



THE PYRALOID PLANET

Volume 12 – December 1, 2018
A Newsletter for Pyraloidea Fans

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Editorial

It is easy to see that pyraloid enthusiasts (as well as the moths) are everywhere, especially since I joined twitter [my twitter handle is @drpyralid]. Pyraloids are being observed, enjoyed, and studied in all parts of the world, from primary forests to gardens to window screens, and people are sharing information and pictures about them via social media. This year I discovered Robin Howard (see below, page 10, for his pyraloid photographs). It is inspiring to see so many moth enthusiasts all over the world sharing their amazing photographs on twitter!

In March I was invited to speak at the University of Texas, College of Natural Sciences, to undergraduate science awardees!

It was inspiring to see so many young researchers in many fields of science.

But I couldn't go to Texas and not look for some of my favorite pyraloids- **acentropines**. Through the grapevine of Texas State and U.S. Fish and Wildlife scientists, I met Delmar Cain, a retired lawyer, who collects photos of moths in his backyard. His property is the origin of one of the cleanest creeks in Texas. He and his wife were kind enough to invite me and my husband to stay and collect moths and immatures of acentropines (see below, page 8, for more on this).

Something else new in this volume is a request from Yves Basset, an ecologist in Panama, for help with identification of his moths. Herb Neunzig and I described a new phycitine, *Vorapourouma basseti* Solis & Neunzig, 2017 (PESW, 119 (3): 464-470), in his honor that he reared at his study site. Also, there is a list of papers on the ecology of larval feeding and their interactions with plants, specifically with fruits, on a broad scale, primarily in Papua New Guinea, on page 5.

Finally, thanks to everyone who sent in items for the newsletter.

M. Alma Solis

GlobIZ News 2018

The Global Information System on Pyraloidea (GlobIZ) is still slowly growing in terms of the quantity of taxa. Since the last newsletter, the number of valid species included in the database increased by 54 (+ 1 synonym).

Altogether, there are **25,324** pyraloid names for **2,100** genera (+ 1,395 synonyms) and **15,597** species (+ 6,232 synonyms).

The following updated table provides an overview per subfamily, but we are convinced that some described species are still missing, especially in Phycitinae and Pyralinae. I would very much like to thank all who contributed editing data to GlobIZ.

Matthias Nuss

	Genera		Species	
	Valid	Syns.	Valid	Syns.
Chrysauginae	131	60	399	130
Epipaschiinae	95	69	721	169
Galleriinae	63	61	258	119
Phycitinae	656	386	3131	1474
Pyralinae	135	109	966	348
Acentropinae	75	39	772	208
Crambinae	176	123	2047	1090
Cybalomiinae	19	15	107	12
Glaphyriinae	52	36	347	165
Heliothelinae	5	6	50	15
Lathrotelinae	4	7	37	8
Linostinae	1	0	4	2
Midilinae	13	8	95	16
Musotiminae	23	8	193	24
Odontiinae	87	38	384	139
Pyraustinae	173	103	1179	590
Schoenobiinae	29	17	236	98
Scopariinae	24	19	578	208
Spilomelinae	339	291	4093	1417
Total	2100	1395	15597	6232



Cryptoses sp. (Pyralidae: Chrysauginae)

sloth moth on sloth fur

Progress Report on the Pyraloids of Borneo Hybrid Publishing Project

It is 3 years since the publication of print Volume 1. We, the authors, Terry Whitaker, Henry Barlow, and myself had hoped to publish Volume 2 last year, but a number of factors got in the way. We have a definitive list of the species for Vol. 2 but we lack images for 9% of the 788 species of Crambidae that we can fit in. In quite a few cases we know where specimens are, but we haven't been able to obtain them. They will have to be shown as greyed-out profiles in the Plates. We could delay while we look for funds (and time) to visit the museums involved, but have decided to go ahead. Terry Whitaker travels to Sabah on the 10th December for 2 months. I will work with him then to finalise the layout of Volume 2. We will include about 100 images of live specimens at rest to link them to the set specimens.

