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An annotated and illustrated list of the primary type specimens of geometrid moths deposited in the Queensland Museum (Australia, Brisbane)

(Lepidoptera, Geometridae)

Olga Schmidt

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The present study is a first step towards making available taxonomic and photographic information on type specimens of geometrid moths (Lepidoptera, Geometridae) deposited in Australian insect collections. The current paper provides an annotated and illustrated list of 62 primary types of geometrid moths deposited in the Queensland Museum insect collection in Brisbane. Included are representatives of 23 Ennominae, 12 Oenochrominae, 11 Geometrinae, 10 Larentiinae, and six Sterrhinae. In order to preserve stability of nomenclature, lectotypes are designated for the following eighteen taxa described by A. J. Turner: *Aglossophanes adoxima*, *Anisodes lechriostropha*, *A. rhodobapta*, *Anomogenes morphnopa*, *Dichromodes lechria*, *D. loxotropha*, *D. mesotoma*, *D. tritospila*, *Eois trissomita*, *Epidesmia phoenicina*, *Gelasma selenosema*, *Idiochroa rufifrons*, *Pisoraca sticta*, *Poecilasthena ischnophrica*, *Scopula loxographa*, *Taxeotis pleurostigma*, *T. spodoides*, *Tephroclystia aphanes*. Photographs of both the upper and underside of each primary type are shown and data from all labels are given. Additionally, for the subfamily Larentiinae, information on paratypes is provided.

Olga Schmidt, Zoologische Staatssammlung München, Münchhausenstr. 21, 81247 München, Germany; e-mail: olga.schmidt@zsm.mwn.de

Introduction

Australia has a rich fauna of geometrid moths (Lepidoptera, Geometridae) with over 1300 described species (McQuillan & Edwards 1996). A few catalogues have been published in recent decades, including a chapter on geometrid moths as part of a checklist of Australian Lepidoptera by McQuillan and Edwards (1996) and a World Catalogue of Geometridae by Scoble (1999). These comprehensive checklists focus on nomenclatural and basic taxonomic data without providing detailed information about type specimens and illustrations.

In recent years a large number of photographs has been accumulated as part of projects like the "International Barcode of Life" initiative (iBOL, www.ibol.org), including many images of Australian geometrid moths (v3.boldsystems.org). For these projects it is of prime importance that specimens are identified at species level. However, since many geometrid taxa are in need of revision, many species cannot be reliably identified without comparison to the type specimens. The problem is fortified by the fact that most descriptions of early authors are based on series of two or more specimens that represent syntypes because no single specimen has been identified by the author that serves as a holotype. With very few exceptions, none of these syntypes have ever been illustrated, neither had their depositories been clarified. During the present study it became obvious that some type series were conglomerates of cryptic, yet undescribed species and that these type

specimens were scattered across a few Australian museums. Moreover, it appeared that currently there are manuscript names that are not available according to the International Code of Zoological Nomenclature (ICZN 1999).

During a short-term visit to the Queensland Museum in spring 2008, taxonomic research was undertaken in the geometrid moth collection. The present study is a first step towards making available the information on geometrid type specimens deposited in Australian insect collections. The aims of the current paper are to validate primary type data, to designate eighteen lectotypes in order to preserve stability of nomenclature, and to provide photographs of primary type specimens deposited in the Queensland Museum to aid in the identification of Australian geometrids.

Notes on the Queensland Museum geometrid moth collection

The Queensland Museum in Brisbane houses an important collection of geometrid moths of Australia. The majority of specimens have been collected by Wilfred Bourne Barnard, Frederick Parkhurst Dodd, Henry Hacker, and Charles James Wild, Wild being the last officially designated zoological collector at the museum. Alfred Jefferis Turner (1861–1947), a medical officer and honorary entomologist at the Queensland Museum curated the collection from the beginning of the 20th century until his death. Turner's own collection of over 50 000 moths was bequeathed to the Council for Scientific and Industrial Research (CSIR) (Canberra) which after A. J. Turner's death became the Commonwealth Scientific and Industrial Research Organisation (CSIRO). It formed the basis for the Lepidoptera part of the Australian National Insect Collection (ANIC) currently administered by CSIRO Ecosystem Sciences (C. J. Young, pers. comm.). In the mid 80's of the 20th century, type specimens of Australian species that were deposited in various insect collections were photographed for the Checklist of the Lepidoptera of Australia. The type slides showing the upper side of wings are currently held in the ANIC, but neither type catalogues nor the images have ever been published.

W. B. Barnard insect collection

Wilfred Bourne Barnard (1870–1940) was born into a family of naturalists. He was a collector colleague of A. J. Turner. Barnard himself was not really involved in taxonomic research on geometrid moths but Turner became interested in studying the specimens collected by Barnard. When Barnard died, his collection was bequeathed to the Council for Scientific and Industrial Research (Canberra). Turner had previously arranged with W. B. Barnard that both their collections should go to the CSIR but after Barnard's death it was agreed between the Barnard family and the Chief of the Division of Entomology that it should go to the Queensland Museum. After Barnard's death Turner produced three papers between 1941 and 1945 describing new moths from Barnard's collection (Glen 1993, C. J. Young, pers. comm.). More than 40 species discussed in the present paper have been described from the material collected by W. B. Barnard. In general, the Barnard collection is assumed to contain 750 of Turner's types.

Material, methods and abbreviations

ANIC	Australian National Insect Collection (CSIRO, Canberra, Australia)
NSW	New South Wales
Qld	Queensland
QMB	Queensland Museum (Brisbane)
SA	South Australia
WA	West Australia
w.e.	wing expanse (is measured approximately as twice the distance from midthorax to the forewing apex)

Information is given from all the type specimen labels; a semicolon is used between the data from different labels. Most photographs of adults were taken with a Canon PowerShot G5. The digital images were enhanced and the plates compiled with Adobe Photoshop™.

Results and discussion

Search for type material deposited in the Queensland Museum in Brisbane resulted in the discovery of 62 primary type specimens. Almost all species were described during the first half of the 20th century. Fifty-six primary types from the subfamilies Ennominae, Geometrinae, Larentiinae, Oenochrominae and Sterrhinae were described by A. J. Turner. Three geometrine and one larentiine species were described by O. B. Lower, and two geometrine species by G. M. Goldfinch. According to literature references, one oenochromine species, namely *Dichromodes lygrophanes* Turner (currently valid name *Taxeotis lygrophanes*) should have been deposited in QMB but could not be located in the geometrid collection. Forty-seven species names are currently valid. The generic placement of at least 14 species is in need of critical examination. The type localities cover most Australian states and mainland territories except South Australia, the Northern Territory, and the

Australian Capital Territory. Most species (71 %) were described from Queensland.

Notes on lectotype designation

Most of the geometrid species based on primary type material deposited in the QMB were described by A. J. Turner who conducted taxonomic studies at the museum over many years. Generally, species descriptions by Turner were not based on a single specimen. Original descriptions reveal series of specimens having equal status in nomenclature. Not all the types were located in the QMB. However, mostly a single specimen from the type series labelled "Type", in Turner's handwriting (E. D. Edwards, C. J. Young, pers. comm.), is presented. For 18 species discussed in this paper, the specimen labelled as "Type" has been designated as a lectotype to fix and stabilise the current concept of the species name. The choice follows the recommendation 74D (ICZN 1999): "when possible, a lectotype should be chosen from syntypes in the collection of a public institution … containing the collection upon which the author … worked".

Data on paratypes and paralectotypes, based mainly on original descriptions, are provided, since a number of secondary type specimens have not been located in QMB collection and therefore have not been studied.

Subfamily Ennominae

Amelora conia Turner
Figs 1a,b

Amelora conia Turner, 1947: 106. Holotype: male, Australia, WA, Denmark (three more specimens in type series; SA, Mt Lofty and WA, Denmark are type localities).

Holotype specimen labels: *Amelora* Type *conia* Turn. [in A. J. Turner's handwriting]; T. 8064; Denmark, W.A., 11.iv.1926, W. B. Barnard; specimen photographed for Checklist Aust. Lep., film 177/23.

Notes: A single male labelled "Type" was located. In Scoble (1999) four males are treated as belonging to a syntype series. According to the Article 73.1.1. (ICZN 1999) the holotype has been fixed by original designation.

Apheloceros dasciodes Turner
Figs 2a,b

Apheloceros dasciodes Turner, 1947: 74. Holotype: male, Australia, Qld, Injune (nine more specimens in type series).

Holotype specimen labels: *Apheloceros* Type *dasciodes* Turn. [in A. J. Turner's handwriting]; T. 8041; Injune, Q., 10.i.1937, W. B. Barnard; specimen photographed for Checklist Aust. Lep., film 176/35.

Notes: A single male labelled "Type" was located. In Scoble (1999) ten males are treated as belonging to a syntype series. According to the Article 73.1.1. (ICZN 1999) the holotype has been fixed by original designation. One of the paratypes deposited in ANIC has been sequenced and illustrated (http://www.boldsystems.org).

Boarmia aellographa Turner
Figs 3a,b

Boarmia aellographa Turner, 1947: 84. Holotype: male, Australia, Qld, Carnarvon Range (one more specimen in type series).

Holotype specimen labels: *Boarmia* Type *aellographa* Turn. [in A. J. Turner's handwriting]; T. 8056; Carnarvon Rg, Q., 18.xii.1938, W. B. Barnard; specimen photographed for Checklist Aust. Lep., film 177/12.

Current name: *Thallogama aellographa* (Turner).

