

## Appendix S2 of

# **A comprehensive molecular phylogeny of Geometridae (Lepidoptera) with a focus on enigmatic small subfamilies**

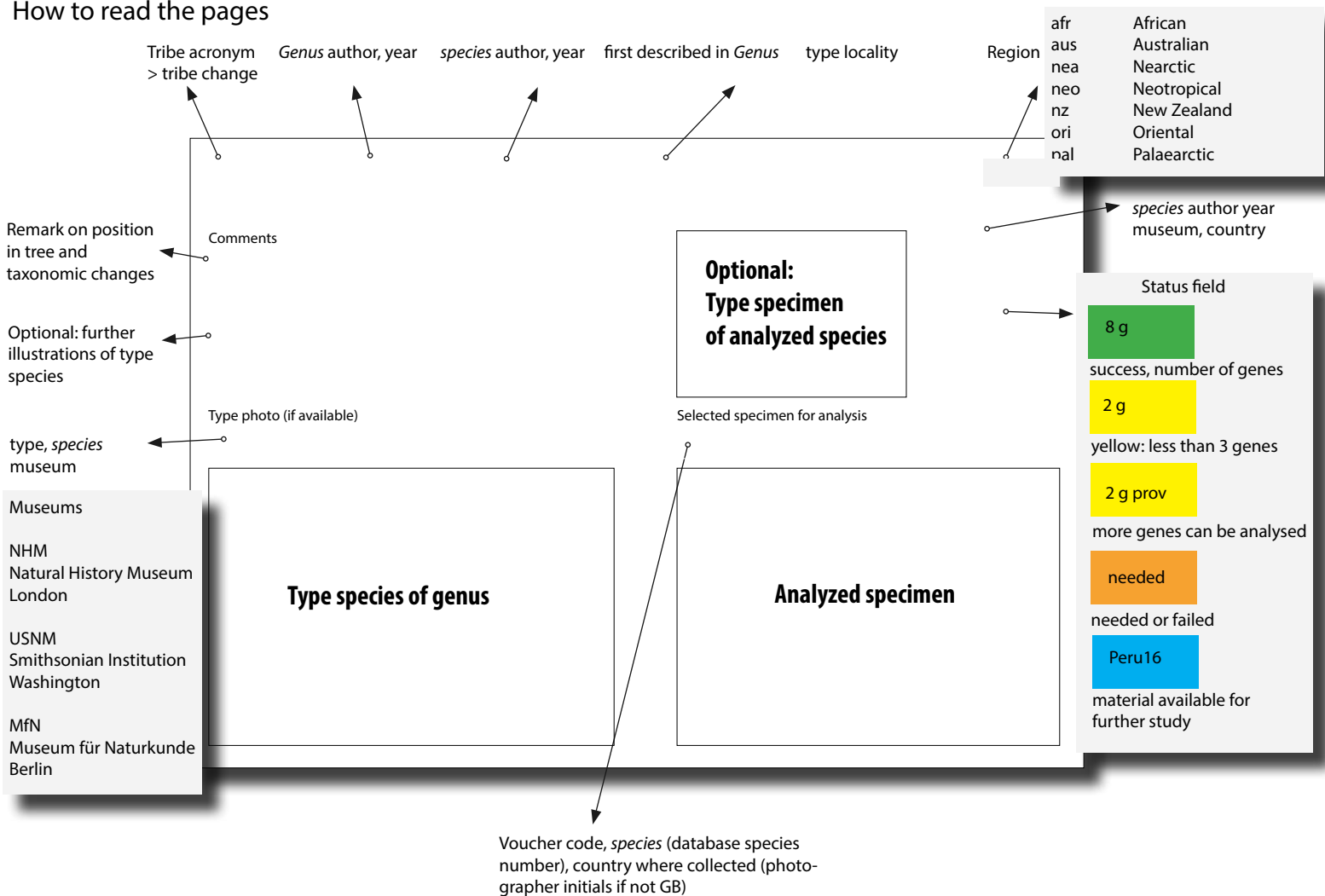
Leidys Murillo-Ramos, Gunnar Brehm, Pasi Sihvonen, Axel Hausmann,  
Sille Holm, Hamid Ghanavi, Erki Öunap, Andro Truuverk, Hermann Staude,  
Egbert Friedrich, Toomas Tammaru, Niklas Wahlberg

Compiled by G. Brehm

Photos and material by Australian National Insect Collection (ANIC), Egbert Friedrich (EF), Axel Hausmann (AF), B. Christian Schmidt (CS), Pasi Sihvonen (PS), Dirk Stadie (DS); all other photos (including "from XX") by Gunnar Brehm

- 1 ARCH Archiearinae
- 2 ARCH > ENNO Archiearinae transferred to Ennominae
- 3 OENO > STER Oenochrominae transferred to Sterrhinae (see also Sihvonen et al. in preparation)
- 4 DESM Desmobathrinae
- 5 EUME *Eumelea*
- 6 OENO Oenochrominae
- 7 EPID New subfamily Epidesmiinae