The website software platform we have been using (from 2009) is now obsolete and Mr. Lim of Biovis Informatics in Kuala Lumpur is migrating the site to a new and far more versatile platform. This move is overdue and may cause further delay.

Volume 2 will contain all the subfamilies

of the Crambidae in alphabetical order. Within each subfamily, the genera are in alphabetical order, too. In the Spilomelinae, we include genera as far as *Haritalodes*. The rest will be in Vol 3, which will have >680 spp., depending on the latest generic revisions at the time of publication.

Stephen Sutton

PS: Anyone who thinks they might be able to help find missing images before the end of the year please email: stephensutton7@gmail.com for a list of these.

<http://www.pyralidsofborneo.org/index.php>
<http://stephensutton.info/home/>
(QR Codes & A New World of Moths Explored Across Three Continents)

Meeting Presentations

Microlepidopterists' Meeting, July 10, 2018

Pyraloidea research in Nicaragua; preliminary results based on two field trips-Bernard Landry

Combined Annual Meeting of the Lepidopterists' Society and Societas Europaea Lepidopterologica, Ottawa, Canada, July 13, 2018.

The phylogenetic systematics of Spilomelinae (Pyraloidea: Crambidae)-Richard Mally

Tribal classification of Spilomelinae (Pyraloidea: Crambidae): implications for the New World fauna-James Hayden

Phylogeny, character evolution and tribal classification in Crambinae and Scopariinae (Lepidoptera, Pyraloidea)-Theo Léger

Entomological Collections Network Meeting,
November 10, 2018
Beware the mighty minuten! *In* Tales from the Field, Vol. 3-Alma Solis

National Entomological Society of America,
November 14, 2018
Aquatic Lepidoptera wellspring: Where do we go from here? *In* Aquatic Entomology without Borders-Alma Solis

NEWS FROM.....

Bernard Landry- Colombia

Since the publication of the 2017 issue of the Pyraloid Planet my main contribution to our collective efforts towards Pyraloidea research has been a collecting trip to Colombia, from July 18 to August 8 (See images below). I joined my PhD student Helber Arévalo Maldonado (who works on Gracillariidae) in Bogotá and we travelled first to the privately owned Parque Natural Chicaque (www.chicaque.com), not far from Bogotá, for an extended weekend. We collected at 2150 m in elevation in the cloud forest and at 2250 m in a patch of oak forest.

Then we joined Helber's major professor, Francisco Serna, of the Universidad Nacional de Colombia for a 2-week trip with his group of students to Leticia (\pm 80 m elevation), in the Amazon. Collecting proved to be good at Chicaque and poor to very good at Leticia, where we arrived just before the start of the rainy season. We collected at night in three privately owned reserves along the road to Tarapacá within 20 km from 'downtown' Leticia and on the property of the Universidad Nacional de Colombia, Sede Leticia, located near the airport. A one-day trip on the Ama-

zon River between Leticia and Puerto Nariño allowed me to add a few specimens taken with the net in the grasses along the top of the river bank. The last collecting night of the trip was at 35 m above ground on a platform in a tree. It was the best night in terms of moth diversity, with more than 200 species collected or observed.

Altogether slightly more than 1,000 specimens of Pyraloidea were collected, comprising just short of 300 species in all subfamilies found in the Neotropical region except Galleriinae and Linostinae. If anyone can help in the more precise determination of the species figured on Figs 1, 2, 4, and 6, please do!

In addition to my collecting efforts, our museum (MHNG, Geneva, Switzerland) received 1600 additional specimens of Pyraloidea as gifts from three entomologists in 2018.



Fig. 1. Undetermined *Neurophyseta* species (Musotiminae, male) from Chicaque. Wingspan: 24 mm.



Fig. 2. Undetermined *Dicepolia* species (Odonitiinae, male) from Leticia. Wingspan: 15 mm.

