



PHEGEA



Royal
Botanic Garden
Edinburgh



GBIF

Global Biodiversity
Information Facility



Co-evolutionary relationships between Australian Gracillariidae moths and Australian plants www.gracillariidae.net



Jurate De Prins
Flemish Entomological Society,
Commonwealth Scientific and Industrial
Research Organisation



Royal
Botanic Garden
Edinburgh

James Nicolls
Royal Botanic Garden Edinburgh



Diana Hartley
Commonwealth Scientific and Industrial
Research Organisation



Jesse Wallace
Commonwealth Scientific and Industrial
Research Organisation



Virginijus Sruoga
Institute of Biosciences, Life Sciences Center
Vilnius University

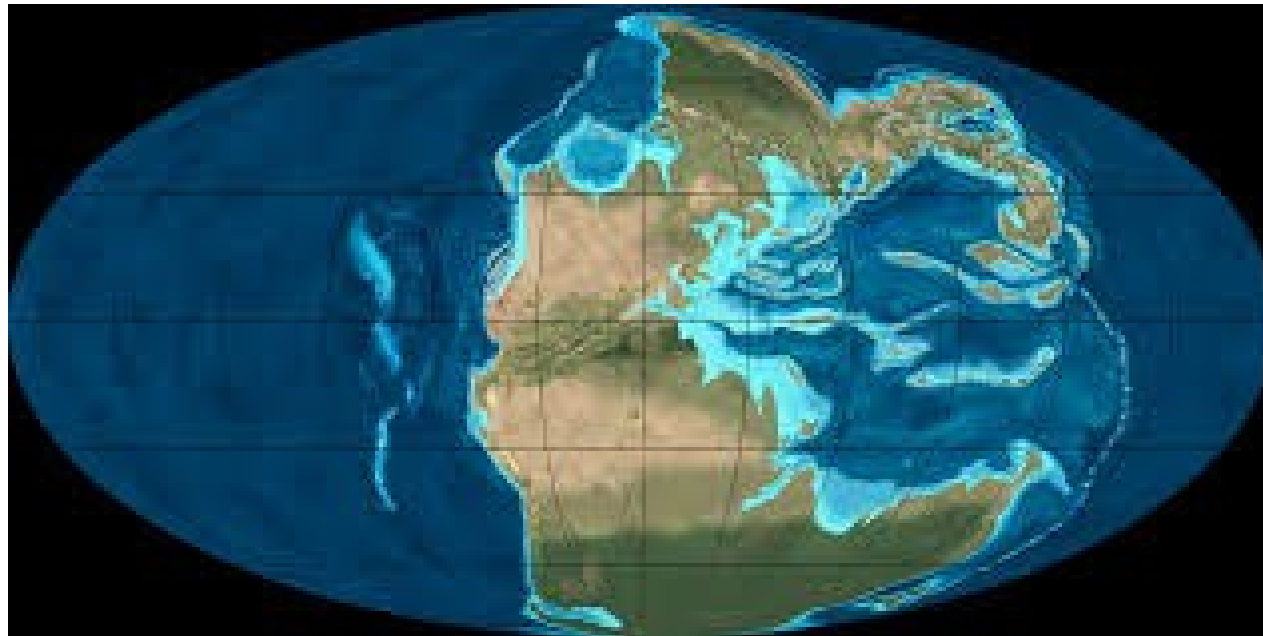


Andreas Zwick
Commonwealth Scientific and Industrial
Research Organisation

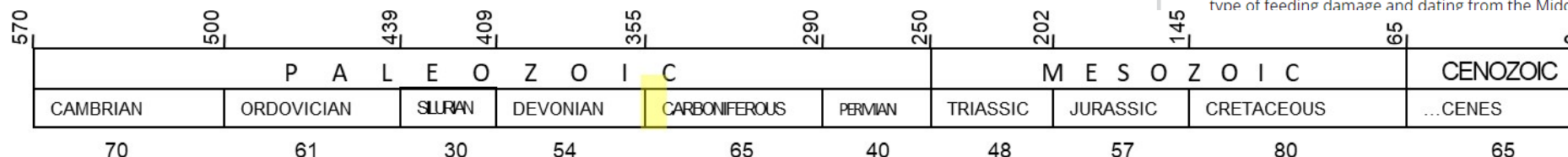


André Heughebaert
Belgian Biodiversity Platform
Global Biodiversity Information Facility

Co-evolutionary relationships between Australian Gracillariidae moths and Australian plants www.gracillariidae.net



The Triassic Period (252 - 201 million years ago). ©



New Phytologist

Full paper

Endophytic ancestors of modern leaf miners may have evolved in the Late Carboniferous

Richard J. Knecht, Anshuman Swain, Jacob S. Benner, Steve L. Emma, Naomi E. Pierce, Conrad C. Labandeira

First published: 05 October 2023 | <https://doi.org/10.1111/nph.19266>

Read the full text >

PDF TOOLS SHARE

Summary

- Endophytic feeding behaviors, including stem borings and galling, have been observed in the fossil record from as early as the Devonian and involve the consumption of a variety of plant (and fungal) tissues. Historically, the exploitation of internal stem tissues through galling has been well documented as emerging during the Pennsylvanian (c. 323–299 million years ago (Ma)), replaced during the Permian by galling of foliar tissues. However, leaf mining, a foliar endophytic behavior that today is exhibited exclusively by members of the four hyperdiverse holometabolous insect orders, has been more sparsely documented, with confirmed examples dating back only to the Early Triassic (c. 252–250 Ma).
- Here, we describe a trace fossil on seed-fern foliage from the Rhode Island Formation of Massachusetts, USA, representing the earliest indication of a general, endophytic type of feeding damage and dating from the Middle Pennsylvanian (c. 312 Ma).

Co-evolutionary relationships between Australian Gracillariidae moths and Australian plants www.gracillariidae.net