# How to read the pages



# 1 Archiearinae

ARCH *Archiearis* Hübner, [1823] *parthenias* Linné, 1761 4 LSL Sweden

nea-pal

Comments



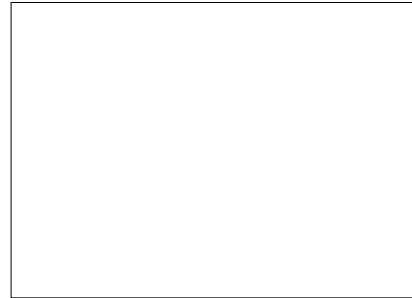
9 g

Type photo (if available)  
no type *infans* NHM

Selected specimen for analysis  
CNC508477 *A. infans* Canada (from CS)



Comments



9 g

Type photo (if available)

no type *parthenias* NHM

Selected specimen for analysis

NW107-1 *A. parthenias* Sweden (NW)



ARCH *Boudinotiana* Leraut, 2002 check *notha?* unclear deposit

pal

Comments



5 g

Type photo (if available)

no type *notha* BC\_ZSM\_Lep\_82203

Selected specimen for analysis

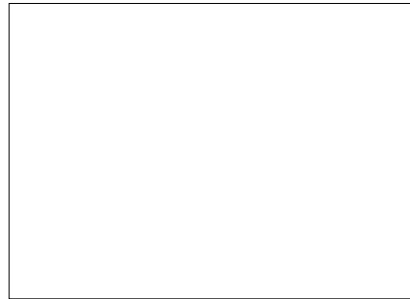
EO0196 no photo



ARCH *Leucobrephos* Grote, 1874 *brephoides* Walker, 1857 3 NHM Canada: Hudson Bay

nea-pal

Comments



6 g

Type photo (if available)  
type *brephoides* NHM



Selected specimen for analysis  
CNC508469 *L. brephoides* Canada (from CS)



2 Archiearinae  
transferred to  
Ennominae

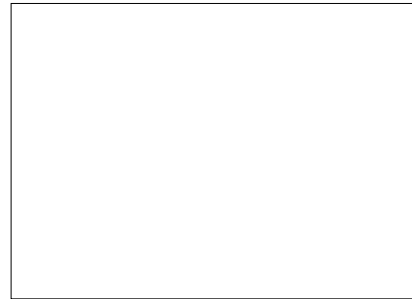


ARCH *Acalyphes* Turner, 1926 *philorites* Turner, 1926 1 unclear deposit Tasmania

aus

Comments

Young (2006): not Archiearinae  
transferred to Ennominae



2 g

Type photo (if available)

no type *A. philorites* 10ANIC\_12135

Selected specimen for analysis

10ANIC-12134 *A. philorites* Australia

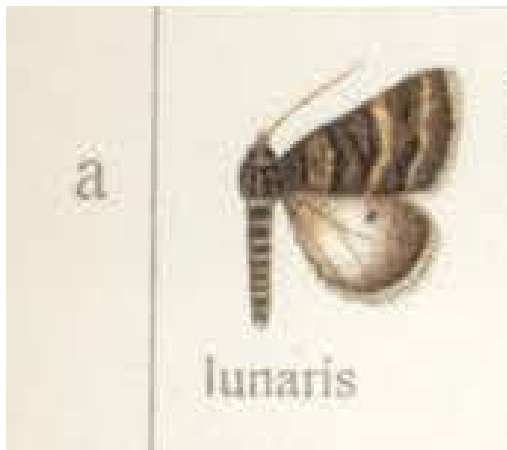


Comments

Young (2006): not Archiearinae  
transferred to Ennominae

Type photo (if available)

Seitz illustration *lunaris*



2 g

Selected specimen for analysis

10ANIC-12152 *D. aesiodora* Australia



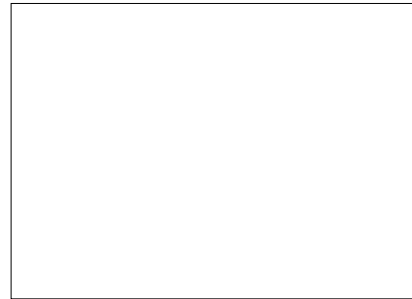
3 Oenochrominae  
transferred to  
Sterrhinae

OENO > STER *Ametris* Hübner, [1822] 1806 *nitocritaria* Hübner, 1822 2 unclear deposit ?

neo

Comments

transferred to *Sterrhinae*  
(Sihvonen et al. in prep.)



