he didn't neglect his interests in Lepidoptera, and he joined the Yorkshire Naturalists' Union (YNU) at the time that the Lepidoptera Group was contemplating an update to the 1970 list, a periodic review of Yorkshire Lepidoptera. This deepened his interest in the regional Lepidoptera, and included regularly running a moth trap at his home in Shadwell, near Leeds, as well as undertaking much extensive light trapping throughout Yorkshire to expand the scope of a book he co-authored with Harry Beaumont. *The Butterflies and Moths of Yorkshire* (Sutton & Beaumont, 1989) was the first re-assessment of the group since the lists of G. T. Porritt (1883, 1904, 1907, 1922). In the same period, Stephen set up Bond Ing, Shadwell, as a nature reserve and ecological

research site on overgrown grassland near his house. Many graduate and undergraduate research projects were conducted there, including some of the long-term moth trapping that measured the decline of industrial melanism in the peppered moth *Biston betularia* in northern England. This phenomenon was first highlighted in the North of England by Porritt in the 19th and early 20th centuries and became a prominent case study and support for a mechanism in Darwin's theory of evolution (Cook et al., 2005).

Stephen also renewed his expedition interests, becoming president of the University of Leeds' Expedition Society. His interest in tropical forests was certainly fueled by his involvement in the Zaire River Expedition in 1974-75. Here he first encountered the astonishing diversity of tropical moths and became aware that at least thirty percent of all tropical forest moths are pyraloids. It was through this initial work, and the contacts that ensued, that he became increasingly involved with Operation Drake and its successor Operation Raleigh in Southeast Asia. He became a leader for ecological research on



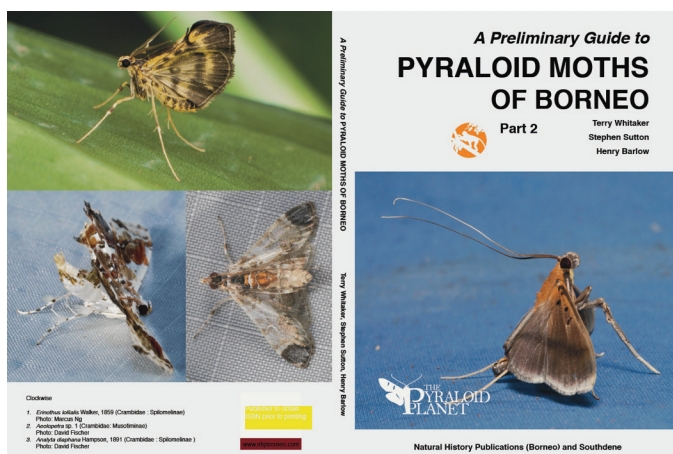
**Fig. 2. Stephen Sutton and other biologists at Kinabalu Mountain Lodge.**



these ambitious international projects and later was closely associated with the Royal Society's Southeast Asia Rainforest Research Programme as its scientific involvement in tropical research in Borneo developed, particularly in the Danum Valley, Sabah, Malaysia. Initially, his work in the tropics was based at Leeds University, where he still had a role teaching and with research students, but by the early 2000s, and after taking early retirement, he moved almost permanently to Kota Kinabalu (KK) in Sabah (Fig. 2). Here, he expanded his interests in books and publishing, establishing an on-line and physical bookshop, Borneo Books, with his future second wife, Rosalind Tsang, whom he married in 2006. This expanded his already extended family with step-children, Evangeline and Jeremiah [Jerry] Majawat. Even before he had settled in KK, Stephen began a major project with Dato' Henry Barlow on the Pyraloid Moths of Borneo, leading to planned species guides (Sutton et al., 2015; Whitaker et al., 2023) (Fig. 3). After 1996, much of this work was implemented by Terry Whitaker who had re-established his connections with his former university teacher and mentor.

From 2015 to 2021, Stephen started regularly trapping for micro moths on Mount Kinabalu at Kinabalu Mountain Lodge, and with Terry Whitaker built up a collection deposited in the Borneensis Museum at the Institution of Tropical Biology and Conservation in the University of Malaysia Sabah, Kota Kinabalu. The intention was to provide a pyralid reference collection suitable for DNA sequencing. This well curated collection is still awaiting taxonomic research.