PHEGEA



Royal
Botanic Garden
Edinburgh



GBIF

Global Biodiversity
Information Facility



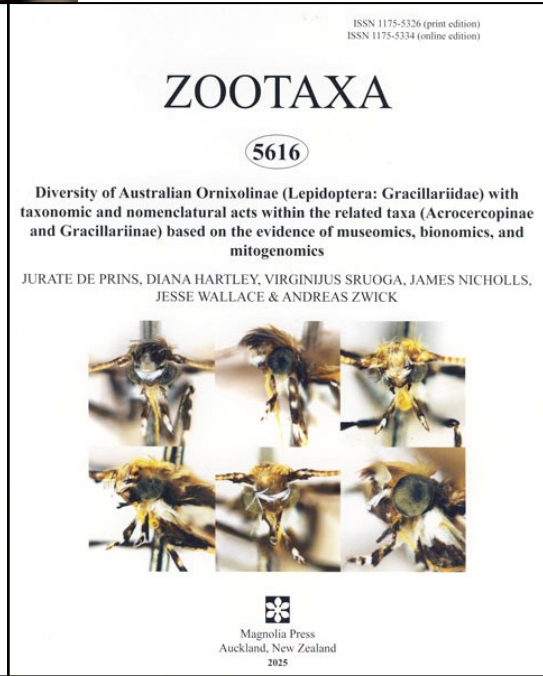
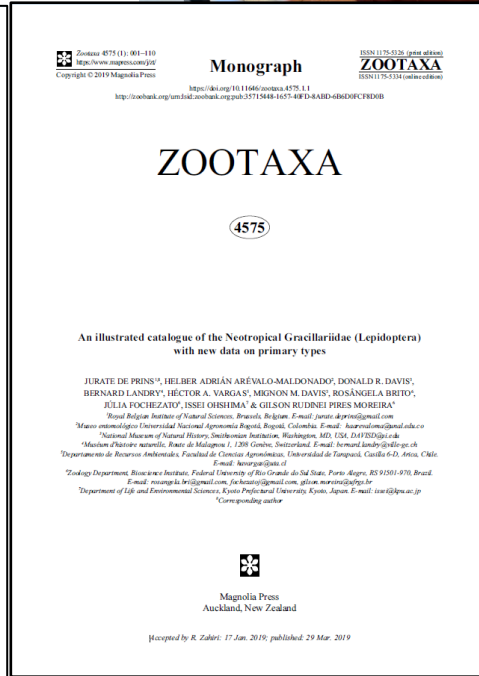
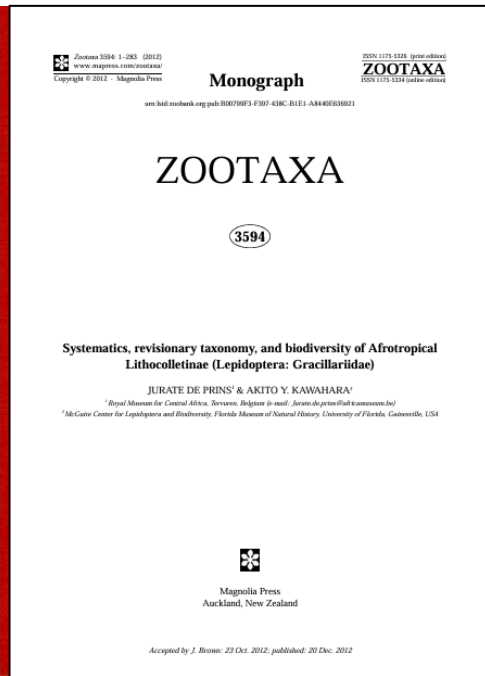
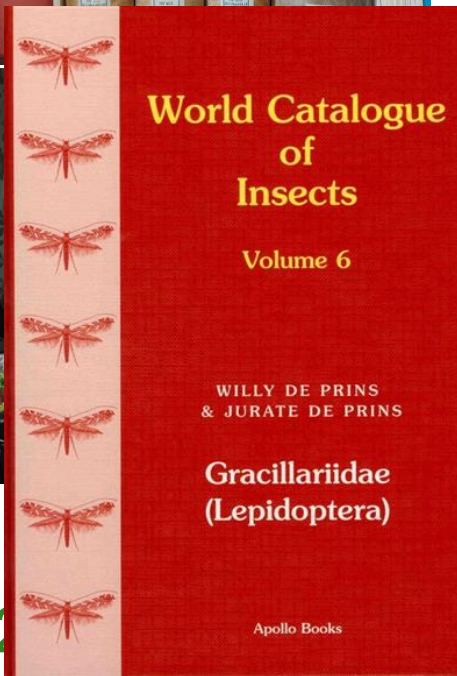
Co-evolutionary relationships between Australian Gracillariidae moths and Australian plants www.gracillariidae.net



A series of books by
Edward Meyrick on
Exotic Microlepidoptera
1913–1937



Publications of
Donald R. Davis, including
our joint illustrated
Catalogue on Neotropical
Gracillariidae
1983–2025