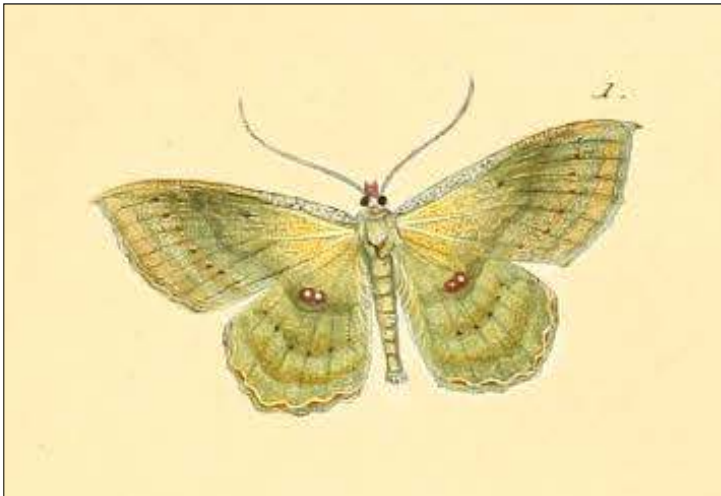
9g

Type photo (if available)

Hübner illustration *nitocris*

Selected specimen for analysis

CNCLEP00152613 *A. nitocris* USA (from CS)

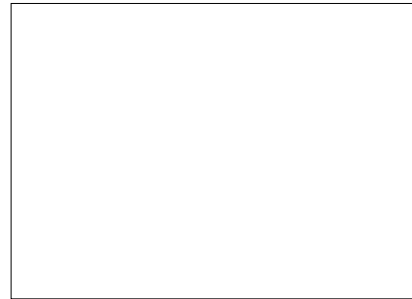


OENO > STER *Ergavia* Walker, 1866 *bogotaria* Walker, 1866 22 NHM Colombia Bogota

neo

Comments

transferred to Sterrhinae  
(Sihvonen et al. in prep.)



7g

Type photo (if available)

type *bogotaria* NHM (syn of *carinenta* Cramer)

Selected specimen for analysis

ID 17186 *Ergavia* sp Ecuador



OENO > STER *Macrotis* Westwood, 1841 *netrix* Cramer, 1777 3 unclear deposit Guyana or near

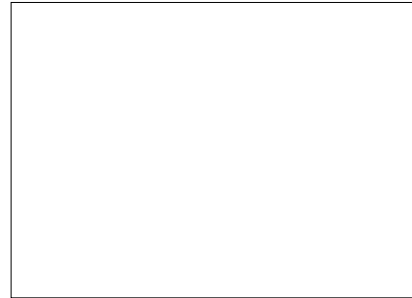
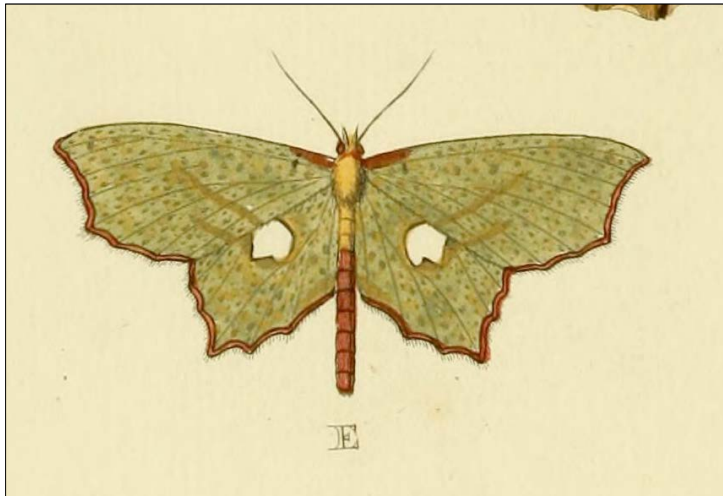
neo

Comments

transferred to *Sterrhinae*  
(Sihvonen et al. in prep.)

Type photo (if available)

Cramer illustration *netrix*



7g

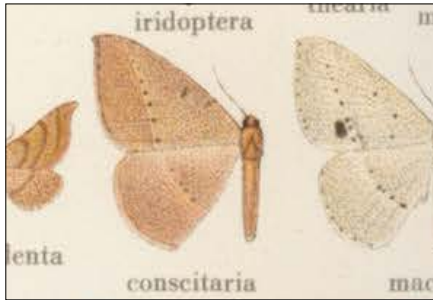
Selected specimen for analysis

ID 22654 *M. netrix* (#2669) Ecuador



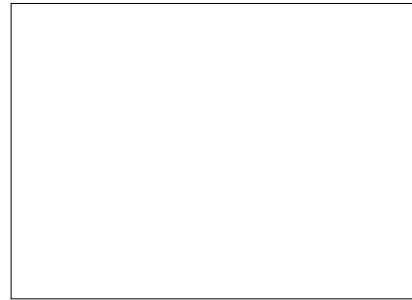
# 5 Desmobathrinae

Seitz illustration



Type photo (if available)

type *conscitaria* NHM



6 g

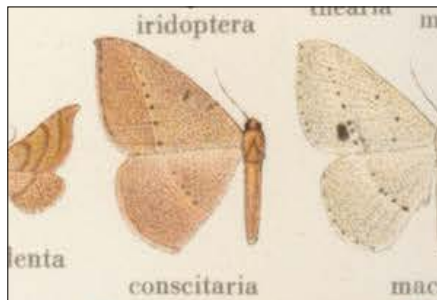
Selected specimen for analysis

MM00224 *C. nr conscitaria* South Africa (PS)