Notes: A single male labelled "Type" was located. In Scoble (1999) two males are treated as belonging to a syntype series. According to the Article 73.1.1. (ICZN 1999) the holotype has been fixed by original designation. McQuillan and Edwards (1996) treated this species as *Thallogama aellographa* (Turner).

Boarmia catephes Turner
Figs 4a,b

Boarmia catephes Turner, 1947: 76. Holotype: male, Australia, Qld, Killarney (two more specimens in type series).

Holotype specimen labels: *Boarmia* Type *catephes* Turn. [in A. J. Turner's handwriting]; T. 8049; Killarney, Qld, 20.i.1936, W. B. Barnard; specimen photographed for Checklist Aust. Lep., film 177/9.

Current name: "*Hypomecis*" *catephes* (Turner) (Scoble 1999).

Notes: A single male labelled "Type" was located. In Scoble (1999) three males are treated as belonging to a syntype series. According to the Article 73.1.1. (ICZN 1999) the holotype has been fixed by original designation. McQuillan and Edwards (1996) treated this species under "No available genus". The generic placement of the species needs to be reconsidered.

Boarmia conspersa Turner
Figs 5a,b

Boarmia conspersa Turner, 1947: 86. Holotype: male, Australia, Qld, Injune (13 more specimens in type series; Injune and Milmerran are type localities).

Holotype specimen labels: *Boarmia* Type *conspersa* Turn. [in A. J. Turner's handwriting]; T. 8054; Injune, Q., 1.ii.1934, W. B. Barnard; specimen photographed for Checklist Aust. Lep., film 177/14.

Current name: "*Hypomecis" conspersa* (Turner) (Scoble 1999).

Notes: According to the Article 73.1.1. (ICZN 1999) the holotype has been fixed by original designation. McQuillan and Edwards (1996) treated this species under "No available genus". The generic placement of the species needs to be reconsidered.

Boarmia cymatias Turner
Figs 6a,b

Boarmia cymatias Turner, 1947: 85. Holotype: female, Australia, Qld, Springbrook.

Holotype specimen labels: *Boarmia* Type *cymatias* Turn. [in A. J. Turner's handwriting]; T. 8052; Springbrook, Q., 30.ix.1931, W. B. Barnard; specimen photographed for Checklist Aust. Lep., film 177/11.

Current name: *Psilosticha attacta* (Walker).

Notes: The original description of the species was based on a single specimen. The species has been synonymised by McQuillan and Edwards (1996).

Boarmia harmodia Turner
Figs 7a,b

Boarmia harmodia Turner, 1947: 83. Holotype: male, Australia, Qld, Toowoomba (seven more specimens in type series).

Holotype specimen labels: *Boarmia* Type *harmodia* Turn. [in A. J. Turner's handwriting]; T. 8055; Toowoomba, Q., 4.ix.1930, W. B. Barnard; specimen photographed for Checklist Aust. Lep., film 177/15.

Current name: "*Hypomecis" curtaria* (Walker) (Scoble 1999).

Notes: A single specimen labelled "Type" was located. In Scoble (1999) eight specimens (males and females) are treated as belonging to a syntype series. According to the Article 73.1.1. (ICZN 1999) the holotype has been fixed by original designation. McQuillan and Edwards (1996) treated this species under "No available genus" as a synonym of *curtaria*. The generic placement of the species needs to be reconsidered.

Boarmia loxosticha Turner
Figs 8a,b

Boarmia loxosticha Turner, 1947: 77. Holotype: male, Australia, Qld (north), Cape York (two more specimens in type series; Cape York and Prince of Wales Island are type localities).

Holotype specimen labels: *Boarmia* Type *loxosticha* Turn. [in A. J. Turner's handwriting]; T. 8051; Cape York, N.Q., 20.vi.1928, W. B. Barnard; specimen photographed for Checklist Aust. Lep., film 177/8.

Current name: *Pachyplocia atmocyma* (Turner).

Notes: A single male labelled "Type" was located. In Scoble (1999) three specimens (males and females) are treated as belonging to a syntype series. According to the Article 73.1.1. (ICZN 1999) the holotype has been fixed by original designation. The species has been synonymised by McQuillan and Edwards (1996).

Boarmia odontosticha Turner
Figs 9a,b

Boarmia odontosticha Turner, 1947: 77. Holotype: male, Australia, Qld, Emerald (two more specimens in type series).

Holotype specimen labels: *Boarmia* Type *odontosticha* Turn. [in A. J. Turner's handwriting]; T. 8050; Emerald, Q., 14.ix.1923; specimen photographed for Checklist Aust. Lep., film 177/5.

Current name: *Syneora odontosticha* (Turner).

Notes: A single male labelled "Type" was located. In Scoble (1999) three specimens (males and females) are treated as belonging to a syntype series. According to the Article 73.1.1. (ICZN 1999) the holotype has been fixed by original designation. McQuillan and Edwards (1996) treated this species as *Syneora odontosticha* (Turner).

Boarmia pansticta Turner
Figs 10a,b

Boarmia pansticta Turner, 1947: 80. Holotype: male, Australia, Victoria.

Holotype specimen labels: *Boarmia* Type *pansticta* Turn. [in A. J. Turner's handwriting]; T. 8047; Springvale, V., 19.i.1920, L. B. Thorn; specimen photographed for Checklist Aust. Lep., film 177/4.

Figs 1-9. Holotypes of geometrid moths at the QMB (taxon names presented in their original combination); **a.** upper side; **b.** underside. **1.** *Amelora conia*, w.e. 31 mm; **2.** *Apheloceros dasciodes*, w.e. 23 mm; **3.** *Boarmia aellographa*, w.e. 35 mm; **4.** *Boarmia catephes*, w.e. 22 mm; **5.** *Boarmia conspersa*, w.e. 32 mm; **6.** *Boarmia cymatias*, w.e. 36 mm; **7**. *Boarmia harmodia*, w.e. 30 mm; **8.** *Boarmia loxosticha*, w.e. 28 mm; **9.** *Boarmia odontosticha*, w.e. 28 mm.

Current name: *Thallogama pansticta* (Turner).

Notes: The original description was based on a single specimen. McQuillan and Edwards (1996) treated this species as *Thallogama pansticta* (Turner).

Boarmia platyleuca Turner
Figs 11a,b

Boarmia platyleuca Turner, 1947: 82. Holotype: male, Australia, Qld, Bunya Mts (eight more specimens in type series).

Holotype specimen labels: *Boarmia* Type *platyleuca* Turn. [in A. J. Turner's handwriting]; T. 8053; Bunya Mt, Q., 11.xi.1930, W. B. Barnard; specimen photographed for Checklist Aust. Lep., film 177/13.

Current name: "*Hypomecis*" *platyleuca* (Turner) (Scoble 1999).

Notes: A single male labelled "Type" was located. In Scoble (1999) nine specimens (males and females) are treated as belonging to a syntype series. According to the Article 73.1.1. (ICZN 1999) the holotype has been fixed by original designation. McQuillan and Edwards (1996) treated this species under "No available genus". The generic placement of the species needs to be reconsidered.

Boarmia prionodes Turner
Figs 12a,b

Boarmia prionodes Turner, 1947: 78. Holotype: female, Australia, Qld, Carnarvon Range (two more specimens in type series; Carnarvon Range and Tweed Heads are type localities).

Holotype specimen labels: *Boarmia* Type *prionodes* Turn. [in A. J. Turner's handwriting]; T. 8048; Carnarvon Rg., Q., 10.xii.1938, W. B. Barnard; specimen photographed for Checklist Aust. Lep., film 177/6.

Current name: *Pachyplocia prionodes* (Turner).

Notes: According to the Article 73.1.1. (ICZN 1999) the holotype has been fixed by original designation. McQuillan and Edwards (1996) treated this species as *Pachyplocia prionodes* (Turner).

Casbia ereutha Turner
Figs 13a,b

Casbia ereutha Turner, 1947: 95. Holotype: male, Australia, WA, Bunbury (five more specimens in type series).

Holotype specimen labels: *Casbia* Type *ereutha* Turn. [in A. J. Turner's handwriting]; T. 8059; Bunbury, W.A., 11.ii.1926, W. B. Barnard; specimen photographed for Checklist Aust. Lep., film 177/19.

Current name: *Rhinodia undiferaria* (Walker).

Notes: A single male labelled "Type" was located. In Scoble (1999) six specimens (males and females) are treated as belonging to a syntype series. According to the Article 73.1.1. (ICZN 1999) the holotype has been fixed by original designation. McQuillan and Edwards (1996) treated this name as a synonym of *Rhinodia undiferaria* (Walker).

Chlenias chytrinopa Turner
Figs 14a,b

Chlenias chytrinopa Turner, 1947: 103. Holotype: male, Australia, Victoria, Moe (two more specimens in type series).

Holotype specimen labels: *Chlenias* Type *chytrinopa* Turn. [in A. J. Turner's handwriting]; T. 8065; Moe, Vic., 25.v.1934, C. G. L. Gooding; specimen photographed for Checklist Aust. Lep., film 177/25.

Current name: *Chlenias belophora* (Turner).

Notes: A single male labelled "Type" was located. In Scoble (1999) three males are treated as belonging to a syntype series. According to the Article 73.1.1. (ICZN 1999) the holotype has been fixed by original designation. The species has been synonymised by McQuillan and Edwards (1996).

Cleora dolichoptila Turner
Figs 15a,b

Cleora dolichoptila Turner, 1947: 91. Holotype: male, Australia, Victoria, Moe (two more specimens in type series; Victoria, Moe and NSW, Murrurundi are type localities).