Neotropical

de Prins

Canberra_2



PHEGEA



Royal
Botanic Garden
Edinburgh



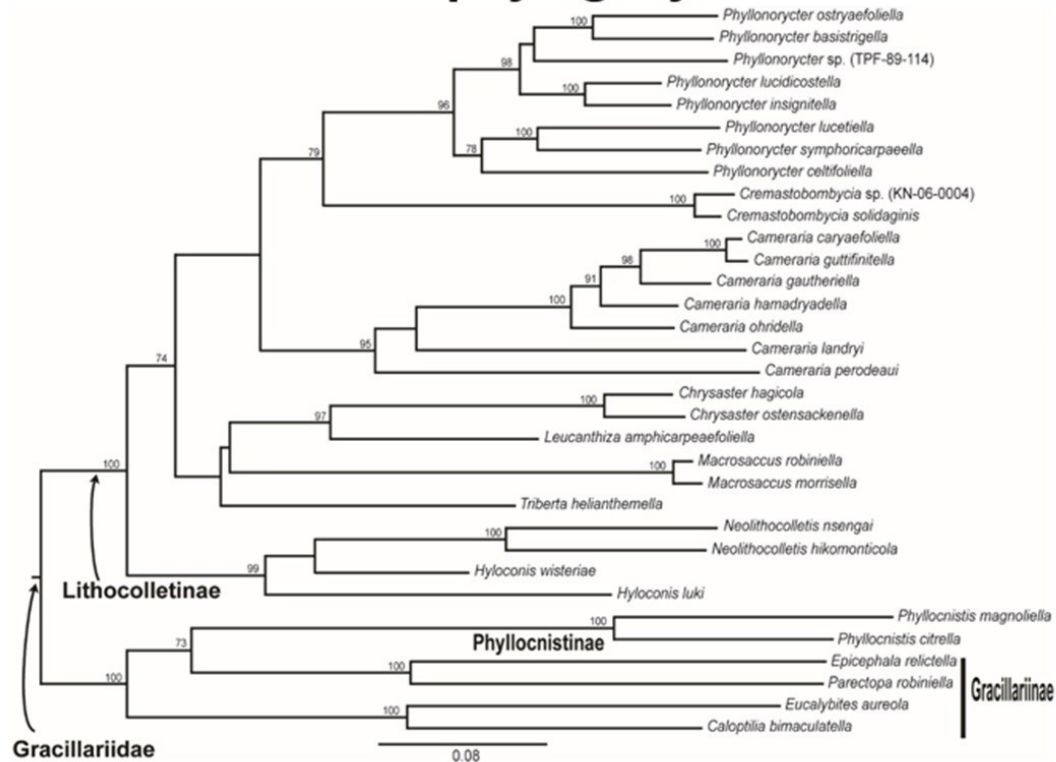
GBIF

Global Biodiversity
Information Facility



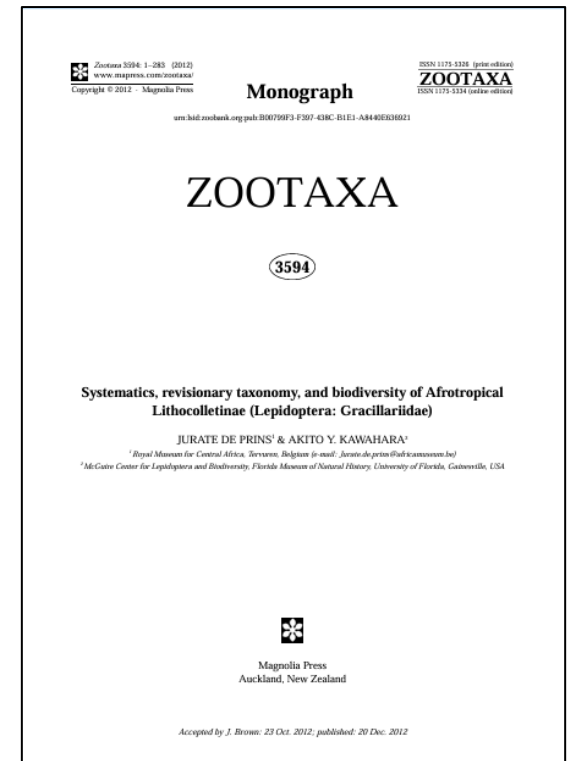
Co-evolutionary relationships between Australian Gracillariidae moths and Australian plants www.gracillariidae.net

Molecular phylogeny based on 11 nuclear genes



Maximum Likelihood tree of Lithocolletinae

The sequences considered for our study consisted of 11 nuclear genes totaling 8,838 bp:
Gelsolin (552 bp), Histidyl tRNA synthetase (447 bp), AMP deaminase (768 bp), Glucose phosphate dehydrogenase (621 bp), Acetyl-coA carboxylase (501 p), Pyrimidine biosynthesis (CAD) (2,913 bp), Dopa-decarboxylase (708 bp), Enolase (1,134 bp), Elongation factor-1 alpha (519 bp), Histone 3 (273 bp), and Wingless (402 bp).



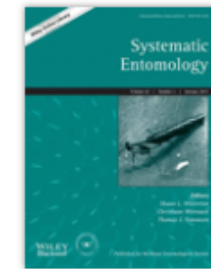
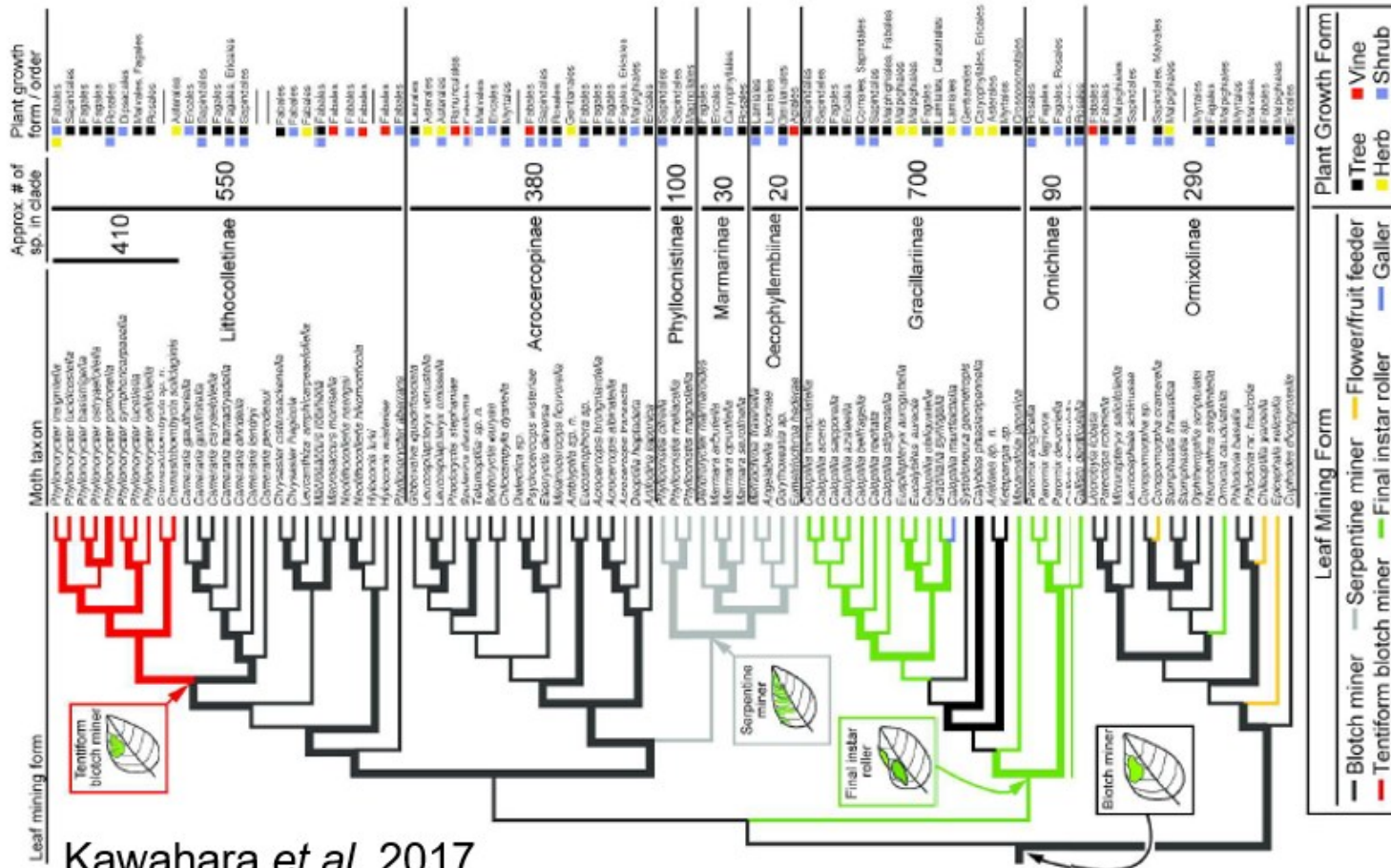
ISSUE: VOL. 3594 NO. 1: 20 DEC. 2012 TYPE: ARTICLES PUBLISHED: 2012-12-20 DOI: 10.11646/ZOOTAXA.3594.1.1 PAGE RANGE: 1-283 ABSTRACT VIEWS: 438 PDF DOWNLOADED: 161

Systematics, revisionary taxonomy, and biodiversity of Afrotropical Lithocolletinae (Lepidoptera: Gracillariidae)

JURATE DE PRINS*, AKITO Y. KAWAHARA*

Royal Museum for Central Africa, Tervuren, Belgium

Co-evolutionary relationships between Australian Gracillariidae moths and Australian plants www.gracillariidae.net



Systematic Entomology: Volume 42, Issue 1

Pages: 1-300
January 2017

Systematic Entomology



Original Article

A molecular phylogeny and revised higher-level classification for the leaf-mining moth family Gracillariidae and its implications for larval host-use evolution