Seitz illustration



Type photo (if available)  
type *conscitaria* NHM



10 g

Selected specimen for analysis  
PS265 *C. conscitaria* South Africa (PS)



DESM *Derambila* Walker, [1863] *punctisignata* Walker, 1863 44 OUM West Africa afr-mad-aus-oce-pal-nea

Comments



7g

Type photo (if available)

type *punctisignata* NHM



Selected specimen for analysis

PS182 *D. nr saponaria* Asia (PS)



DESM *Dolichoneura* Warren, 1894 *albidentata* Warren, 1894 11 NHM Guyana

neo

Comments

Seitz illustration



Type photo (if available)

no type *albidentata* NHM



7g

Selected specimen for analysis

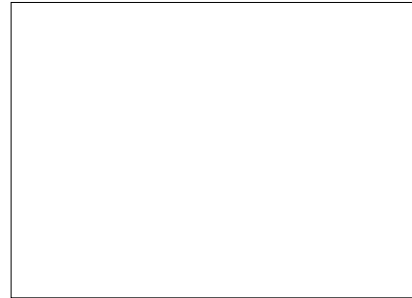
AH7160 *D. oxypteraria* Peru (from AH)



DESM *Noreia* Walker, 1861 *perdensata* Walker, 1862 13 NHM Sri Lanka

aus-ori

Comments



6 g

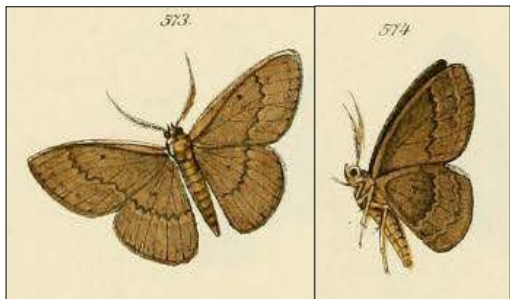
Type photo (if available)  
no type *perdensata* NHM

Selected specimen for analysis  
PS183 *Noreia* sp Asia (PS)



DESM *Ophiogramma* Hübner, [1831] *injunctaria* Hübner, [1831] 8 unclear deposit Br: Rio de Janeiro neo

illustration Hübner



Type photo (if available)

no type *injunctaria* NHM



8 g

Selected specimen for analysis

gb\_ID\_19219 *O. coenobiata* (#996) Ecuador



Comments



4 g

Type photo (if available)

Seitz illustration *microniaria*



Selected specimen for analysis

PS191 *Ozola* nr *convergens* Thailand (PS)



DESM *Ozola* Walker, 1861 *microniaria* Walker, 1862 48 NHM Sri Lanka

afr-aus-oce-ori-pal

Comments

holotype *hollowayi* Scoble & Sommerer, 1988 NHM

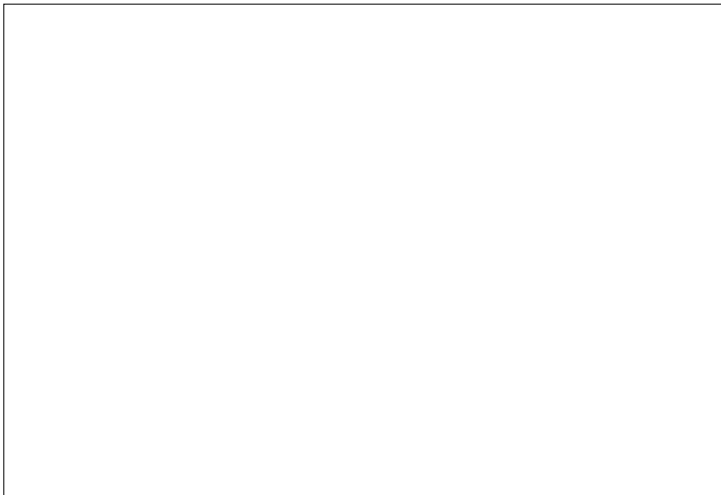


5 g

Type photo (if available)

Selected specimen for analysis

BC86106 *O. hollowayi* Australia (from EF)



DESM *Ozola* Walker, 1861 *microniaria* Walker, 1862 48 NHM Sri Lanka  
Seitz illustration *niphoplaca* (type species of Desmobathrinae), described as *Desmobathra* Meyrick, 1886