Holotype specimen labels: *Cleora* Type *dolichoptila* Turn. [in A. J. Turner's handwriting]; T. 8046; Moe. Vic., 7.v.1931, C. G. L. Gooding; specimen photographed for Checklist Aust. Lep., film 177/3.

Current name: *Smyriodes trigramma* (Lower).

Notes: A single male labelled "Type" was located. In Scoble (1999) three males are treated as belonging to a syntype series. According to the Article 73.1.1. (ICZN 1999) the holotype has been fixed by original designation. McQuillan and Edwards (1996) treated this name as a synonym of *Smyriodes trigramma* (Lower).

Ectropis fragilis Turner
Figs 16a,b

Ectropis fragilis Turner, 1947: 72. Holotype: male, Australia, Qld (north), Atherton Tablelands.

Holotype specimen labels: *Ectropis* Type *fragilis* Turn. [in A. J. Turner's handwriting]; T. 8042; Evelyn S., Q., Jan. 1911, F. P. D.; 3454 Relton Bequest.; specimen photographed for Checklist Aust. Lep., film 176/36.

Current name: "*Ectropis*" *fragilis* Turner (Scoble 1999).

Notes: The original description was based on a single specimen. McQuillan and Edwards (1996) treated this species under "No available genus". The generic placement of the species needs to be reconsidered.

Epidesma aetheria Turner
Figs 17a,b

Epidesma aetheria Turner, 1947: 92. Holotype: male, Australia, Qld (north), Gordonvale near Cairns (one more specimen in type series).

Holotype specimen labels: *Epidesma* Type *aetheria* Turn. [in A. J. Turner's handwriting]; T. 8058; Gordonvale, 16.xii.1928, W. A. May; specimen photographed for Checklist Aust. Lep., film 177/17.

Current name: *Milionia aetheria* (Turner).

Notes: One male is labelled "Type", there are several specimens in the collection. In Scoble (1999) two males are treated as belonging to a syntype series. According to the Article 73.1.1. (ICZN 1999) the holotype has been fixed by original designation. McQuillan and Edwards (1996) treated this species as *Milionia aetheria* (Turner).

Heterogena exitela Turner
Figs 18a,b

Heterogena exitela Turner 1947: 105. Holotype: male, Australia, Qld, Jandowae near Dalby.

Holotype specimen labels: *Heterogena* Type *exitela* Turn. [in A. J. Turner's handwriting]; T. 8060; Jandowae, Q., 19.iii.1927, R. Hamilton; specimen photographed for Checklist Aust. Lep., film 177/22.

Notes: The original description was based on a single specimen.

Orsonoba diplodonta Turner
Figs 19a,b

Orsonoba diplodonta Turner, 1947: 98. Holotype: female, Australia, Qld, Injune.

Holotype specimen labels: *Orsonoba* Type *diplodonta* Turn. [in A. J. Turner's handwriting]; T. 8062; Injune, Q., 14.xi.1938, W. B. Barnard; specimen photographed for Checklist Aust. Lep., film 177/21.

Current name: *Gonodontis luteola* (Turner).

Notes: The original description was based on a single specimen. The species has been synonymised by McQuillan and Edwards (1996).

Orsonoba stramenticea Turner
Figs 20a,b

Orsonoba stramenticea Turner, 1947: 98. Holotype: female, Australia, Qld, Emerald (one more specimen in type series).

Holotype specimen labels: *Orsonoba* Type *stramentia* Turn. [in A. J. Turner's handwriting, misspelling]; T. 8061; Emerald, 20.viii.1920; specimen photographed for Checklist Aust. Lep., film 177/20.

Current name: *Gonodontis stramenticea* (Turner).

Notes: The female is labelled "Type", the male is not marked as "Type". In Scoble (1999) two specimens (male and female) are treated as belonging to a syntype series. According to the Article 73.1.1. (ICZN 1999) the holotype has been fixed by original designation. McQuillan and Edwards (1996) treated this species as *Gonodontis stramenticea* (Turner).

Syneora sinuosa Turner
Figs 21a,b

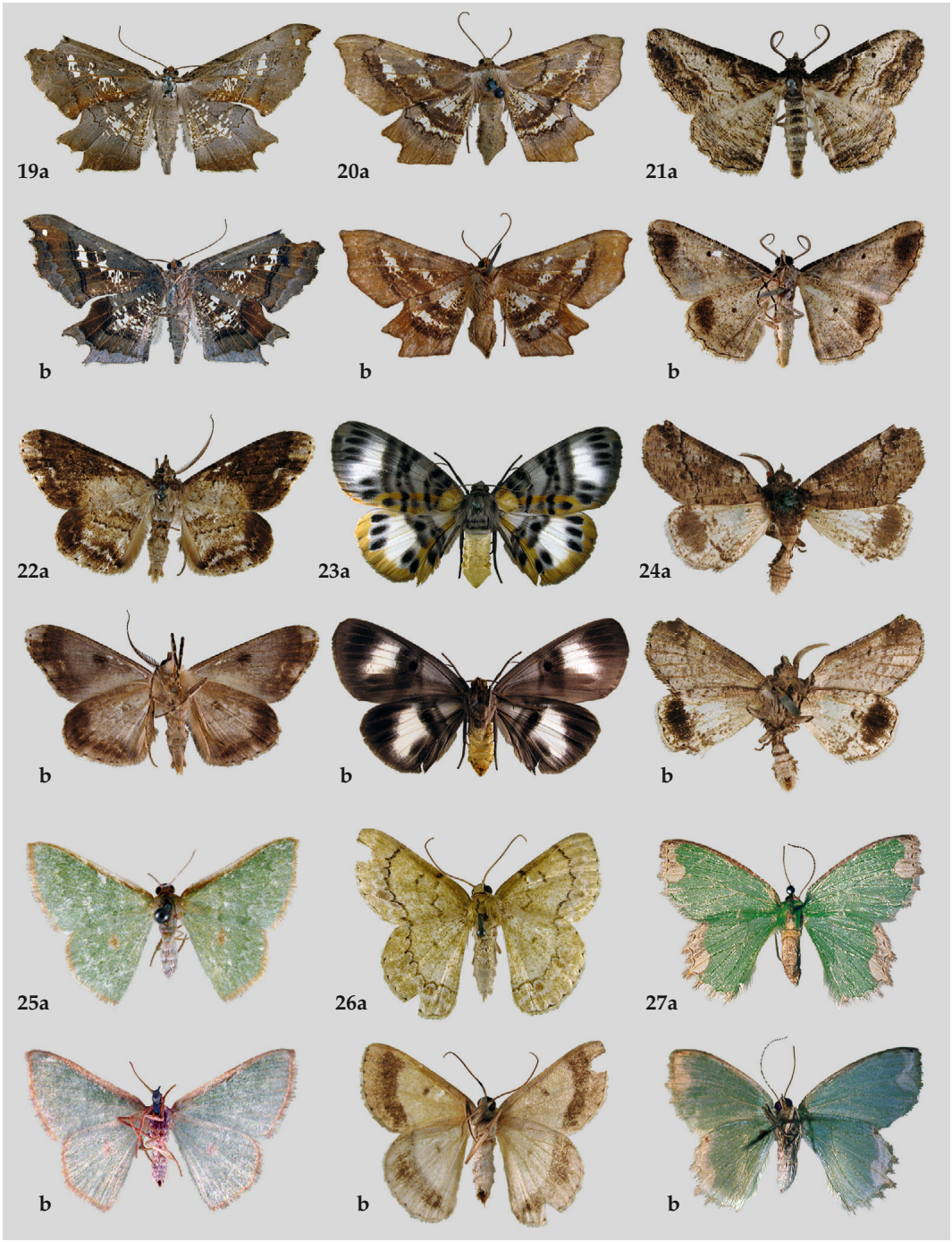
Syneora sinuosa Turner, 1947: 88. Holotype: male, Australia, Qld, Stanthorpe (one more specimen in type series).

Holotype specimen labels: *Syneora* Type *sinuosa* Turn. [in A. J. Turner's handwriting]; T. 8044; Stanthorpe, Q., 24.xii.1935, W. B. Barnard; specimen photographed for Checklist Aust. Lep., film 177/1.

Current name: *Syneora euboliaria* (Walker).

Notes: A single male labelled "Type" was located. In Scoble (1999) two males are treated as belonging to a syntype series. According to the Article 73.1.1. (ICZN 1999) the holotype has been fixed by original designation. The species has been synonymised by McQuillan and Edwards (1996).

Figs 10-18. Holotypes of geometrid moths at the QMB (taxon names presented in their original combination). **a.** upper side; **b.** underside. **10.** *Boarmia pansticta*, w.e. 30 mm; **11.** *Boarmia platyleuca*, w.e. 43 mm; **12.** *Boarmia prionodes*, 31 mm; **13.** *Casbia ereutha*, w.e. 30 mm; **14.** *Chlenias chytrinopa*, w.e. 37 mm; **15.** *Cleora dolichoptila*, w.e. 38 mm; **16.** *Ectropis fragilis*, w.e. 28 mm; **17.** *Epidesma aetheria*, w.e. 56 mm; **18.** *Heterogena exitela*, w.e. 40 mm.