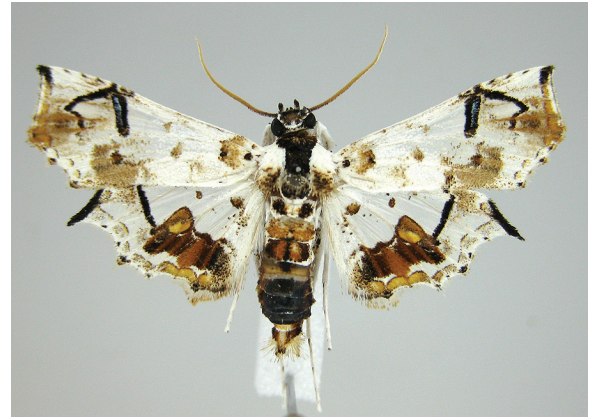


Fig. 3. *Hosithea gynaecia* Dyar (Midilinae, male) from Leticia. Wingspan: 26 mm.



Fig. 4. Undetermined Spilomelinae species (male) from Chicaque. Wingspan: 21 mm.



Fig. 5. Undetermined Diptychophorini species (Crambinae, female) from Leticia. Wingspan: 13 mm.



Fig. 6. Undetermined *Proschoenobius* species (Schoenobiinae, male) from Leticia. Wingspan: 19 mm.



Fig. 7. *Eupastranaia tumidifrons* (Munroe) (Midilinae, female). Wingspan: 80 mm.

Yves Basset-Panama, Thailand Request for taxonomic help

The ForestGEO Arthropod Initiative (<https://forestgeo.si.edu/node/145497/>) has been collecting Pyraloidea at light traps at the sites of Barro Colorado Island, Smithsonian Tropical Research Institute, (Panama), and Khao Chong (Thailand) since 2009 and 2010, respectively. Each year, we collect 80 trap-night samples at these sites for the purpose of long-term monitoring several insect taxa across a small arthropod network (<https://forestgeo.si.edu/node/145497/>). Pyraloidea are morphotyped, pinned and databased (the ForestGEO Arthropod database should

be available on-line soon). For an example of what we aim to achieve and if you are interested, please have a look at a recent paper (OpenView) on saturniid moths in *Ecology and Evolution*, 2017, 00:1–14. <https://doi.org/10.1002/ece3.3515>

We could donate extra pyraloid specimens for identifications. If interested, please let me know at bassety@si.edu and we can discuss further.

Scott Miller-Papua New Guinea, etc.

The following multi-authored ecological papers were recently published that included Pyraloidea. A result snippet from each abstract is provided.

Ctvrtecka, R., et al. 2016. **Fruit sizes and the structure of frugivorous communities in a New Guinea lowland rainforest.** *Austral Ecology* 41(3):228-237. Fruits attacked by Diptera were significantly larger and had larger volume of both mesocarp [the middle, usually fleshy layer of fruit wall] and seeds than fruits attacked by Coleoptera and Lepidoptera.

Sam, K., et al. 2017. **Low host specificity and abundance of frugivorous Lepidoptera in the lowland rain forests of Papua New Guinea.** *PLoS One* 12(2):e0171843. Lepidoptera preferred smaller fruits with both smaller mesocarp and seeds. The very low incidence of seed damage suggests that pre-dispersal seed predation by Lepidoptera does not play a major role in regulating plant populations.

Segar, S. T., et al. 2017. **Variably hungry caterpillars: predictive models and foliar chemistry suggest how to eat a rainforest.**

Proceedings of the Royal Society B 284(1866):20171803. We used standardized food-web data, multigene phylogenies of both trophic levels and plant chemistry data to model interactions between Lepidoptera larvae (caterpillars) from two lineages (Geometridae and Pyraloidea) and plants in a species-rich lowland rainforest in New Guinea. For pyraloids, we relied on phylogeny alone and predicted 54% of species-level interactions, translating to 79% of all trophic links for individual insects, by sampling insects from only 15% of local woody plant diversity. Includes a multi-gene phylogeny for relevant Pyraloidea genera.