AKITO Y. KAWAHARA, DAVID PLOTKIN, ISSEI OHSHIMA, CARLOS LOPEZ-VAAMONDE, PETER R. HOULIHAN, JESSE W. BREINHOLT, ATSUSHI KAWAKITA, LEI XIAO, JEROME C. REGIER, DONALD R. DAVIS, TOSIO KUMATA, JAE-CHEON SOHN, JURATE DE PRINS, CHARLES MITTER ... See fewer authors

First published: 13 October 2016 | <https://doi.org/10.1111/syen.12210> | Citations: 59

Kawahara et al. 2017



PHEGEA



Royal
Botanic Garden
Edinburgh



GBIF

Global Biodiversity
Information Facility



This monograph is dedicated to the Memory of Tosio Kumata

Diversity of Australian Ornixolinae (Lepidoptera: Gracillariidae) and related taxa based on the evidence of museomics, bionomics, and mitogenomics

JURATE DE PRINS, DIANA HARTLEY, VIRGINIJUS SRUOGA, JAMES NICHOLLS, JESSE WALLACE & ANDREAS ZWICK

Novelties:

- ☐ 9 new genera;
- ☐ 37 new species;
- ☐ 2 new synonymisation acts;
- ☐ 17 new combinations;
- ☐ 15 lectotype designations;
- ☐ 3 new distribution records for Australia
- ☐ 4 new families of host plants

Holistic analysis based on **156** whole mitogenomic data sets obtained from microlepidoptera collection specimens even more than **100 years old**.



PHEGEA



Royal
Botanic Garden
Edinburgh



GBIF

Global Biodiversity
Information Facility



Australian Ornixolinae – a study based on the ANIC microlepidoptera collection www.gracillariidae.net



Canberra_2025

<https://www.mapress.com/zt/article/view/zootaxa.5616.1.1>

Dr. Jurate De Prins



PHEGEA



Royal
Botanic Garden
Edinburgh

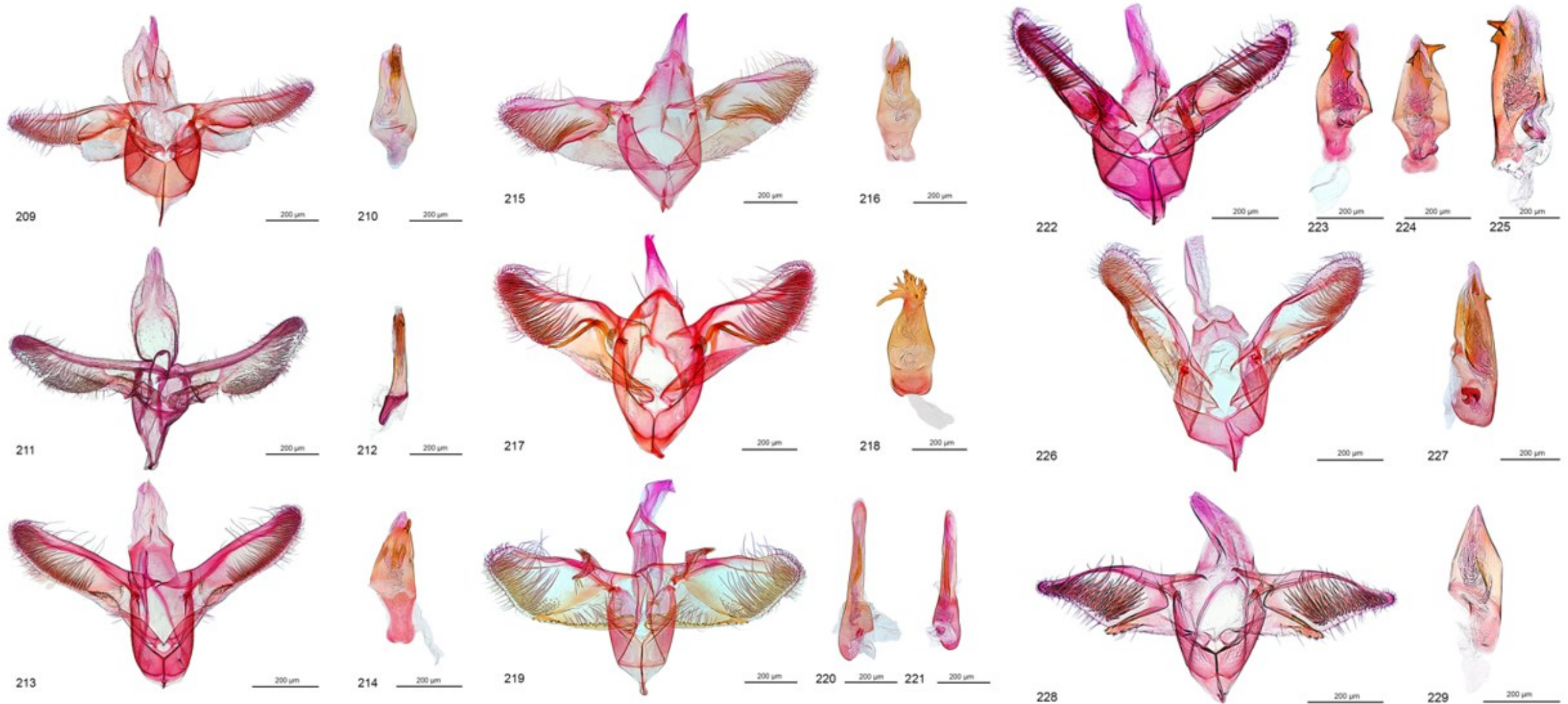


GBIF

Global Biodiversity
Information Facility



Australian Ornixolinae – a study based on the ANIC microlepidoptera collection www.gracillariidae.net