Figs 19-27. Holo- and lectotypes of geometrid moths at the QMB (taxon names presented in their original combination). **a.** upper side; **b.** underside; **19.** *Orsonoba diplodonta*, w.e. 44 mm; **20.** *Orsonoba stramenticea*, w.e. 37 mm; **21.** *Syneora sinuosa*, w.e. 36 mm; **22.** *Syneora speciosa*, w.e. 48 mm; **23.** *Tigridoptera leucoplethes*, w.e. 72 mm; **24.** *Anomogenes morphnopa*, w.e. 26 mm; **25.** *Chlorocoma cyclosema*, w.e. 20 mm; **26.** *Epipristis australis*, w.e. 38 mm; **27.** *Euchloris goniota*, w.e. 29 mm.

Syneora speciosa Turner
Figs 22a,b

Syneora speciosa Turner, 1947: 88. Holotype: male, Australia, Qld (north), Cape York.

Holotype specimen labels: *Syneora* Type *speciosa* Turn. [in A. J. Turner's handwriting]; T. 8043; Cape York, N.Q., 1.xi.1927, W. B. Barnard; specimen photographed for Checklist Aust. Lep., film 177/2.

Current name: *Cleora repetita* (Butler).

Notes: The original description was based on a single specimen. The species has been synonymised by McQuillan and Edwards (1996).

Tigridoptera leucoplethes Turner
Figs 23a,b

Tigridoptera leucoplethes Turner, 1947: 92. Holotype: female, Australia, Qld (north), Cape York (three more specimens in type series).

Holotype specimen labels: *Tigridoptera* Type *leucoprepes* Turn. [in A. J. Turner's handwriting, misspelling]; T. 8057; Cape York, N.Q., 29.iv.1928, W. B. Barnard; specimen photographed for Checklist Aust. Lep., film 177/16.

Current name: *Bracca rosenbergi* (Pagenstecher).

Notes: One female is labelled "Type", there are several specimens from Qld (north) in the collection. In Scoble (1999) four females are treated as belonging to a syntype series. According to the Article 73.1.1. (ICZN 1999) the holotype has been fixed by original designation. The species has been synonymised by McQuillan and Edwards (1996).

Subfamily Geometrinae

Anomogenes morphnopa Turner
Figs 24a,b

Anomogenes morphnopa Turner, 1932: 176. Lectotype: male, [Australia], Qld (west). Paralectotype: female, same locality as lectotype.

Lectotype specimen labels: *Anomogenes* Type *morphnopa* Turn. [in A. J. Turner's handwriting]; *Anomogenes morphnopa* Turn. Type [unknown handwriting]; T. 8470 male; W. Queensland, S. E. Flanders; bred from wild limes; specimen photographed, E. S. Nielsen, ANIC. This specimen is here designated lectotype in order to preserve stability of nomenclature.

Notes: A single male labelled "Type" was located.

Chlorocoma cyclosema Turner
Figs 25a,b

Chlorocoma cyclosema Turner, 1941: 46. Holotype: female, [Australia], NSW, Brunswick Heads.

Holotype specimen labels: *Chlorocoma* Type *cyclosema* Turn. [in A. J. Turner's handwriting]; T. 8027; Brunswick H, N.S.W., 5.i.1927, W. B. Barnard; specimen photographed, E. S. Nielsen, ANIC.

Notes: The original description was based on a single specimen.

Epipristis australis Goldfinch
Figs 26a,b

Epipristis australis Goldfinch, 1929: 402, pl. 16, fig. 13. Holotype: female, Australia, Qld, Toowoomba (one more specimen in type series).

Holotype specimen labels: *Epipristis australis* Goldfinch, Holo-Type; T. 9264; Toowoomba, Q., 30.i.1928, W. B. Barnard; specimen photographed for Checklist Aust. Lep., film, 177/34.

Current name: *Epipristis oxycyma* Meyrick.

Notes: According to the Article 73.1.1. (ICZN 1999) the holotype has been fixed by original designation. A paratype is also deposited in the collection. McQuillan and Edwards (1996) treated the species as *Epipristis oxycyma* Meyrick.

Euchloris goniota Lower
Figs 27a,b

Euchloris goniota Lower, 1894: 86. Holotype: female, Australia, Qld, Mackay.

Holotype specimen labels: *Euchloris* Type *goniota* Low.; T. 8034; nr. Mackay; specimen photographed for Checklist Aust. Lep., film, 177/33.

Current name: *Eucyclodes goniota* (Lower) (Scoble 1999).

Notes: The original description was based on a single specimen. McQuillan and Edwards (1996) treated the species as *Anisozyga goniota* (Lower).

Euchloris megaloptera Lower
Figs 28a,b

Euchloris megaloptera Lower, 1894: 87. Holotype: male, Australia, Qld (north).

Holotype specimen labels: *Euchloris* Type *megaloptera* Low.; Qld (north).

Current name: *Chrysochloroma megaloptera* (Lower).

Notes: The original description was based on a single specimen. McQuillan and Edwards (1996) treated the species as *Chrysochloroma megaloptera* (Lower).

Euchloris orthodesma Lower
Figs 29a,b

Euchloris orthodesma Lower, 1894: 86. Holotype: male?, Australia, Qld (north), Cairns.

Holotype specimen labels: *Euchloris* Type *orthodesma* Low.; TYPE; T. 8033; Cairns, Sept. 1890, C. J. Wild; specimen photographed for Checklist Aust. Lep., film, 177/32.

Current name: *Maxates orthodesma orthodesma* (Lower) (Scoble 1999).

Notes: The original description was based on a single specimen. McQuillan and Edwards (1996) treated the species as *Gelasma orthodesma* (Lower).

Gelasma selenosema Turner
Figs 30a,b

Gelasma selenosema Turner, 1941: 46. Lectotype: female, [Australia], Qld (north), Cape York. Paralectotypes: four specimens, same locality as lectotype.

Lectotype specimen labels: *Gelasma* Type *selenosema* Turn. [in A. J. Turner's handwriting]; T. 8028; Cape York, N.Q., 21.x.1927, W. B. Barnard; specimen photographed, E. S. Nielsen, ANIC. This specimen is here designated lectotype in order to preserve stability of nomenclature.

Current name: *Maxates selenosema* (Turner) (Scoble 1999).

Notes: A single female labelled "Type" was located. McQuillan and Edwards (1996) treated the species as *Gelasma selenosema* Turner.

Hypobapta barnardi Goldfinch
Figs 31a,b

Hypobapta barnardi Goldfinch, 1929: 384, pl. 15, fig. 15. Holotype: male, Australia, Qld, Toowoomba.

Holotype specimen labels: *Hypobapta barnardi* Goldfinch, Holo-Type; T. 8040; Toowoomba, Q., 6.x.1928, W. B. Barnard; specimen photographed for Checklist Aust. Lep., film, 177/36.

Notes: The holotype was designated by the original description.

Idiochroa rufifrons Turner
Figs 32a,b

Idiochroa rufifrons Turner, 1941: 45. Lectotype: female, [Australia], Qld, Injune. Paralectotypes: four females, same locality as lectotype.

Lectotype specimen labels: *Idiochroa* Type *rufifrons* Turn. [in A. J. Turner's handwriting]; T. 8026; Injune, Q., 3.iv.1937, W. B. Barnard; specimen photographed for Checklist Aust. Lep., film, 177/31. This specimen is here designated lectotype in order to preserve stability of nomenclature.

Notes: A single female labelled "Type" was located.

Oxyphanes thiobapta Turner
Figs 33a,b

Oxyphanes thiobapta Turner, 1936: 27. Holotype: male, Australia, Qld, Talwood.

Holotype specimen labels: *Oxyphanes* Type *thiobapta* Turn. [in A. J. Turner's handwriting]; T. 8038; Talwood, Q., 30.xi.1936, W. B. Barnard; specimen photographed for Checklist Aust. Lep., film, 177/35.

Notes: The original description was based on a single specimen.

Terpna pammiges Turner
Figs 34a,b

Terpna pammiges Turner, 1941: 47. Holotype: male, [Australia], Qld, Injune.

Holotype specimen labels: *Terpna* Type *pammiges* Turn. [in A. J. Turner's handwriting]; T. 8037; Injune, Q., 3.iv.1937, W. B. Barnard; specimen photographed, E. S. Nielsen, ANIC.