Redmond, C. M., et al. 2018. **High specialization and limited structural change in plant-herbivore networks along a successional chronosequence in tropical montane forest.** *Ecography* [early online doi:10.1111/ecog.03849]. Herbivore abundance was greatest in the earliest stages, and hosts here had more species-rich herbivore assemblages, presumably reflecting higher palatability due to lower defensive investment.

Basset, Y., et al. 2018. **A cross-continental comparison of assemblages of seed- and fruit-feeding insects in tropical rain forests: Faunal composition and rates of attack.** *Journal of Biogeography* 45(6):1395-1407. Our study suggests that seed eaters may be most commonly associated with dry fruits at relatively dry tropical sites where fleshy fruits may be less prevalent.



Conogethes
spp.
larva

A. K. Chakravarthy - India

He reports various publications and investigations on *Conogethes* spp.

The Black spotted, Yellow Borer, *Conogethes punctiferalis* Guenee and Allied Species.

2018. A.K. Chakravarthy, Editor. Springer, Singapore. 347 pp.

This recently published book has 22 chapters on *Conogethes*, an economically important genus from southeast Asia that now also occurs in Hawaii and Great Britain. It includes a chapter by Richard Mally “Moths of the Genus *Conogethes*: Taxonomy, Systematics, and Similar Species.” The immatures feed on more than 200 plants, including horticultural and forest trees. There are 30 black and white illustrations and 70 color illustrations. ebook: \$149.00; hardcover \$199.00.

Shashank, P.R., V. Kammar, R. Mally & A.K. Chakravarthy & 2018. **A new Indian species of shoot and capsule borer of the genus *Conogethes* (Lepidoptera: Crambidae), feeding on cardamom.** *Zootaxa*. 4374(2): 215-234. (This paper was reported as in press by Richard Mally in PP#11)

He also reports two investigations: Kumar, K.P. & A.K. Chakravarthy. Standardization of mass rearing technique of shoot and capsule borer, *Conogethes* spp. (Lepidoptera: Crambidae) on selected host plants.

Kammar, V. & A.K. Chakravarthy. DNA barcoding, species-specific primer design, selection and sensitivity tests for the shoot and fruit borer, *Conogethes punctiferalis* and *Conogethes sahyadriensis* (Lepidoptera: Crambidae) infesting select host plants.

Alma Solis- United States

Pyraloidea Virginia specimens & database-

A Lepidoptera collection from the state of Virginia was recently donated to the NMNH. Almost 5000 specimens of Pyraloidea were barcoded and databased. This database is in EMU, but not yet available to the public. As an aside, I also cleaned up previous Pyraloidea non-type entries in EMU.

Pyraloidea alcohol collection-

I noted in PP#11 that each vial of the Pyraloidea alcohol collection was barcoded and databased. I am still proofing and adding taxonomic information to submit it for entry into EMU which will be made available on the web.

Pyraloidea type specimen database-

Jessica Bird, SI Dept. of Entomology, is working on translating the FileMakerPro database to another, more amenable database for transfer to EMU which will make it available on the web. The old type specimen entries, many of which are plagued with spelling and other issues, will be replaced with my type database.

North American *Crambus*

I mentioned in PP#11 that Hugh McGuinness is volunteering at the NMNH, sorting *Crambus* to species. He finished sorting the described Nearctic *Crambus* to species- 46 drawers! Hugh is now dissecting specimens. Emily McLeod volunteered to do the final curation sorting each species to state and putting header and state labels in each unit tray. I was able to procure a USDA grant for Emily to complete this project.



Emily McLeod and Hugh McGuinness in the *Crambus* collection.



The holotype of *C. cockleellus* Kearfott, 1908 [NMNH].