PHEGEA



Royal
Botanic Garden
Edinburgh

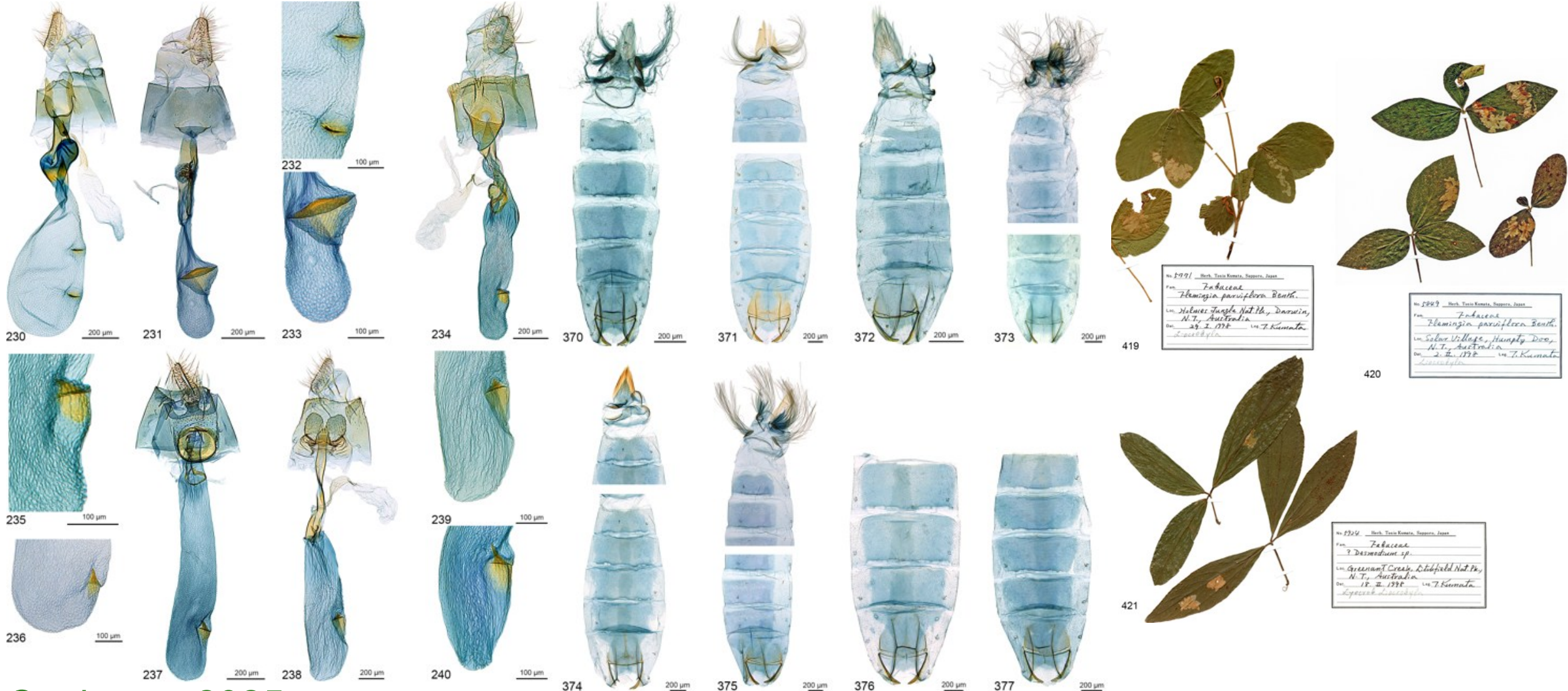


GBIF

Global Biodiversity
Information Facility



Australian Ornixolinae – a study based on the ANIC microlepidoptera collection and herbarium www.gracillariidae.net



Canberra_2025

<https://www.mapress.com/zt/article/view/zootaxa.5616.1.1>

Dr. Jurate De Prins



PHEGEA



Royal
Botanic Garden
Edinburgh

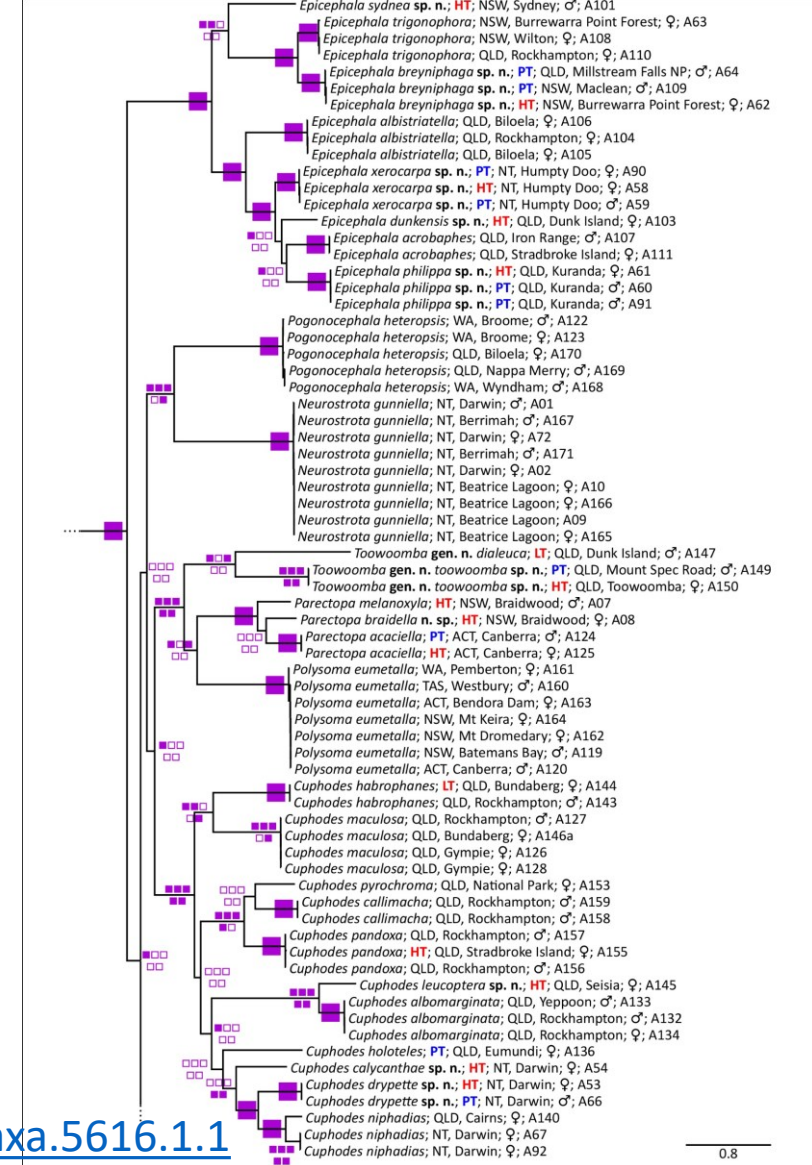
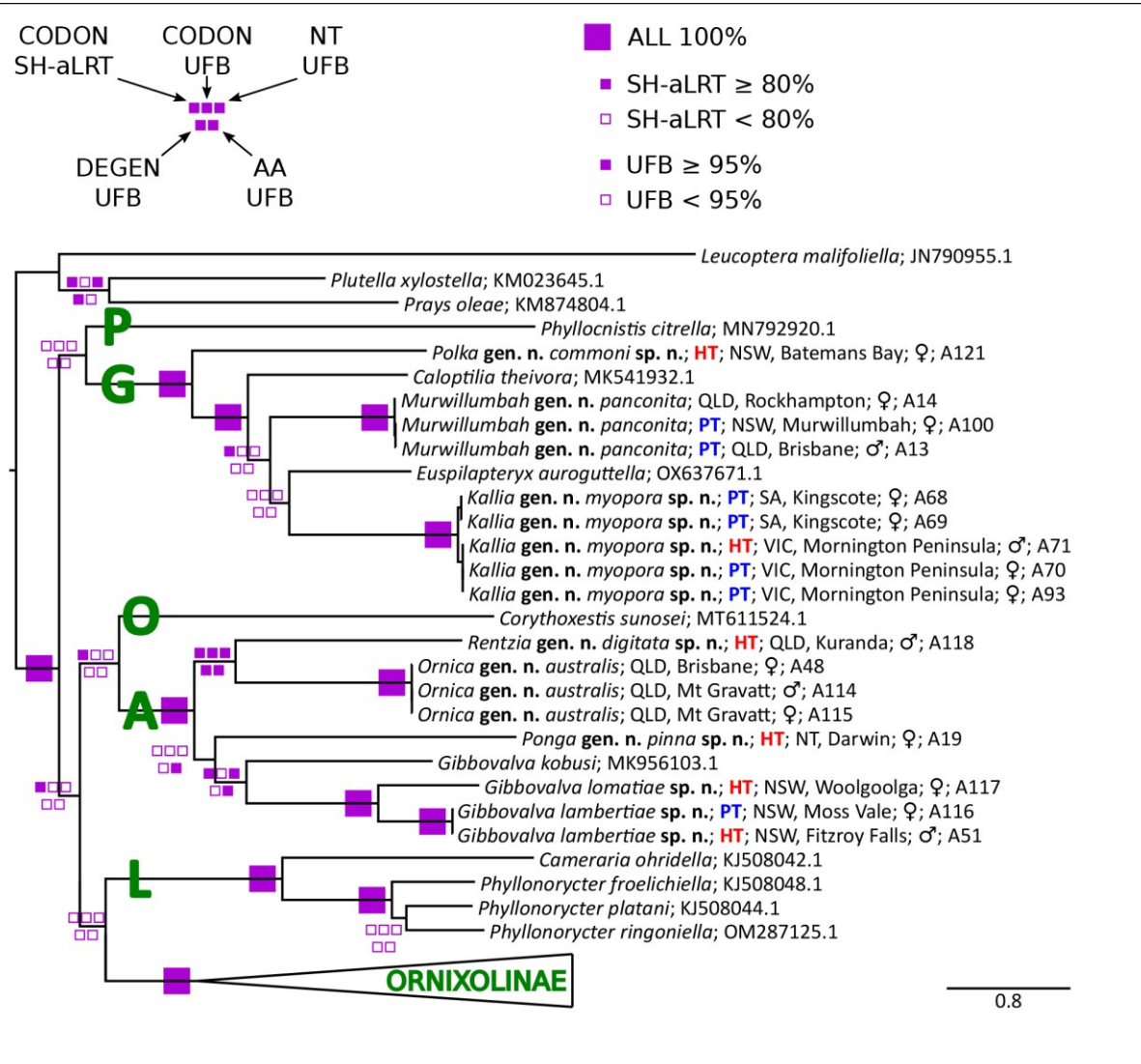