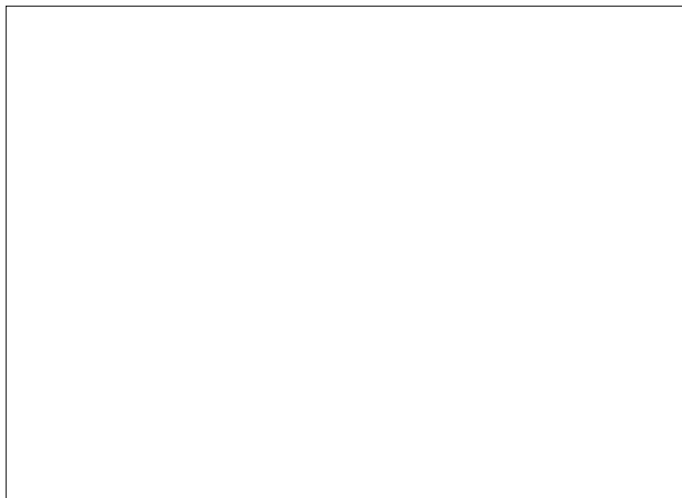


Type photo (if available)  
type *niphoplaca* NHM



Selected specimen for analysis  
no sequenced material

needed

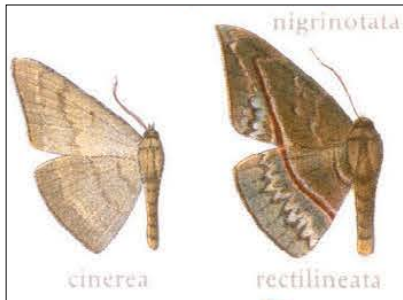




DESM *Pycnoneura* Warren, 1894 *rectilineata* Warren, 1906 9 USNM French Guiana

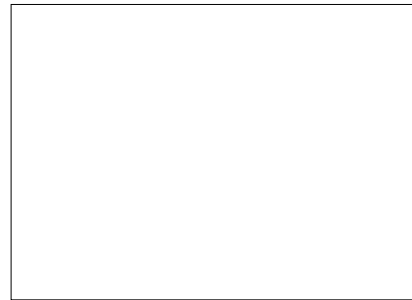
neo

Seitz illustration



Type photo (if available)

type *rectilineata* USNM



8 g

Selected specimen for analysis

Pe-Geo-1327 *P. rectilineata* Peru



OENO > DESM *Racasta* Walker, 1861 *caberaria* Walker, 1861 2 NHM Venezuela

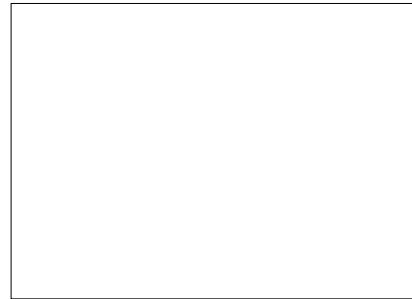
neo

Comments

transferred to Desmobathrinae

Type photo (if available)

type *spatiaria caberaria* NHM



8 g

Selected specimen for analysis

gb\_ID\_19265 *R. spatiaria extendata* (#2676) Ecuador



OENO *Nearcha* Guest, 1887 *buffalaria* Guenée, 1887 13 MNHM Tasmania

aus

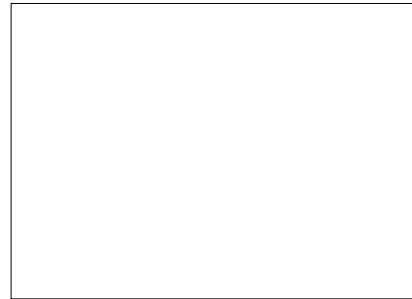
Comments

no photo but likely that this is *N. dasyzona*  
(barcode checked on BOLD)

transferred to Desmobathrinae?

Type photo (if available)

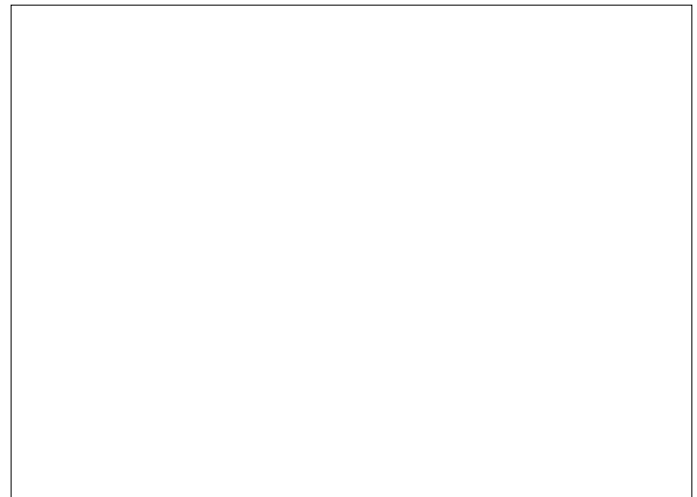
type *buffalaria* NHM



5 g

Selected specimen for analysis

MJM\_96\_0267 *N. dasyzona* no photo

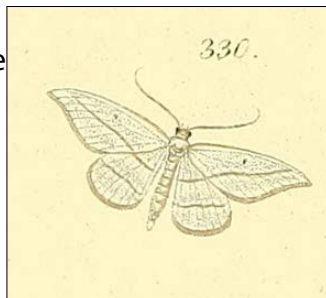


OENO > DESM *Zanclopteryx* Herrich-Schäffer, [1855] *aculeataria* HS, [1855] 8 unclear deposit