Current name: *Aelochroma pammiges* **(Turner).**

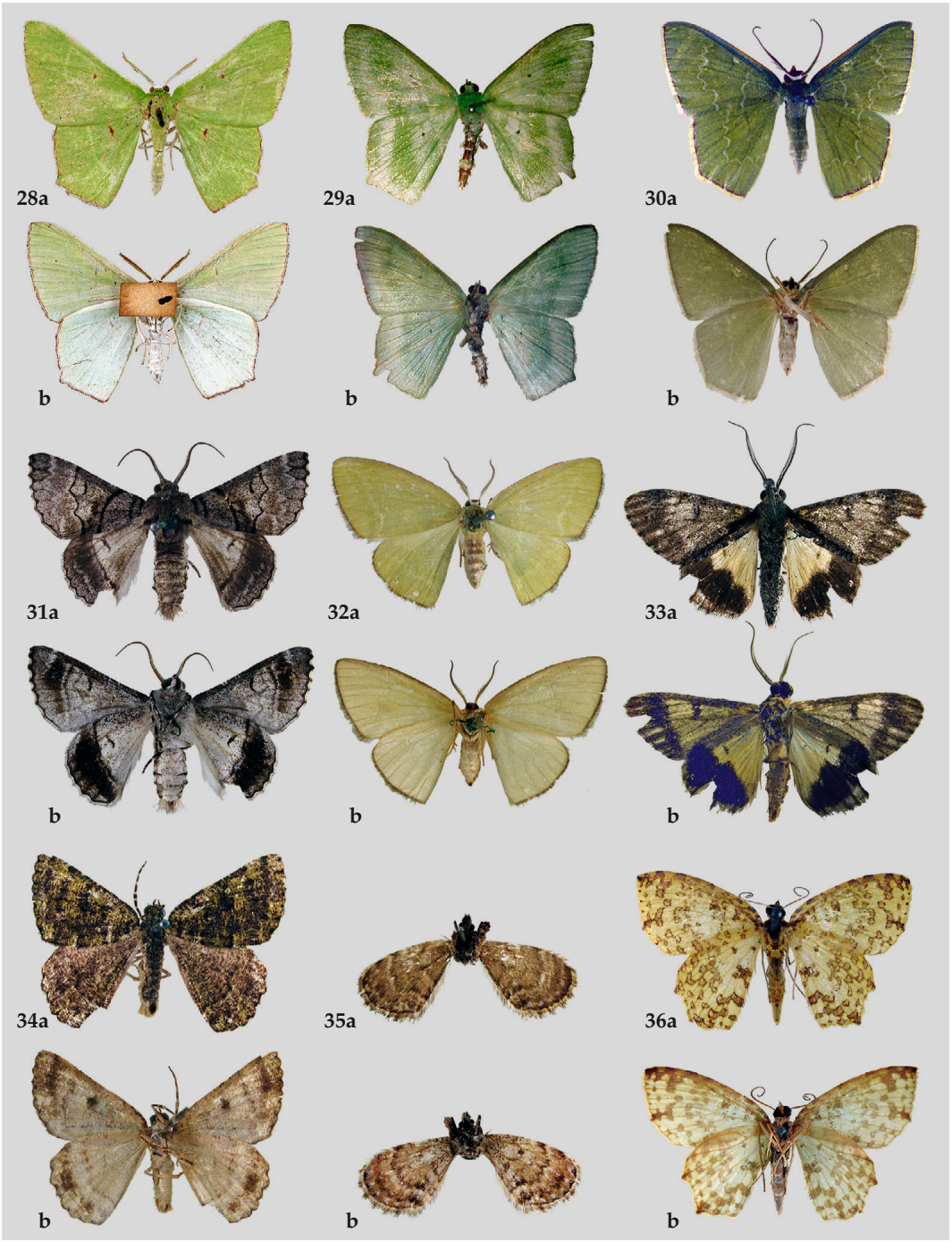
Notes: The original description was based on a single specimen. McQuillan and Edwards (1996) treated the species as *Aelochroma pammiges* (Turner).

Subfamily Larentiinae

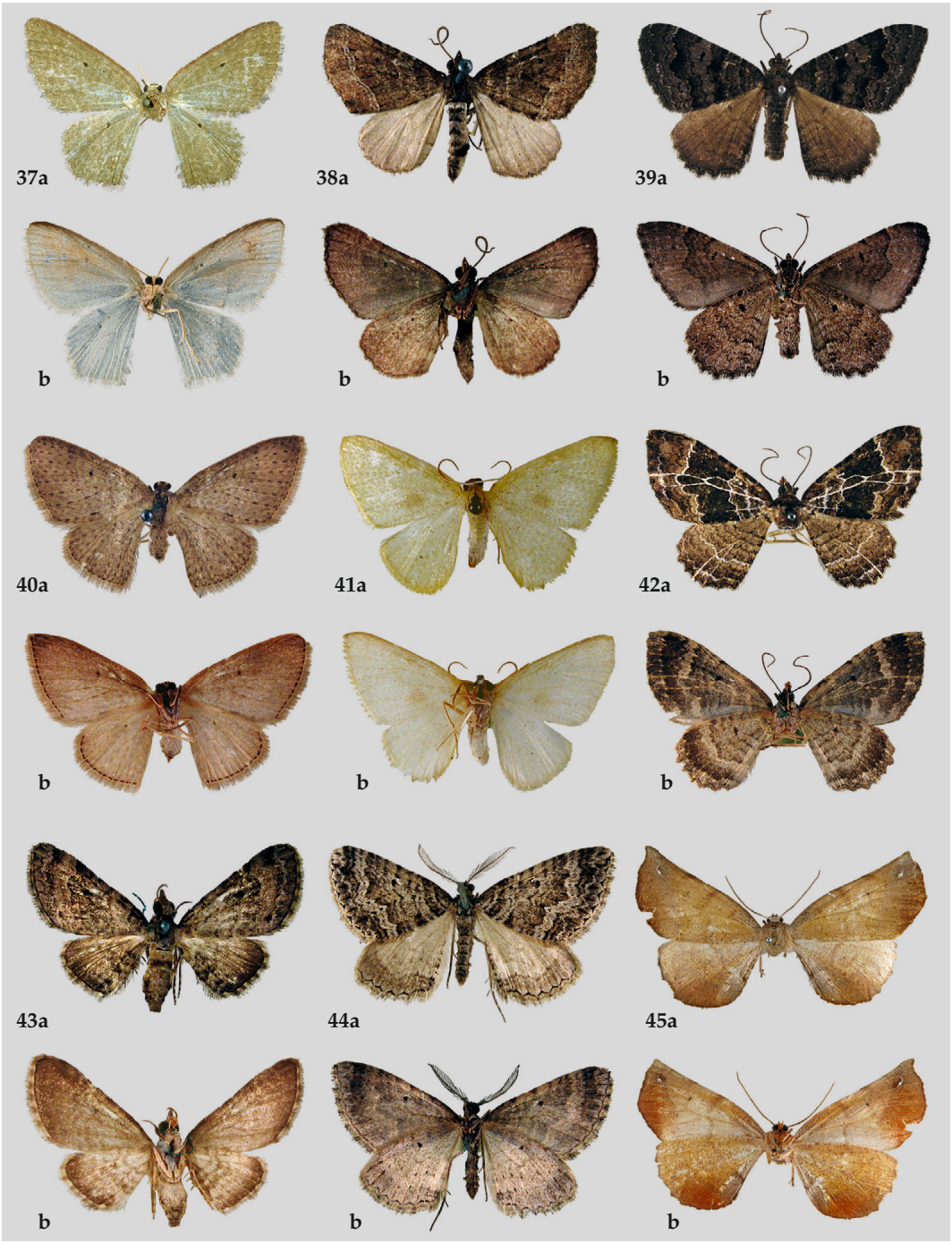
Dasysternica crypsiphoena Turner
Figs 35a,b

Dasysternica crypsiphoena Turner, 1922: 257. Holotype: female, Australia, Tasmania, Mt Wellington.

Holotype specimen labels: *Dasysterna* Type *crypsiphoena* Turn. [in A. J. Turner's handwriting, wrong spelling]; T. 8019; Mt Wellington, 6.i.1916/13, G. H. Hardy; specimen photographed for Checklist Aust. Lep., film 178/7.



Figs 28-36. Holo- and lectotypes of geometrid moths at the QMB (taxon names presented in their original combination). **a.** upper side; **b.** underside. **28.** *Euchloris megaloptera*, w.e. 38 mm; **29.** *Euchloris orthodesma*, w.e. 30 mm; **30.** *Gelasma selenosema*, w.e. 30 mm; **31.** *Hypobapta barnardi*, w.e. 32 mm; **32.** *Idiochroa rufifrons*, w.e. 26 mm; **33.** *Oxyphanes thiobapta*, w.e. 25 mm; **34.** *Terpna pammiges*, w.e. 30 mm; **35.** *Dasysterna crypsiphoena*, w.e. 26 mm (forewings missing); **36.** *Ecnomophlebia argyrospila*, w.e. 28 mm.



Figs 37-45. Holo- and lectotypes of geometrid moths at the QMB (taxon names presented in their original combination). **a.** upper side; **b.** underside. **37.** *Euchloris microgyna*, w.e. 22 mm (abdomen not shown); **38.** *Euphyia phaulophanes*, w.e. 22 mm; **39.** *Euphyia propinqua*, w.e. 38 mm; **40.** *Poecilasthena ischnophrica*, w.e. 23 mm; **41.** *Poecilasthena pisicolor*, w.e. 22 mm; **42.** *Scotocyma transfixa*, w.e. 35 mm; **43.** *Tephroclystia aphanes*, w.e. 18 mm; **44.** *Xanthorhoe emmelopis*, w.e. 28 mm; **45.** *Gerusia rubricosa*, w.e. 50 mm.

Current name: *Chrysolarentia bertha* (Swinhoe 1902).

Notes: The original description was based on a single specimen. Turner (1922) supposed the identity of *Dasysternica crypsiphoena* with *Epirrhoe bertha* Swinhoe and later on listed the species as *Dasysternica bertha* (Turner 1926). McQuillan and Edwards (1996) treated the name as a synonym of *Chrysolarentia bertha* (Swinhoe) in the tribe Xanthorhoini.

Ecnomophlebia argyrospila Turner
Figs 36a,b

Ecnomophlebia argyrospila Turner, 1941: 47. Holotype: male, [Australia], Qld (north), Cape York.

Holotype specimen labels: *Ecnomophlebia argyrospila* Turn. Type [in A. J. Turner's handwriting]; T. 8035; Cape York, N.Q., 4.xi.1927, W. B. Barnard; specimen photographed, E. S. Nielsen, ANIC.