Adventures in Acentropinae

I published two research papers on North American acentropines this year. One was a multi-authored paper on the immatures of two North American genera. I worked with Nathan Harms, a student at Texas Tech to rear the larvae he found feeding on 2 species of macrophytes in Texas rivers. He was able to rear one species that I identified as *Usingeriessa onyxalis*, a species that extends south to intersect with my Costa Rican project with Jenny Phillips, Dan Janzen, and Winnie Hallwachs. The paper shows the very distinctive adult genitalia of *U. onyxalis*. I then collaborated with Sonja Sheffer and Matt Lewis

in our lab to do DNA CO1 barcoding on the immatures and adults; the immatures of *Usingeriessa onyxalis* were confirmed

There is only one species of *Oxyelophila* in the United States. Nathan found these larvae feeding on 5 species of macrophytes, but was unable to rear the larvae that are hypothesized to be *Oxyelophila callista*. Dale Habeck had hypothesized this highly distinctive larva to be *O. callista* when he was working with biological control workers of aquatic weeds in 1985. Our molecular research could not confirm the DNA of the adults because we did not have any fresh adults. I hope to collect adults of this species from Texas in the future.

Paul Tuskes (Solis & Tuskes, 2018). This is the most diverse group of acenotropines in the Western Hemisphere. There are many new species of *Petrophila* in the southwestern U.S. They form webs on rocks and scrape algae from rocks. The ecological results for these new and other *Petrophila* species is in press by Paul and Anne Tuskes.



Petrophila jaliscalis Schaus, female (NMNH)

As I mentioned earlier, I also had the opportunity to do a few days fieldwork in central Texas. My husband, Jason Hall, came along to assist me. He was able to take some great photographs of the immatures that I subsequently placed in liquid nitrogen for genomic analysis and in alcohol for morphological work.



From Solis et al. 2018

I also published a paper describing 2 new species of *Petrophila* from Arizona with



Texas creek where we collected immatures.



Jason Hall searching macrophytes for acentropine larvae.



Alma Solis at the moth sheet behind Delmar Cain's house.



Elophila sp. photographed by Jason Hall.

Research papers about Pyraloidea published by AS in 2018:

Solis, M.A., N. E. Harms, E. Phillips-Rodriguez, S. J. Scheffer, M. L. Lewis, D. H. Janzen, W. Hallwachs, and M. A. Metz. 2018. ***Aquatic larvae of two acentropines, *Uisingeriessa onyxalis* (Hampson) and *Oxyelophila callista* (Forbes) (Lepidoptera: Crambidae).*** Proceedings of the Entomological Society of Washington. 120(1): 180-195. <https://doi.org/10.4289/0013-8797.120.1.180>

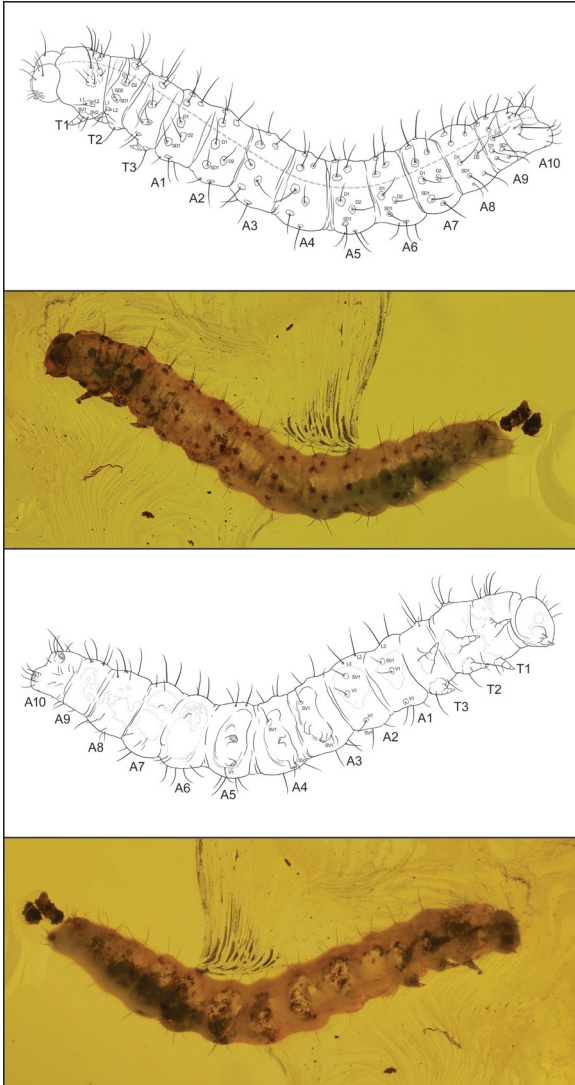
Sharkey, M. J., S. Meierotto, E. Chapman, D. H. Janzen, W. Hallwachs, T. Dapkey, M. A. Solis. 2018. ***Alabagrus Enderlein (Hymenoptera, Braconidae, Agathidinae) species of Costa Rica, with an emphasis on specimens reared from caterpillars in Area de Conservación Guanacaste.*** Natural History Museum of Los Angeles County Contributions in Science. 526: 31-180.