neo

Comments

transferred to Desmobathrinae



Herrich-Schäffer illustration



8 g

Type photo (if available)

no type *aculeataria* NHM

Selected specimen for analysis

Pe-Geo-0492 *Zanclopteryx* sp Peru



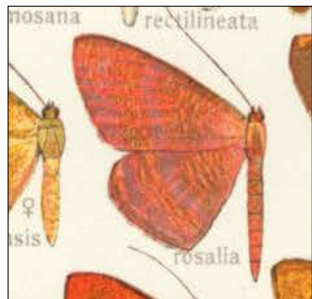
*5 Eumelea*

DESM > UN *Eumelea* Duncan [& Westwood], 1841 *rosalia* Stoll, 1781 28 unclear deposit

aus-oc-ori-pal

Indonesia: Moluccas, Amboinia

Seitz illustration



Comments

transferred to unassigned

type *ludovicata* Guenée, [1858] NHM Ceylon



6 g

Type photo (if available)

type *rosalia* NHM



Selected specimen for analysis

MM13433 *E. ludovicata*



# 6 Oenochrominae

OENO *Antictenia* Prout, 1910 *punctunculus* Lucas, 1892 2 unclear deposit Australia QLD

aus

Comments



10 g

Type photo (if available)

Seitz illustration *punctunculus*

Selected specimen for analysis

EF\_Aus-Geo\_5 *A. torta* Australia (EF)





OENO *Arhodia* Guenée, [1858] *lasiocamparia* Gn, 1858 1 MNHN Tasmania

aus

Comments



8 g

Type photo (if available)

type *lasiocamparia* NHM



Selected specimen for analysis

EF\_Aus-Geo\_6 *A. lasiocamparia* Australia



OENO *Dinophalus* Prout, 1910 *cyanorrhoea* Lower, 1903 15 unclear deposit Australia: No. Territory aus

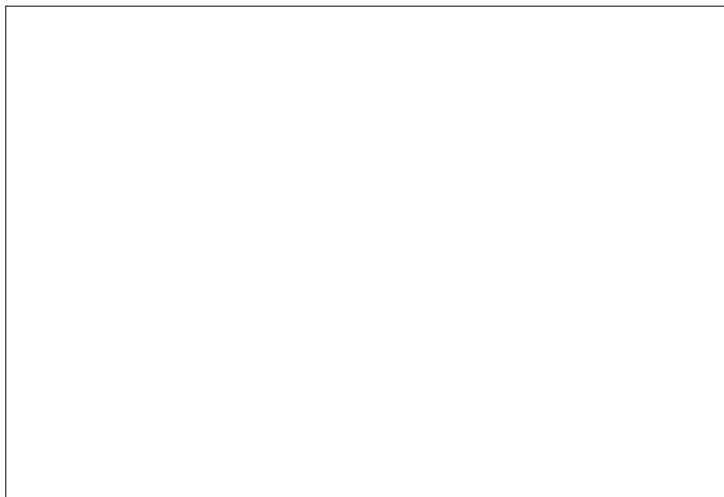
Comments

Seitz illustration *serpentaria*



5 g

Type photo (if available)



Selected specimen for analysis

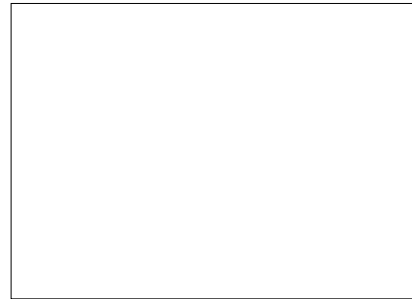
EF\_Aus-Geo\_9 *D. serpentaria* Australia (EF)



OENO *Gastrophora* Guenée, [1858] *henricaria* Guenée, [1858] 1 NHM Australia

aus

Comments



7g

Type photo (if available)

type *henricaria* NHM (female)



Selected specimen for analysis

EF\_Aus-Geo\_1 *G. henricaria* Australia (EF)



OENO *Homospora* Turner, 1904 *procrita* Turner, 1904 1 unclear deposit Austrlia QLD

aus

Comments

Seitz illustration *rhodoscopa*

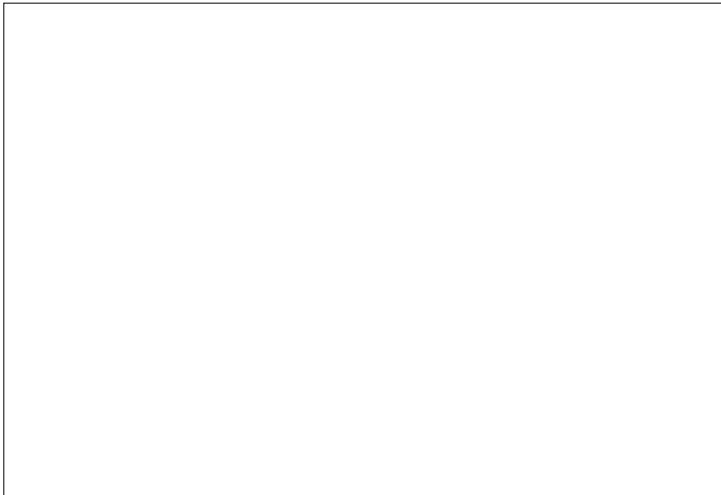


9g

Type photo (if available)