Notes: The original description was based on a single specimen. According to McQuillan and Edwards (1996) *E. argyrospila* could possibly be a species of *Polynesia* Swinhoe. The venation, colour and wing pattern of *P. sunandava* (Walker 1861) is very similar to that of *E. argyrospila*. The former occurs disjunctly in Sri Lanka, India, Peninsular Malaysia, Indonesia, China and New Guinea (Holloway 1997). The study of the genitalia is necessary to check if *E. argyrospila* is a synonym of *P. sunandava*. The genus *Polynesia* belongs in the tribe Asthenini (Xue & Scoble 2002).

Euchloris (Iodis) microgyna Lower
Figs 37a,b

Euchloris (Iodis) microgyna Lower, 1894: 85. Holotype: female, Australia, Brisbane.

Holotype specimen labels: *Euchloris* Type *microgyna* Low.; Brisbane; specimen photographed for Checklist Aust. Lep., film 178/3.

Current name: *Poecilasthena glaucosa* (Lucas).

Notes: The original description was based on a single specimen. The species has been synonymised by Turner (1904). The genus belongs in the tribe Asthenini (Xue & Scoble 2002).

Euphyia phaulophanes Turner
Figs 38a,b

Euphyia phaulophanes Turner, 1936: 26. Holotype: male, Australia, WA, Denmark (one more specimen in type series).

Holotype specimen labels: *Euphyia* Type *phaulophanes* Turn. [in A. J. Turner's handwriting]; T. 8017; Denmark, W.A., 8.iii.1926, W. B. Barnard; specimen photographed for Checklist Aust. Lep., film 178/5, [abdomen glued to the specimen but seems to be authentic].

Current name: *Chrysolarentia phaulophanes* (Turner).

Notes: A single male labelled "Type" was located. In Scoble (1999) both specimens (male and female) are treated as belonging to a syntype series. According to the Article 73.1.1. (ICZN 1999) the holotype has been fixed by original designation. McQuillan and Edwards (1996) treated the species as *Chrysolarentia phaulophanes* (Turner) which appeared to be a printing mistake (McQuillan, pers. comm.). The generic and tribal placement of the species needs to be reconsidered.

Euphyia propinqua Turner
Figs 39a,b

Euphyia propinqua Turner, 1936: 26. Holotype: male, Australia, WA, Denmark (two more specimens in type series).

Holotype specimen labels: *Euphyia* Type *propinqua* Turn. [in A. J. Turner's handwriting]; T. 8016; Denmark, W.A., 11.iii.1926, W. B. Barnard; specimen photographed for Checklist Aust. Lep., film 178/4.

Current name: *Xanthorhoe propinqua* (Turner).

Notes: One male is labelled "Type", there are other specimens collected by W. B. Barnard. In Scoble (1999) two males and one female are treated as belonging to a syntype series. According to the Article 73.1.1. (ICZN 1999) the holotype has been fixed by original designation. McQuillan and Edwards (1996) treated the species as *Xanthorhoe propinqua* (Turner). The generic placement of the species needs to be reconsidered.

Poecilasthena ischnophrica Turner
Figs 40a,b

Poecilasthena ischnophrica Turner, 1941: 42. Lectotype: female, [Australia], WA, Denmark. Paralectotypes: nine females, Busselton and Denmark are type localities.

Lectotype specimen labels: *Poecilasthena* Type *ischnophrica* Turn. [in A. J. Turner's handwriting]; T. 8012; Denmark, W.A., 13.iv.1926, W. B. Barnard; specimen photographed, E. S. Nielsen, ANIC. This specimen is here designated lectotype in order to preserve stability of nomenclature.

Notes: One female is labelled "Type", there are five more specimens collected by W. B. Barnard. The genus belongs in the tribe Asthenini (Xue & Scoble 2002).

Poecilasthena pisicolor Turner
Figs 41a,b

Poecilasthena pisicolor Turner, 1942: 62. Holotype: male, [Australia], WA, Denmark (six more specimens in type series; WA, Denmark, Albany and Busselton are type localities).

Holotype specimen labels: *Poecilasthena* Type *pisicolor* Turn. [in A. J. Turner's handwriting]; T. 8011; Denmark, W.A., 25.iii.1926, W. B. Barnard; specimen photographed for Checklist Aust. Lep., film 178/2.

Notes: One male from Denmark is labelled "Type", there are other specimens from Denmark, Albany and Busselton. In Scoble (1999) seven specimens (males and females) are treated as belonging to a syntype series. According to the Article 73.1.1. (ICZN 1999) the holotype has been fixed by original designation. The genus belongs in the tribe Asthenini (Xue & Scoble 2002).

Scotocyma transfixa Turner
Figs 42a,b

Scotocyma transfixa Turner, 1931: 337. Holotype: female, Australia, Qld, Jandowae near Dalby; National Park, 3000 ft (one more specimen in type series).

Holotype specimen labels: *Scotocyma* Type *transfixa* Turn. [in A. J. Turner's handwriting]; T. 8015; National Park, Q., 3000 ft, 26.ii.1929, W. B. Barnard; specimen photographed for Checklist Aust. Lep., film 178/6, [abdomen on slide].

Current name: *Scotocyma albinotata* (Walker) (Schmidt 2005).

Notes: According to the Article 73.1.1. (ICZN 1999) the holotype has been fixed by original designation. A single female labelled "Type" was located. The species has been synonymised, the genus belongs in the tribe Xanthorhoini (Schmidt 2005, 2006, 2007).

Tephroclystia aphanes Turner
Figs 43a,b

Tephroclystia aphanes Turner, 1941: 42. Lectotype: female, [Australia], Qld, Toowoomba. Paralectotypes: two females, same locality as lectotype.

Lectotype specimen labels: *Tephroclystia aphanes* Turn. Type [in A. J. Turner's handwriting]; T. 8014; Toowoomba, Q., 14.iii.1924; specimen photographed, 34/23, E. S. Nielsen, ANIC. This specimen is here designated lectotype in order to preserve stability of nomenclature.

Current name: *Eupithecia aphanes* (Turner) (Scoble 1999).

Notes: One female is labelled "Type", there are two more specimens from Toowoomba. McQuillan and Edwards (1996) treated the species as *Tephroclystia aphanes* Turner. The generic placement of the species needs to be reconsidered.

Xanthorhoe emmelopis Turner
Figs 44a,b

Xanthorhoe emmelopis Turner, 1941: 43. Holotype: male, [Australia], WA, Denmark.

Holotype specimen labels: *Xanthorhoe* Type *emmelopis* Turn. [in A. J. Turner's handwriting]; T. 8018; Denmark, W.A., 15.iv.1926, W. B. Barnard; specimen photographed, 24/24, E. S. Nielsen, ANIC.

Notes: The original description was based on a single specimen. McQuillan and Edwards (1996) treated the species as *Xanthorhoe emmelopis* Turner. The generic placement of the species needs to be reconsidered.

Additionally the paratypes of *Anachloris tofocolorata*, *Sauris commoni*, *S. rectilineata* and *S. melanosterna* are deposited in the collection.