GBIF

Global Biodiversity
Information Facility



Australian Ornixolinae – whole mitogenomes based on the ANIC microlepidoptera collection www.gracillariidae.net





PHEGEA



Royal
Botanic Garden
Edinburgh



GBIF

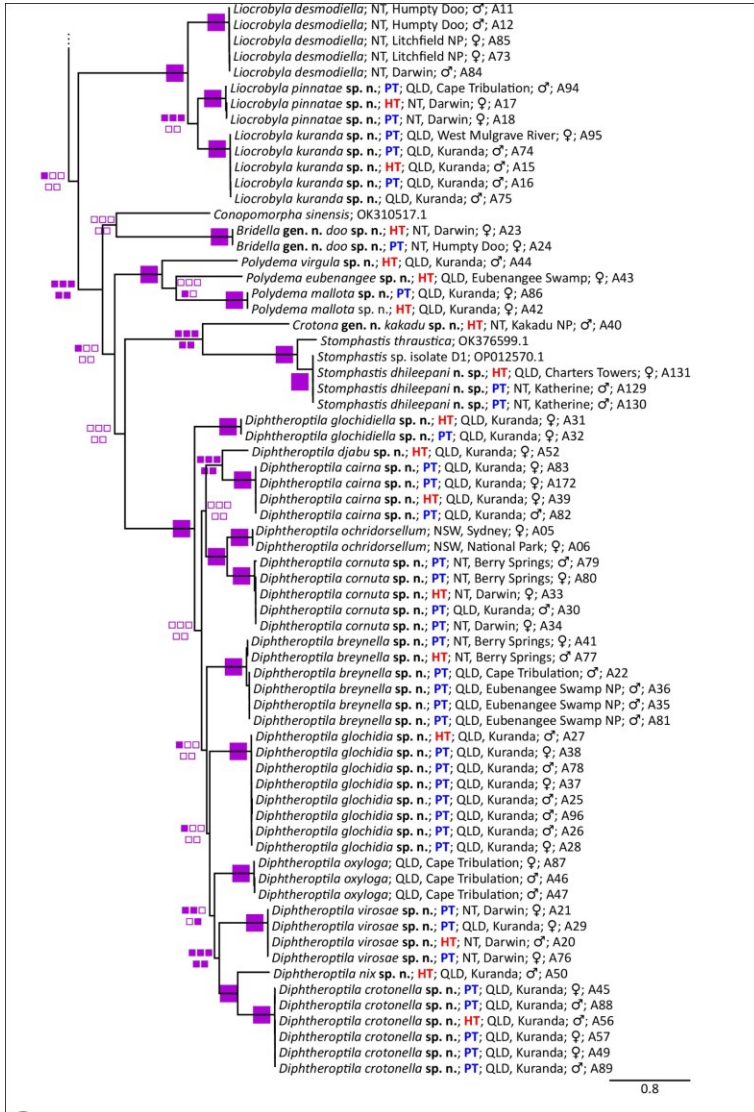
Global Biodiversity
Information Facility



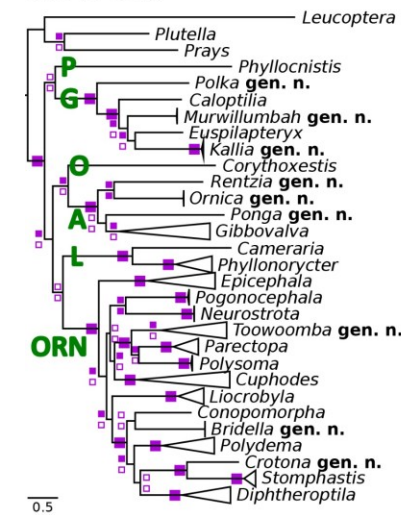
belspo



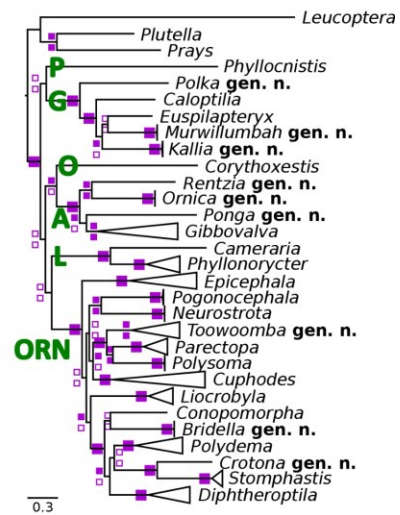
Australian Ornixolinae – whole mitogenomes based on the ANIC microlepidoptera collection www.gracillariidae.net