On settling in KK, Stephen was soon invited to become a member of the Rotary Club of Kota Kinabalu, and in 2015 he became the main organiser of a Project Partnership Programme with the Malaysian Rotary Clubs Foundation. The Rotarian project was initially to help the people affected by the deadly 2015 Mount Kinabalu earthquake, which had closed the national park to tourists for some years. It centered on the worst hit villages in the Kiau Valley and started with finding money for training some of the unemployed Kinabalu mountain guides as specialist bird guides and later by promoting the villages' economy through homestay initiatives that encouraged tourists to stay and spend in the local villages. Having learned about the Swallowtail and Birdwing Butterflies Trust founded by his friend Dato' Henry Barlow to conserve the threatened large butterflies of the world, Stephen realised that some of these red-data-book butterflies were in Borneo. More especially, *Troides andromache*, the Kinabalu Birdwing butterfly, was in Kampong Kiau. The natural history education of the villagers was extended from birds to butterflies through the first two-day Birds and Butterfly Festival in Kampong Kiau in 2019. Teachers and twelve-year-old school children from schools around Mount



**Fig. 3. Front & back cover of Part 2, *Pyraloid Moths of Borneo*.**

Kinabalu participated in various activities, all of which were aimed at raising a better understanding and appreciation of the birds and butterflies around them.

Stephen's contribution to the conservation and interpretation of the rainforests of Sabah is now well recognized, in particular since 2019 with the Kinabalu Birdwing (*Troides andromache*) Conservation Project. The gazetting in 2023 of *Troides andromache* as Sabah's State Butterfly was almost entirely due to his efforts. In his address, Stephen stressed that "not only is a better understanding of these species useful to science, it is also important to the common people, especially communities who live close to their natural habitat. It would also be good for community-based tourism on the mountain because the Kinabalu Birdwing is so rare that many people around the world would want to come to Sabah to see it." This spawned a communal initiative to cultivate the previously unknown food plant of the butterfly and make surveys of the distribution of the butterfly and its food plant around the mountain. Money was also obtained to help fund DNA research investigating the taxonomy of the butterfly. The Sabah Minister for State Tourism, Culture and Environment, Datuk Christina Liew, was able to acknowledge this and congratulate Stephen and his team when she unveiled the Kinabalu Birdwing as the State Butterfly of Sabah in October 2023.

Throughout all of his professional life, Stephen nurtured the careers of many young biologists. Overall, his contribution to scientific research was typified by his enabling and co-ordination abilities to further the research of others, rather than by data collection, analysis, and publication of his own studies. His open, collaborative and highly social approach enabled many important research and

conservation projects to be funded.

His characteristics of a generous open personality, a whimsical sense of humour and an unusually broad knowledge of the natural world will be sorely missed by his colleagues, friends and family.

**Terry Whitaker**

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## Yuki Matsui



I finished my PhD program in March 2023 at Tottori University, Japan, with the thesis title of “Systematics and “Hybrid type” sex pheromone of Japanese Pyraustinae and Spilomelinae.” This theme aimed to reveal female pheromone usage for many Pyraustinae and Spilomelinae species with laboratory bioassays and to project them onto a molecular phylogenetic tree to infer the evolution of female pheromone usage in these two sub-families. The molecular phylogenetic analysis using about 200 species has been published (Matsui et al., 2022), while the section about pheromone bioassays is in preparation.

Pheromone studies require a large number of insects, and therefore need mass

rearing from egg laying. For this reason, I reared more than 170 species of Pyraustinae and Spilomelinae. During this process, I realized that there were many cryptic species in the Japanese Pyraustinae and Spilomelinae fauna and proceeded to describe some of them (Matsui et al., 2021; Matsui & Naka, 2023). The striking sexual dimorphism (see below) found in *Nosophora insignis* (Matsui et al. 2024) is a unique finding by rearing!



I am currently engaged in taxonomic research on the Pyraloidea of the Ogasawara Islands as a postdoctoral researcher at Kyushu University, Japan. The islands are located about 1,000 km south from Japan and have never been connected to the mainland. Inoue (1996) described many endemic species of the Pyraloidea from these islands, but his descriptions are brief, better illustrations are needed, and several undescribed species remain. For these reasons, I am planning to taxonomically revise the pyraloid fauna of the Ogasawara Islands.

Despite great contributions to the Japanese pyraloid fauna by H. Inoue, H. Yamanaka, A. Sasaki, and Y. Yoshiyasu, there is still a significant amount of work remaining in the taxonomy, phylogeny, and biology of Japanese pyraloids. I hope to do my best to contribute to this. Finally, I am fascinated by the diversity and “cool look” of pyraloids, and I am passionate about these beautiful moths!