Solis, M. A. and P. Tuskes. 2018. ***Two new species of *Petrophila* Guiding (Lepidoptera: Crambidae) from northcentral Arizona, U.S.A.*** Proceedings of the Entomological Society of Washington. 120(3): 593-604. doi:10.4289/0013-8797.120.3.593

Graça, M. B. and M. A. Solis. 2018. ***Order Lepidoptera***, Chapter 11, pp. 325-337 In: Thorp and Covich's Freshwater Invertebrates, Volume IV: Keys to Neotropical Hexapoda, N. Hamada, J. H. Thorp, D. C. Rogers, (Eds.), 4th. Edition, Academic Press (Elsevier), San Diego, CA, USA. 811 pp.

continued on next page

Hekkilä M., T. Simonsen, and M. A. Solis. 2018. *Reassessment of known fossil Pyraloidea (Lepidoptera) with description of the oldest fossil pyraloid and of a crambid larva in Baltic amber.* Zootaxa. 4483(1): 101-127. doi:10.11646/zootaxa.4483.1.4



Baltianania yantarnia Solis, 2018
From Hekkilä et al. 2018.

FROM THE TWITTERSPHERE...

I met Robin Howard (@lotmoths) on Twitter where he posts photos of Lepidoptera. He generously offered to send some

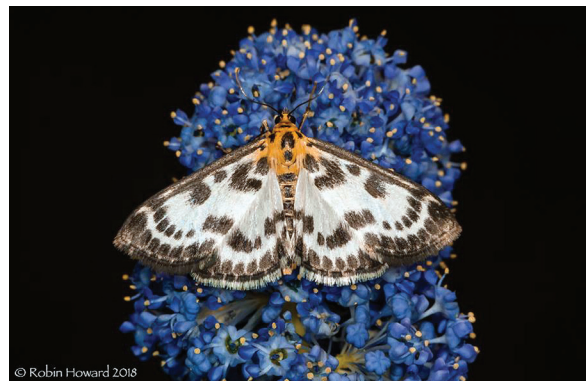
pyraloids for inclusion in the Pyraloid Planet. According to his twitter profile, he is a “retired entomologist and Fellow of the Royal Entomological Society living in an ancient farm in this beautiful, Lepidoptera-rich département of SW France”.



Thisanotia chrysonuchella (Scopoli, 1763)



Cynaeda dentalis ([Denis & Schiffermuller], 1775)



Anania hortulata (Linnaeus, 1758)



Spoladea recurvalis (Fabricius, 1775)



Cydalima perspectalis (Walker, 1859)

FROM THE WEB...

Pyraloid moths of New Zealand

<https://www.landcareresearch.co.nz/resources/identification/animals/large-moths/image-gallery/pyraloid-moths>

Moth Photographers Group (MPG) as a website is the legacy of Bob Patterson. When he started photographing moths in his Maryland backyard he was disappointed that he wasn't able to identify many of the moths, so he created a website and recruited experts to help him start identifying them. As the site developed, he encouraged others to contribute photographs from around the country, and gradually built a fairly comprehensive identification site for moths of America north

of Mexico that included photographs of live moths and identified spread specimens. Ultimately, as it grew, hosting of the site was taken over by Mississippi State University.