Subfamily Oenochrominae sensu stricto

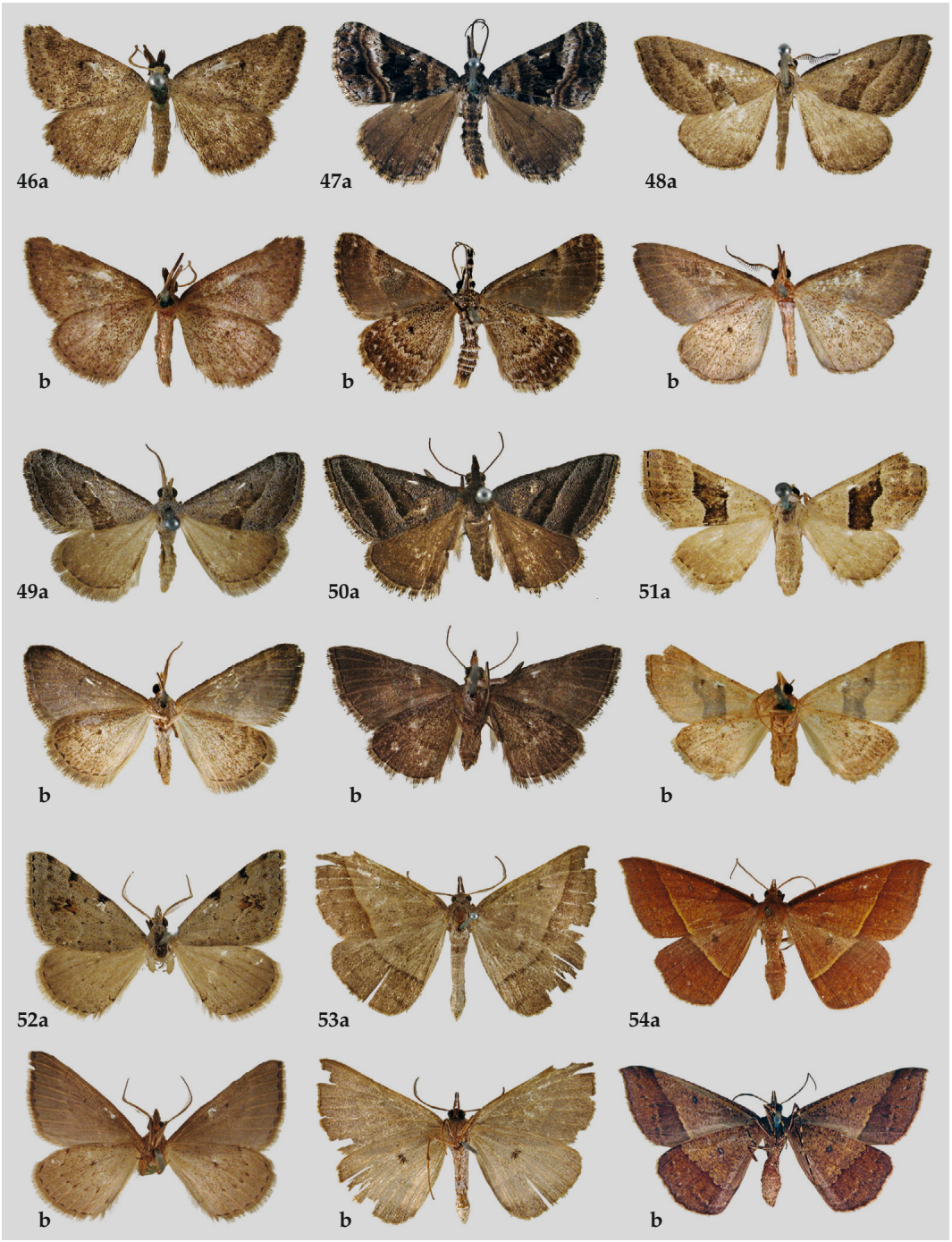
Gerusia rubricosa Turner
Figs 45a,b

Gerusia rubricosa Turner, 1930a: 203. Holotype: female, Australia, [Qld], Toowoomba.

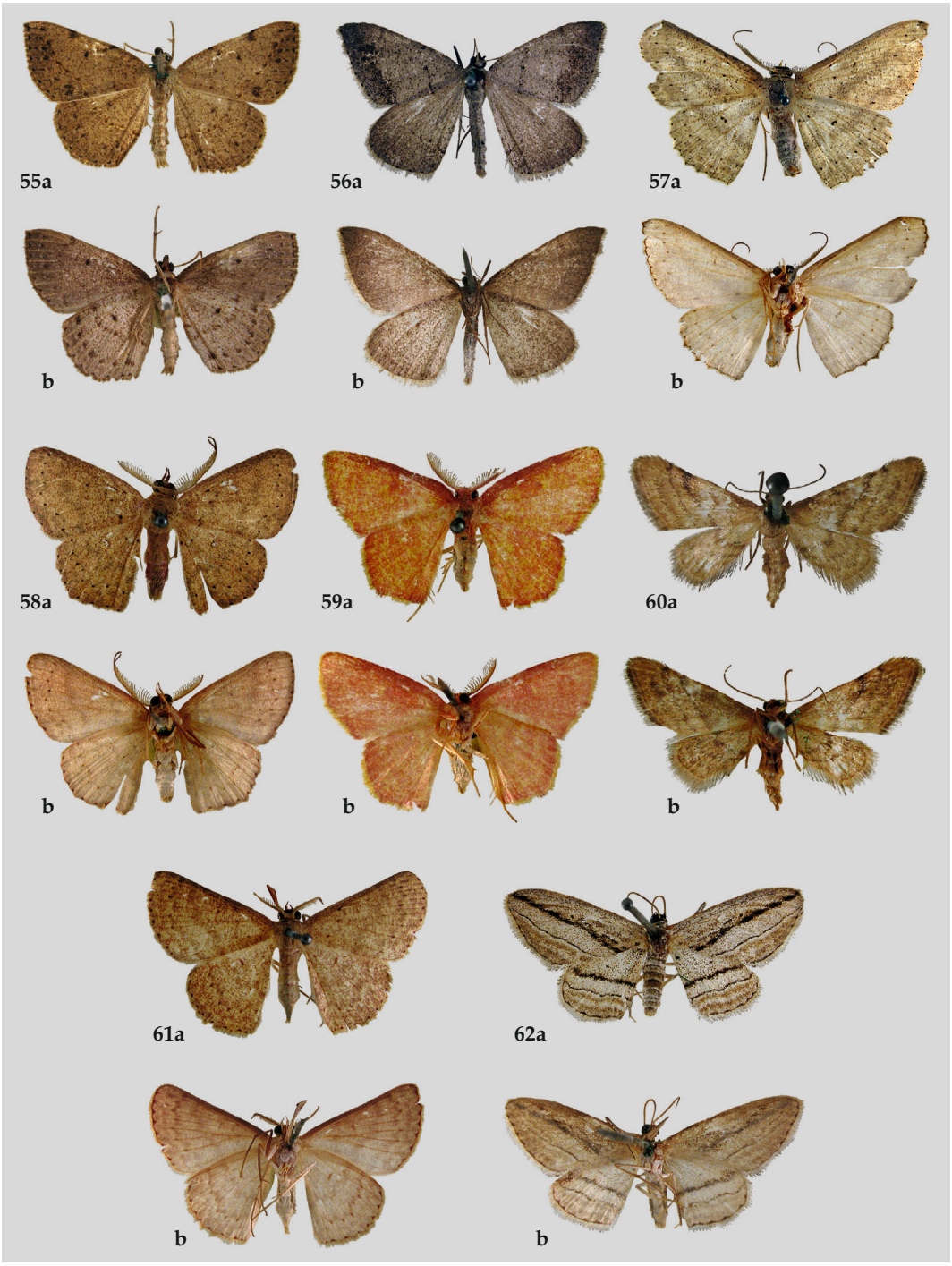
Holotype specimen labels: *Gerusia* Type *rubricosa* Turn. [in A. J. Turner's handwriting]; Lectotype female *Parepisparis rubricosa* (Turner) = *P. multicolora* (Lucas), det. M. J. Scoble & E. D. Edwards, 1989, Type; T. 8078; Lecto-type; Slide N female 168, M.J.S.; Toowoomba, 6.x.1921; specimen photographed for Checklist Aust. Lep., film 177/30.

Current name: *Parepisparis multicolora* (Lucas).

Notes: According to the Article 73.1.1. (ICZN 1999) the holotype has been fixed by original designation. Lectotype was designated by Scoble and Edwards (1990).



Figs 46-54. Holo- and lectotypes of geometrid moths at the QMB (taxon names presented in their original combination). **a.** upper side; **b.** underside. **46.** *Aglossophanes adoxima*, w.e. 20 mm; **47.** *Dichromodes emplecta*, w.e. 25 mm; **48.** *Dichromodes lechria*, w.e. 22 mm; **49.** *Dichromodes leptozona*, w.e. 21 mm; **50.** *Dichromodes loxotropha*, w.e. 20 mm; **51.** *Dichromodes mesotoma*, w.e. 17 mm; **52.** *Dichromodes tritospila*, w.e. 24 mm; **53.** *Ecphyas holopsara*, w.e. 43 mm; **54.** *Epidesmia phoenicina*, w.e. 41 mm.



Figs 55-62. Holo- and lectotypes of geometrid moths at the QMB (taxon names presented in their original combination). **a.** upper side; **b.** underside. **55.** *Taxeotis pleurostigma*, w.e. 23 mm; **56.** *Taxeotis spodoides*, w.e. 25 mm; **57.** *Anisodes lechriostropha*, w.e. 37 mm; **58.** *Anisodes rhodobapta*, w.e. 27 mm; **59.** *Chrysocraspeda eumeles*, w.e. 20 mm; **60.** *Eois trissomita*, w.e. 14 mm; **61.** *Pisoraca sticta*, w.e. 27 mm; **62.** *Scopula loxographa*, w.e. 26 mm.

Subfamily Oenochrominae sensu lato

Aglossophanes adoxima Turner
Figs 46a,b

Aglossophanes adoxima Turner, 1942: 71. Lectotype: male, [Australia], Qld, Injune. Paralectotypes: three specimens, Injune and Milmerran are type localities.

Lectotype specimen labels: *Aglossophanes adoxima* Turn. Type [in A. J. Turner's handwriting]; T. 8072; Injune, Q., 21.iv.1938, W. B. Barnard; specimen photographed for Checklist Aust. Lep., film 177/27. This specimen is here designated lectotype in order to preserve stability of nomenclature.

Notes: One male is labelled "Type".

Dichromodes emplecta Turner
Figs 47a,b

Dichromodes emplecta Turner, 1930: 15. Holotype: male, [Australia], WA, Albany (11 more specimens in type series; WA, Albany and Denmark are type localities).

Holotype specimen labels: *Dichromodes emplecta* Turn. Type [in A. J. Turner's handwriting]; T. 8075; Albany, W.A., 3.iv.1926, W. B. Barnard; specimen photographed for Checklist Aust. Lep., film 177/28.

Notes: According to the Article 73.1.1. (ICZN 1999) the holotype has been fixed by original designation.

Dichromodes lechria Turner
Figs 48a,b

Dichromodes lechria Turner, 1943: 107. Lectotype: male, [Australia], Qld, Emerald. Paralectotype: male, same locality as lectotype.

Lectotype specimen labels: *Dichromodes lechria* Turn. Type [in A. J. Turner's handwriting]; T. 8073; Emerald, Q., 12.ix.1923; specimen photographed, E. S. Nielsen, ANIC. This specimen is here designated lectotype in order to preserve stability of nomenclature.

Notes: A single male labelled "Type" was located.

Dichromodes leptozona Turner
Figs 49a,b

Dichromodes leptozona Turner, 1930: 19. Holotype: male, [Australia], WA, Kalamunda near Perth.

Holotype specimen labels: *Dichromodes leptozona* Turn. Type [in A. J. Turner's handwriting]; T. 8076; Kalamunda, W.A., 28.xii.1925, W. B. Barnard.