Selected specimen for analysis

EF\_Aus-Geo\_4 *H. rhodoscopa* Australia (EF)



OENO *Hypographa* Guenée, [1858] *phlegetonaria* Guenée, [1858] 4 MNHM Tasmania

neo

Comments



9g

Type photo (if available)

Paralectotype *H. phlegetonaria* NHM



Selected specimen for analysis

EF\_Aus-Geo\_13 *H. epiodes* Australia (EF)



OENO *Lissomma* Warren, 1905 *himerata* Warren, 1905 4 NHM Australia N Territory of S Australia

aus

Comments

*Lissomma dilutaria* in Epidesmiinae

Type photo (if available)

type *L. himerata* NHM



9 g

Selected specimen for analysis

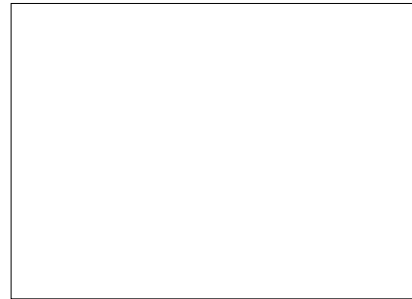
EF\_Aus-Geo\_14 *L. postcarneata* Australia (EF)



OENO *Monoctenia* Guenée, [1858] *falernaria* Gn, [1858] 2 MNHM Tasmania

aus

Comments



10 g

Type photo (if available)

no type *M. falernaria* NHM

Selected specimen for analysis

EF\_Aus-Geo\_15 *Monoctenia* sp Australia (EF)



OENO *Oenochroma* Guenée, [1858] *vinaria* Guenée, [1858] 20 MNHM Australia

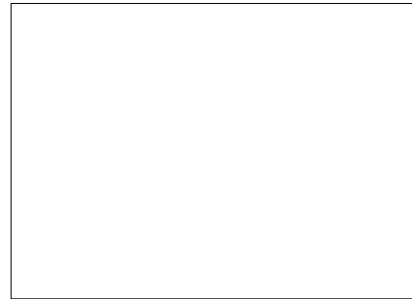
aus

Comments

forms a clade with *vinaria*

Type photo (if available)

no type *vinaria* NHM



8 g

Selected specimen for analysis

MM07576 *O. orthodesma* Australia

photo of specimen misses



OENO *Oenochroma* Guenée, [1858] *vinaria* Guenée, [1858] 20 MNHM Australia

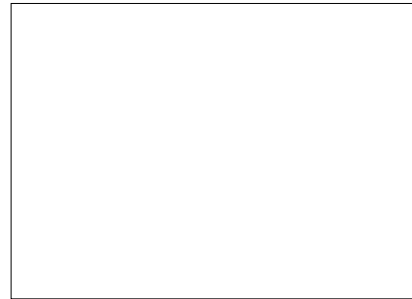
aus-oce

Comments

forms a clade with *orthodesma*

Type photo (if available)

no type *vinaria* NHM



2 g

Selected specimen for analysis

10ANIC\_11131 *O. vinaria* Australia



OENO *Oenochroma* Guenée, [1858] *vinaria* Guenée, [1858] 20 MNHM Australia

aus-oce

Comments

needs to be excluded from *Oenochroma*



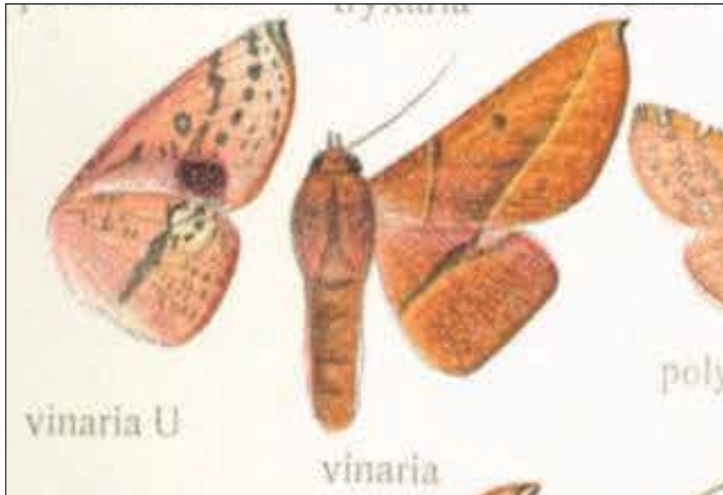
6 g

Type photo (if available)

Seitz illustration

Selected specimen for analysis

EF\_Aus-Geo\_022 *O. infantilis* Australia (EF)



OENO *Onycodes* Guenée, [1858] *traumataria* Guenée, [1858] 3 MNHM Australia

afr-aus

Comments



8 g

Type photo (if available)