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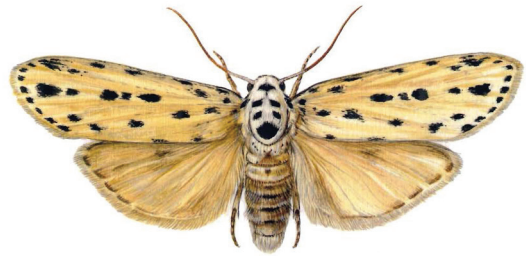
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***Moths of Bhutan***. 2022. Authors: Gielis, C., M. Franssen, F. Groenen, K. Wengdi. 419 pp. Privately published by Gielis & Klein, p./a Lexmond, The Netherlands (Pterophoridae@gmail.com). List of pyraloid moths by family and selected images of field-prepared moths.

## Moths of Bhutan



Cornelis (Cees) Gielis  
Maurice Franssen  
Frans Groenen  
Karma Wangdi

Published by Gielis & Klein

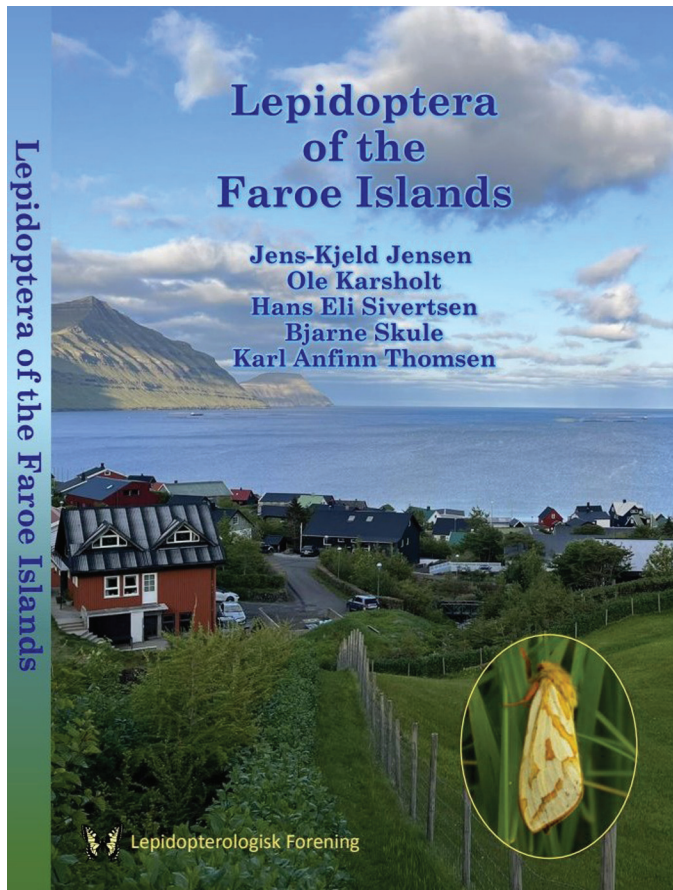
## NEW BOOKS....

These books included sections on Pyraloidea.

***Introducción a los Microlepidópteros de la España peninsular e islas Baleares***. 2024. Author: Txema Revilla. 164 pages, format: 29.7 cm x 21. ISBN: 978-84-19926-87-6. Published: January 2024 by Boletín de la S.E.A. Price: 45 Euros + postage. Contact: Miguel Olvera, mglfgl@gmail.com

***The Lepidoptera of the Faroe Islands***. 2024. Authors: Jensen, J.K., O. Karsholt, H.E. Sivertsen, B. Skule & K.A. Thomsen. 140 pp. Lepidopterologisk Forening, København. ISBN 978-87-974342-0-8, Price: dkk 200, excluding postage. info@lepidoptera.dk, www.lepidoptera.dk





## A “smattering” of publications

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Streltsov, A.N., N. Snegovaya, N.A. Shapoval, M. F.-O. Humbatov, I. B.-O. Mammadov, R. V. Yakovlev. 2024. New data on the Lepidoptera of Azerbaijan (Southern Transcaucasia). Superfamily Pyraloidea Latreille, 1809. *Acta Biologica Sibirica*. 10: 767-790. [222 species in 114 genera; 48 new to Azerbaijan; with

images of localities surveyed]

Yepishin, V., Y. Khalaim, & S. Novytskyi. 2024. The Pyraloidea of the Odesa region of Ukraine (Insecta: Lepidoptera). SHILAP Revista de lepidopterología. 52(205): 115-141. [40 Pyralidae, 125 Crambidae]

### Biology

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Finnie, S., P. Butterill, V. Novotny, C. Redmond, L.R. Jorge, T. Abe, G.P.A. Lamarre, V. Malcher, & K. Sam. 2024. Vertical stratification and defensive traits of caterpillars against parasitoids in a lowland tropical forest in Cameroon. Oecologia. 204: 915-930. [Crambidae, 214 individuals; Pyralidae, 120 individuals.]