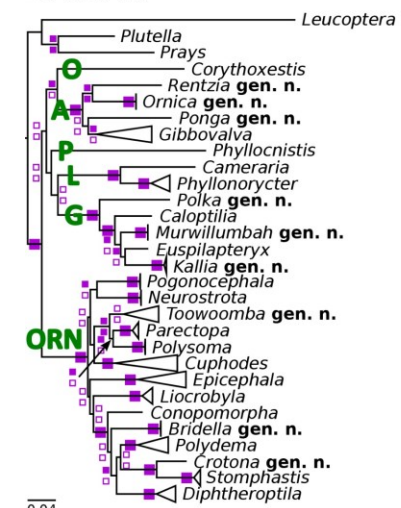
CODON



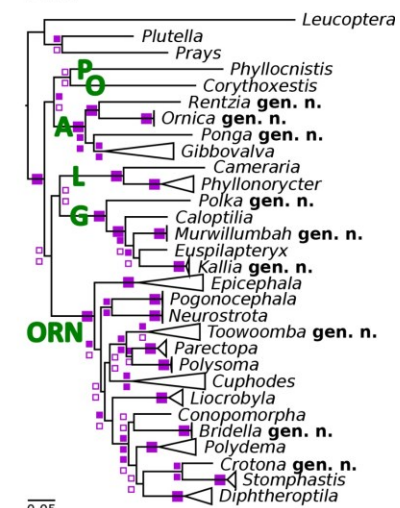
NT



DEGEN



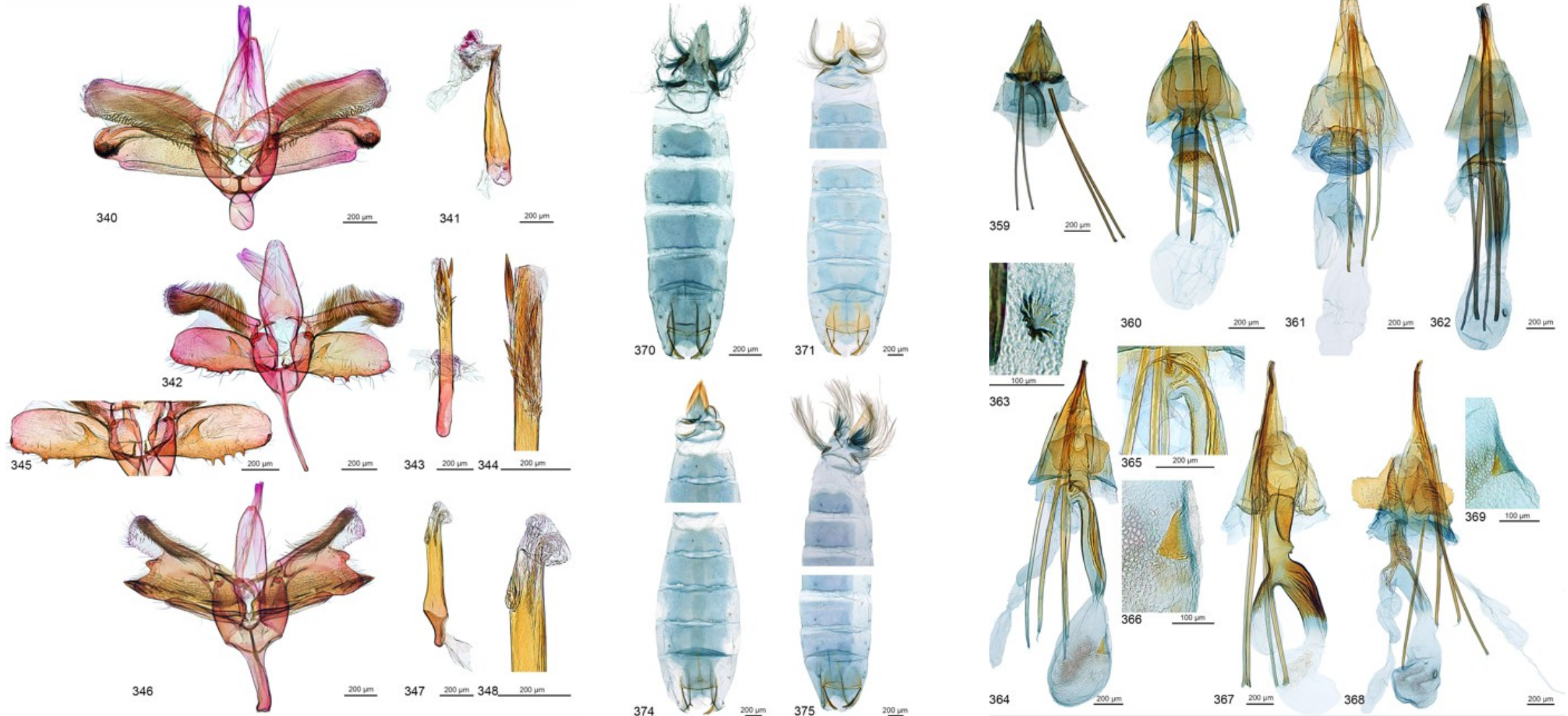
AA



Canberra_2025

<https://www.mapress.com/zt/article/view/zootaxa.5616.1.1>

Australian *Epicephala* – striking morphological adaptations for pollination www.gracillariidae.net



Pollination and oviposition by a female of a host-specific *Epicephala* moth on its host plant *Glochidion* sp. (Phyllanthaceae)



© Atsushi Kawakita <https://www.youtube.com/watch?v=Vg3L6kXPqPw>



PHEGEA



Royal
Botanic Garden
Edinburgh



GBIF

Global Biodiversity
Information Facility



Front Office – Global Taxonomic Database of Gracillariidae



Gracillariidae.net

Global Taxonomic Database of Gracillariidae (Lepidoptera)

[Home](#) [Species](#) [Museums](#) [Photos](#) [Publications](#) [About](#) Looking for names: [Welcome jdp](#) [Admin](#) [Logout](#)

Statistics

last_updated	09 Oct 2025
Families	1
Tribes	6
Genera	168
Species(accepted)	2082
Species(synonyms)	415
Species(misapplied)	304
Subspecies	9
Plants	3540
Parasitoids	1253
Photos	5810
Types	3845
Publications	5182



Phyllonorycter melanosparta

Welcome

This website provides an online database of all Gracillariidae (Lepidoptera) species of the World, updated with the latest information obtained from 5150+ published sources and from our own studies.

The current list is continuously updated and information on the original description, type locality, types and their depository, distribution and foodplants is added on a regular basis.