Seitz illustration *traumataria*



Selected specimen for analysis

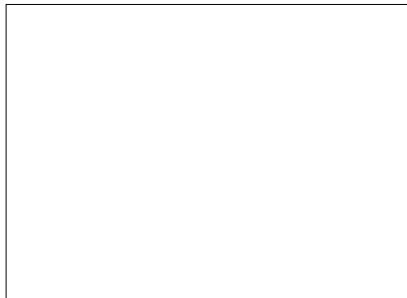
EF\_Aus-Geo\_16 *O. traumataria* Australia (EF)



OENO *Parepisparis* Bethune-Baker, 1906 *crenulata* Bethune-Baker, 1906 17 NHM PNG

aus

Comments



7g

Type photo (if available)  
type *crenulata* NHM



Selected specimen for analysis  
EF\_Aus-Geo\_17 *P. excusata* Australia (EF)



OENO *Sarcinodes* Guenée, [1858] *carnearia* Guenée, [1858] 24 NHM central India

aus-oce-ori-pal

Comments

*Sarcinodes* not monophyletic

Seitz illustration



6 g

Type photo (if available)

type *carnearia* NHM

Selected specimen for analysis

PS181 *S. aequilinearia* Thailand (PS)



7 New subfamily

*Epidesmiiinae*

OENO > EPID *Abraxaphantes* Warren, 1894 *perampla* Swinhoe, 1890 1 NHM Burma: Upper Tenas- ori

Comments

transferred to Epidesmiinae

Type photo (if available)

type *perampla* NHM



5 g

Selected specimen for analysis

PS192 *A. perampla* Thailand (PS)



OENO > EPID *Adeixis* Warren, 1897 *insignata* Warren, 1897 5 NHM S Aust-

Comments

transferred to Epidesmiinae

Type photo (if available)

type *insignata* NHM



4 g

Selected specimen for analysis

MM00246 *A. insignata*

no photograph of analysed specimen



OENO > EPID *Dichromodes* Guenée, [1858] *ainaria* Guenée, [1858] 74 MNHN Tasmania

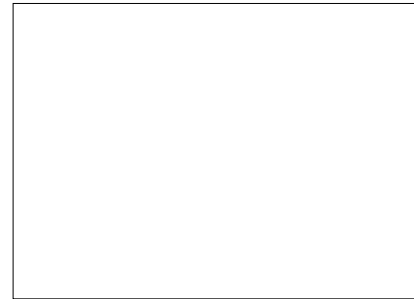
aus-nz

Comments

transferred to Epidesmiinae

Type photo (if available)

Seitz illustration *ainaria*



8 g

Selected specimen for analysis

EF-Aus-Geo-8 *D. indicataria* Australia (EF)



OENO > EPID *Ecphyas* Turner, 1929 *holopsara* Turner, 1929 1 unclear deposit W Australia

aus

Comments

transferred to Epidesmiinae

Type photo (if available)

no type *holopsara*10ANIC\_11588



10 g

Selected specimen for analysis

EF-Aus-Geo-11 *E. holopsara* Australia (EF)



OENO > EPID *Epidesmia* Duncan [& Westwood], 1841 *tricolor* Westwood, 1841 9 OUM Australia:

aus

Comments

transferred to Epidesmiinae  
type genus and species of new subfamily

Type photo (if available)

no type *tricolor* NHM



8 g

Selected specimen for analysis

EF-Aus-Geo-12 *E. chilonaria* Australia (EF)



OENO > EPID *Phrataria* Walker, [1863] 1862 *transcissata* Walker, [1863] 1862 4 NHM Australia

aus

Comments

transferred to Epidesmiinae

Type photo (if available)

holotype *transcissata* NHM



8 g

Selected specimen for analysis

EF-Aus-Geo-18 *P. replicataria* Australia (EF)



OENO > EPID *Phrixocomes* Turner, 1930 *ptilomacra* Lower, 1892 unclear deposit S Australia

aus

Comments

transferred to Epidesmiinae

Type photo (if available)

no type *ptilomacra* 10ANIC\_11643



7g

Selected specimen for analysis

EF-Aus-Geo-3 *Phrixocomes* sp Australia (EF)



OENO > EPID *Systatica* Turner, 1904 *xanthastis* Lower, 1894 1 unclear deposit Australia QLD

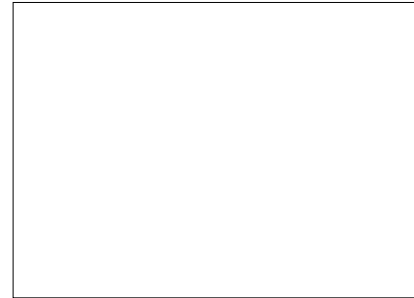
aus

Comments

transferred to Epidesmiinae

Type photo (if available)

no type *xanthastis* 10ANIC\_11591



7g

Selected specimen for analysis

EF-Aus-Geo-19 *S. xanthasis* Australia (EF)