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### Morphology

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Liu, L., C.-Y. Ling, & L.-L. Pan. 2024. Ultrastructure of the sensilla on the larval antennae and mouthparts of *Chilo infuscatellus* (Snellen, 1890) (Lepidoptera: Crambidae). Zoologischer Anzeiger. 310: 10-16.

Wang, Q., Y. Ma, D. Jiang, & S. Yan. 2024. An examination of the antennal sensilla of the oligophagous moth species *Dioryctria sylvetrella* (Lepidoptera: Pyralidae). Forests. 15(9): 1586, 1586.

### Genes/Genomes

The number of pyraloid genomes being sequenced has skyrocketed; just a few are listed below.

Boyes, D. & P. O. Mulhair. In review. The genome sequence of the Water Veneer, *Acentria ephemerella* (Denis & Schiffermüller, 1775). Wellcome Open Research. Latest Version Published: 08 Mar 2024, 9:134 (<https://doi.org/10.12688/wellcomeopenres.21099.1>)

Despabiladeras, J.B. & M.A.M. Bautista. 2024. Mitochondrial genome of the eggplant fruit and shoot borer, *Leucinodes orbonalis* Guenée (Lepidoptera: Crambidae), and comparison with other pyraloid moths. Insects. 15 (220), 1-22. (<https://doi.org/10.3390/insects15040220>)

Ding, Y., J. Jin, M. Fang, Y. Li, & Z. Yan. 2024. A chromosomal-level genome assembly of *Corcyra cephalonica* Stainton (Lepidoptera: Pyralidae). Scientific Data. 11: 1118. (<https://doi.org/10.1038/s41597-024-03967-w>)

Lees, D. In review. The genome sequence of the Ochreous Pearl, *Anania crocealis* (Hübner, 1796). Wellcome Open Research. Latest Version Published: 06 Dec 2023, 8:568 (<https://doi.org/10.12688/wellcomeopenres.20573.1>)

Yi, J., J. Liu, Y. Mao, Y. Cheng, M. Lin, H. Xu, Y. An, J. Li, & H. Wu. 2024. The Complete Mitochondrial Genome of *Chilo infuscatellus* (Lepidoptera: Pyralidae), and Related Phylogenetic Analysis. Biochemical Genetics. 62: 4380–4395 (<https://doi.org/10.1007/s10528-023-10639-8>).



Xiong, M., C.-S. Wu, C.-D. Zhu, & Q.-S. Zhou. 2024. The complete mitochondrial genome of *Parotis chlorochroalis* (Hampson, 1912) (Lepidoptera: Crambidae). Mitochondrial DNA Part B: Resources. 9(10): 1433-1438.

## Pyraloid Enthusiasts

Please refer or forward the details to me about anyone who wishes to be put on the Pyraloid Planet distribution list.

**Welcome to Yuki Matsui, Rolf Moertter, Steve Nanz, & Greg Pohl who are newly added to this list.**

I removed the following from the list: I was notified that Juergen Thiele passed away in 2022; this year Eric Metzler, Bo Sullivan, and Charlie Mitter also passed away. Eric Metzler and Bo Sullivan donated their pyraloid collections to the NMNH; the Sullivan collection has been incorporated and the Metzler collection will soon be received. Charlie Mitter was my Ph.D. major professor; his obituary can be found here: Kawahara, A.Y., D. R. Miller, M.A. Solis, & B.D. Farrell. 2024. Charles Mitter (1948-2024): Evolutionary biologist, consortium builder, and leader in insect evolutionary biology. American Entomologist. 70(3): 58. DOI: <https://doi.org/10.1093/ae/tmae051> (If you cannot access it, request a pdf from me.)

If you have any corrections, suggestions, comments on this issue, let me know as soon as possible. More importantly, send additions for next year's edition anytime during the year. The next deadline will be October/November 2025.

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**Philippines, Luzon, Mt. Mayon, collecting locality, 1992, (bottom to top) Alma Solis, Filipino colleagues, & Alberto Barrion, International Rice Research Institute (IRRI).**



**Philippines, Luzon, Banaue Rice Terraces, 1992, collecting locality, Alma Solis & Alberto Barrion (IRRI).**