Disclaimer



PHEGEA



Royal
Botanic Garden
Edinburgh



GBIF

Global Biodiversity
Information Facility



Back Office – Global Taxonomic Database of Gracillariidae

Moths Back Office WELCOME, JURATE [VIEW SITE](#) / [CHANGE PASSWORD](#) / [LOG OUT](#)

Home » Lite » MothSpecies

Start typing to filter...

AUTHENTICATION AND AUTHORIZATION

Groups [+ Add](#)

Users [+ Add](#)

LITE

Countries [+ Add](#)

HigherTaxa [+ Add](#)

Journals [+ Add](#)

Languages [+ Add](#)

Localities [+ Add](#)

MothSpecies [+ Add](#)

Moths [+ Add](#)

Museums [+ Add](#)

Pages [+ Add](#)

Parasitoids [+ Add](#)

Photographers [+ Add](#)

Plants [+ Add](#)

Provinces [+ Add](#)

Publications [+ Add](#)

Sections [+ Add](#)

Select moth species to change ADD MOTH SPECIES +

Q

Action: 0 of 100 selected

☐	SCIENTIFIC NAME	AUTHORSHIP	RANK	STATUS	VISIBLE	CODE
☐	Acrocercops acanthidias	Meyrick, 1934	species	Accepted	✓	ACROACAN
☐	Acrocercops achnodes	Meyrick, 1915	species	Accepted	✓	ACROACHN
☐	Acrocercops aeglophanes	(Turner, 1913)	species	Accepted	✓	ACROAEGL
☐	Acrocercops aeolella	Turner, 1940	species	Misapplied	✓	01ACRAEO
☐	Acrocercops aeolellum	(Meyrick, 1880)	species	Accepted	✓	ACROAEOL
☐	Acrocercops affinis	Braun, 1918	species	Accepted	✓	ACROAFFI
☐	Acrocercops albanotella	(Chambers, 1877)	species	Misapplied	✓	01ACRALB
☐	Acrocercops albida	Turner, 1947	species	Accepted	✓	ACROALBD
☐	Acrocercops albidorsella	Bradley, 1957	species	Accepted	✓	ACROALDO
☐	Acrocercops albimaculella	(Turner, 1896)	species	Synonym	✓	01ACRLBM
☐	Acrocercops albinatella	(Chambers, 1872)	species	Accepted	✓	ACROALBI
☐	Acrocercops albinotella	Meyrick, 1912	species	Synonym	✓	02ACRALB
☐	Acrocercops albofasciella	Yazaki, 1926	species	Accepted	✓	ACROALBF
☐	Acrocercops albomaculella	(Turner, 1894)	species	Accepted	✓	ACROALBM
☐	Acrocercops albomarginata	Forbes, 1930	species	Misapplied	✓	01ACRALM
☐	Acrocercops albomarginatum	(Walsingham, 1897)	species	Accepted	✓	ACROALBO
☐	Acrocercops allactopa	Meyrick, 1916	species	Accepted	✓	ACROALLA
☐	Acrocercops amethystopa	Meyrick, 1916	species	Accepted	✓	ACROAMET

FILTER

By rank

[All](#)

[species](#)

[subspecies](#)

By visible

[All](#)

[Yes](#)

[No](#)

By status

[All](#)

[Accepted](#)

[Misapplied](#)

[Synonym](#)

By family

[All](#)

[Gracillariidae](#)

[Unassigned](#)

[-](#)



PHEGEA



Royal
Botanic Garden
Edinburgh



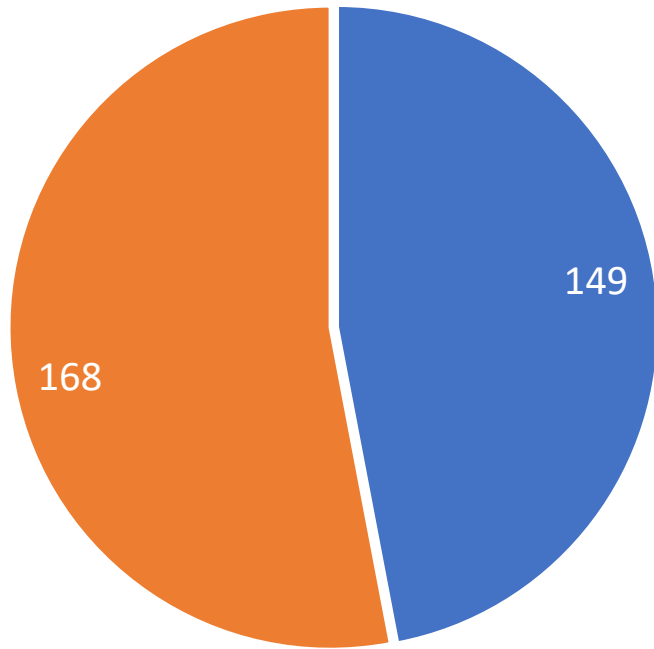
GBIF

Global Biodiversity
Information Facility



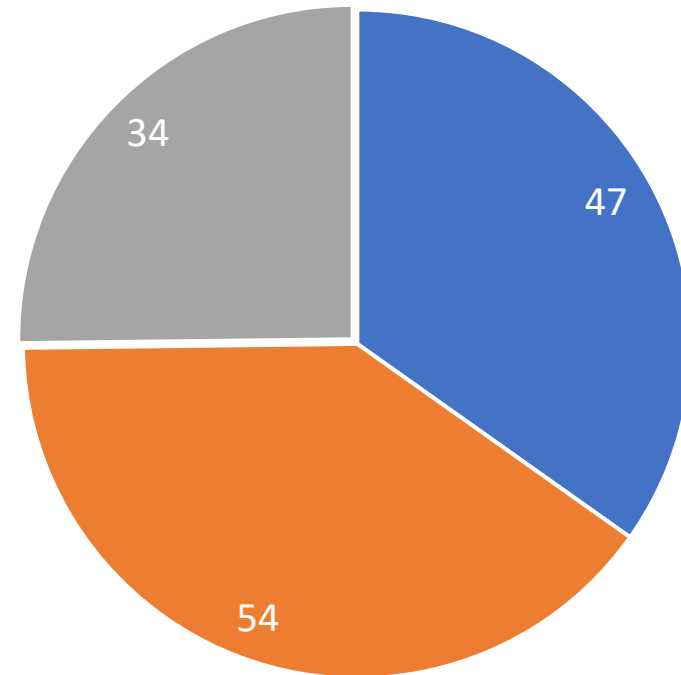
Co-evolutionary relationships between Australian Gracillariidae moths and Australian plants www.gracillariidae.net

Australian Gracillariidae



■ Host plant known ■ Host plant unknown

Australian Gracillariidae – Host plant specificity



■ Monophagous ■ Oligophagous ■ Polygophagous



PHEGEA



Royal
Botanic Garden
Edinburgh



GBIF

Global Biodiversity
Information Facility



Co-evolutionary relationships between Australian Gracillariidae moths and Australian plants



National Research
Collections Australia

Biodiversity
Biosecurity
Biodiscovery

Thank you all for your very kind attention