In the last year, Steve Nanz has taken over maintenance of the site, and re-invigorated it. Several significant updates have occurred, including a complete update of the taxonomy using the most recent update of the North American species list by Pohl et al. (2016), a significant effort to correct errors, updated maps, and a renewed push to include genitalic photos.

Steve continues to actively work on the site and welcomes input and expertise. Please visit at <http://mothphotographersgroup.ms-state.edu/> and explore this very extensive and useful site.

Brian Scholtens

During the past year I was sent photographs of Central and South American pyraloid moths to identify. This site may be able to help with many pyraloid moths south of the U.S. border to at least the genus level.

Alma Solis



Collecting locality, Colorado, July, 2012

Finally.....

A “smattering” of publications

There were many papers published regarding the Pyraloidea or that included Pyraloidea since the last volume. Below are a few representatives:

Boyes, D. H. 2018. ***Natural History of Lepidoptera associated with bird nests in Mid-Wales.***

The Entomologists' Record and Journal of Variation. 130: 249-259. On page 256 includes only *Aphomia sociella* (Linnaeus, 1758) that usually feeds on honeycombs of bees and wasps, but there was no evidence of hymenopterous insects.

Matsui, Y. and H. Naka. 2018. ***Early stages and host plant of crambid moth *Syllepte segnalis* (Leech) under rearing conditions.*** Japan Heterocertists' Journal. 286: 265-267. The larvae were fed *Vitis heyneana* subsp. *ficifolia*. Color images of egg, larval instars, pupae, and adults are provided. Early instars fed on the outer layer of the leaves, but after the 3rd instar they rolled the leaf. Mature larvae made a circular nest with edges firmly bound with silk.

Gaston, J. & A. Vives Moreno. 2018. ***Revision of the genus *Gymnancyla* Zeller, 1848 in continental Spain and description of a new species (Lepidoptera: Pyralidae: Phycitinae).*** SHILAP. 46 (183) 505-517. Color images, including brightly stained male and female genitalia.

Minet, J. and P. Thiacourt. 2018. ***The scientific publications of Pierre Viette: a chronological list.*** ANTENOR. 5: 7-36. A succinct biography of the French entomologist Pierre Viette (1921-2011) and a list of his 449 publications,

with some information on their contents and dates of publication. Pierre Viette was a prodigious writer, describing Lepidoptera and Pyraloidea from Madagascar and related geographic areas.

Plant, C. W. & P. Jaksic. 2018. ***A provisional checklist and bibliography of the Pyraloidea of the Balkan Peninsula.*** Atalanta. 49 (1-4): 219-263.

Poltavsky, A. N. , et al. 2018. ***The Pyraloidea (Lepidoptera) fauna of the woody savannah belt in Mali, West Africa.*** Zootaxa. 4457(1): 39-69.

Chen, K., et al. 2018. ***Revision of the genus *Eumorphobotys* with descriptions of two new species (Lepidoptera: Crambidae: Pyraustinae).*** Zootaxa. 4472 (3): 489-504.

Alipanah, H & J. Asselbergs. 2018. ***Acteniopsis gambronensis* sp. n. (Pyralidae: Pyralinae), a new species from Iran, with a revision of the genus *Acteniopsis* Amsel, 1959.** Nota Lepidopterologica. 41 (1): 87-97.

Gumhalter, D. A., et al. 2018. ***New records of the crambid moth *Euclasta splendidalis* (Herrich-Schaffer, [1848])(Lepidoptera: Crambidae) in Croatia with notes on Pyraloidea fauna from the Neretva Valley.*** Natura Croatica. 27(1): 225-232.

Sakagami, K. & S. Sugiura. 2018. ***A diverse assemblage of moths feeding on aphid honeydew.*** Journal of Asia-Pacific Entomology. 21 (1): 413-416. The most abundant species was *Oncocera semirubella* (Pyralidae: Phycitinae).

Pyraloid Enthusiasts

Please welcome **Delmar Cain, Bartholomew Hacobian, and Rob de Vos.**

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

If you have any suggestions, comments, and, more importantly, additions for next year's edition, please send to me ASAP or during the year, so you don't forget. The next deadline will be October 2019.

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