Notes: According to the Article 73.1.1. (ICZN 1999) the holotype has been fixed by original designation.

Dichromodes loxotropha Turner
Figs 50a,b

Dichromodes loxotropha Turner, 1943: 107. Lectotype: female, [Australia], Qld, Carnarvon Range. Paralectotype: male, same locality as lectotype.

Lectotype specimen labels: *Dichromodes loxotropha* Turn. Type [in A. J. Turner's handwriting]; T. 8077; Carnarvon Rg., Q., 19.xii.1938, W. B. Barnard; specimen photographed, E. S. Nielsen, ANIC. This specimen is here designated lectotype in order to preserve stability of nomenclature.

Notes: A single female labelled "Type" was located.

Dichromodes mesotoma Turner
Figs 51a,b

Dichromodes mesotoma Turner, 1943: 107. Lectotype: female, [Australia], Qld (north), Cape York. Paralectotype: female, same locality as lectotype.

Lectotype specimen labels: *Dichromodes* Type *mesotoma* Turn. [in A. J. Turner's handwriting]; T. 8074; Cape York, N.Q., 10.vi.1928, W. B. Barnard; specimen photographed, E. S. Nielsen, ANIC. This specimen is here designated lectotype in order to preserve stability of nomenclature.

Notes: A single female labelled "Type" was located.

Dichromodes tritospila Turner
Figs 52a,b

Dichromodes tritospila Turner, 1943: 108. Lectotype: male, [Australia], Victoria, Moe. Paralectotypes: five specimens, same locality as lectotype.

Lectotype specimen labels: *D. tritospila* Turn. [in A. J. Turner's handwriting]; Syntype T. 9852; Moe, Vic., 21.ii.1934, C. G. L. Gooding, [abdomen broken, attached to specimen], specimen photographed, 24/27, E. S. Nielsen, ANIC. This specimen is here designated lectotype in order to preserve stability of nomenclature.

Current name: *Dichromodes estigmaria* (Walker).

Notes: There are several specimens from Victoria, three of them being marked as syntypes: *D. tritospila* Turn.; Syntype T. 10701; Moe, Vict., 15.xii.1939, C. G. L. Gooding; *D. tritospila* Turn.; Syntype T. 10702; Moe, Vic., 21.ii.1934, C. G. L. Gooding, and the newly designated lectotype (see above). The species has been synonymised by McQuillan and Edwards (1996).

Ecphyas holopsara Turner
Figs 53a,b

Ecphyas holopsara Turner, 1929: 499. Holotype: male, [Australia], WA, Mt Dale in January (two more specimens in type series).

Holotype specimen labels: *Ecphyas* Type *holopsara* Turn. [in A. J. Turner's handwriting]; T. 8070; Mt. Dale, W.A., 23.i.1926, W. B. Barnard; specimen photographed for Checklist Aust. Lep., film 177/26.

Notes: According to the Article 73.1.1. (ICZN 1999) the holotype has been fixed by original designation. A single male labelled "Type" was located.

Epidesmia phoenicina Turner
Figs 54a,b

Epidesmia phoenicina Turner, 1929: 502. Lectotype: female, [Australia], Qld (north), Kuranda. Paralectotype: male, [Australia], Qld (north), Meringa.

Lectotype specimen labels: *Epidesmia phoenicina* Turn.; T. 8071; Female TYPE; Kuranda, F. P. Dodd. This specimen is here designated lectotype in order to preserve stability of nomenclature.

Notes: A single female labelled "Type" was located. A holotype has not been designated by A. J. Turner. Citation from the original description: North Queensland: Meringa (male type in Coll. Goldfinch) in November, and Kuranda (F. P. Dodd, female type in Coll. Barnard), both near Cairns (Turner 1929). The male type deposited in the Australian Museum (Sydney) is the one on which the identified material in the ANIC and the identified material on BOLD (v3. boldsystems.org) is based (C. J. Young, pers. comm.). However the fact that the male type has not been designated as lectotype by previous workers shows that not much taxonomic work has been done on this group before. Therefore the present selection of the female lectotype in QMB seems justifiable. In Scoble (1999) the male from Meringa (Queensland (north)) was erroneously treated as holotype.

Taxeotis pleurostigma Turner
Figs 55a,b

Taxeotis pleurostigma Turner, 1943: 106. Lectotype: male, [Australia], NSW, Tooloom. Paralectotypes: three males, same locality as lectotype.

Lectotype specimen labels: *Taxeotis* Type *pleurostigma* Turn. [in A. J. Turner's handwriting]; T. 8069; Tooloom Scrub, N.S.W., 16.iii.1936, W. B. Barnard; specimen photographed, E. S. Nielsen, ANIC. This specimen is here designated lectotype in order to preserve stability of nomenclature.

Notes: The lectotype is labelled "Type", paralectotypes are deposited in the collection.

Taxeotis spodoides Turner
Figs 56a,b

Taxeotis spodoides Turner, 1943: 106. Lectotype: male, [Australia], Qld, Injune. Paralectotypes: six specimens, same locality as lectotype.

Lectotype specimen labels: *Taxeotis* Type *spodoides* Turn. [in A. J. Turner's handwriting]; T. 8068; Injune, Q., 9.ix.1937, W. B. Barnard; specimen photographed, E. S. Nielsen, ANIC. This specimen is here designated lectotype in order to preserve stability of nomenclature.

Notes: The lectotype is labelled "Type", paralectotypes are deposited in the collection.

Subfamily Sterrhinae

Anisodes lechriostropha Turner
Figs 57a,b

Anisodes lechriostropha Turner, 1941: 44. Lectotype: male, [Australia], Qld (north), Cape York. Paralectotypes: two specimens, same locality as lectotype.

Lectotype specimen labels: *Anisodes* Type *lechriostropha* Turn. [in A. J. Turner's handwriting]; T. 8024; Cape York, N.Q., 19.vi.1928, W. B. Barnard; specimen photographed, E. S. Nielsen, ANIC. This specimen is here designated lectotype in order to preserve stability of nomenclature.

Current name: "*Cyclophora*" *lechriostropha* (Turner) (Scoble 1999).

Notes: The lectotype is labelled "Type", one paralectotype is deposited in the collection. McQuillan and Edwards (1996) treated the species as *Anisodes lechriostropha* Turner. The generic placement of the species needs to be reconsidered.

Anisodes rhodobapta Turner
Figs 58a,b

Anisodes rhodobapta Turner, 1941: 44. Lectotype: male, [Australia], Qld (north), Cape York. Paralectotypes: two specimens, same locality as lectotype.

Lectotype specimen labels: *Anisodes* Type *rhodobapta* Turn. [in A. J. Turner's handwriting]; T. 8023; Cape York, N.Q., 19.x.1927, W. B. Barnard; specimen photographed, E. S. Nielsen, ANIC. This specimen is here designated lectotype in order to preserve stability of nomenclature.

Current name: "*Cyclophora*" *rhodobapta* (Turner) (Scoble 1999).

Notes: A single male labelled "Type" was located. McQuillan and Edwards (1996) treated the species as *Anisodes rhodobapta* Turner. The generic placement of the species needs to be reconsidered.

Chrysocraspeda eumeles Turner
Figs 59a,b

Chrysocraspeda eumeles Turner, 1936: 26. Holotype: male, [Australia], Qld (north), Cape York (one more specimen in type series).

Holotype specimen labels: *Chrysocraspeda eumeles* Turn. Type [in A. J. Turner's handwriting]; T. 8022; Cape York, N.Q., 30.iv.1928, W. B. Barnard; specimen photographed for Checklist Aust. Lep., film 178/1.

Notes: One male is labelled "Type", there are more specimens collected by W. B. Barnard. In Scoble (1999) two males are treated as belonging to a syntype series. According to the Article 73.1.1. (ICZN 1999) the holotype has been fixed by original designation.

Eois trissomita Turner
Figs 60a,b

Eois trissomita Turner, 1941: 43. Lectotype: female, [Australia], Qld, Injune. Paralectotypes: two females, same locality as lectotype.

Lectotype specimen labels: *Eois* Type *trissomita* Turn. [in A. J. Turner's handwriting]; T. 8020; Injune, Q., 8.x.1936, W. B. Barnard; specimen photographed, 24/25, E. S. Nielsen, ANIC. This specimen is here designated lectotype in order to preserve stability of nomenclature.

Current name: *Idaea trissomita* (Turner).

Notes: The lectotype is labelled "Type", one paralectotype is deposited in the collection. McQuillan and Edwards (1996) treated the species as *Idaea trissomita* (Turner).

Pisoraca sticta Turner
Figs 61a,b

Pisoraca sticta Turner, 1941: 45. Lectotype: male, [Australia], Qld (north), Cape York. Paralectotypes: two specimens, same locality as lectotype.

Lectotype specimen labels: *Pisoraca sticta* Turn. Type [in A. J. Turner's handwriting]; T. 8025; Cape York, N.Q., 5.v.1928, W. B. Barnard; specimen photographed, E. S. Nielsen, ANIC. This specimen is here designated lectotype in order to preserve stability of nomenclature.

Current name: "*Cyclophora*" *sticta* (Turner) (Scoble 1999).

Notes: The lectotype is labelled "Type", one paralectotype is deposited in the collection. McQuillan and Edwards (1996) treated the species as *Anisodes sticta* Turner. The generic placement of the species needs to be reconsidered.

Scopula loxographa Turner
Figs 62a,b

Scopula loxographa Turner, 1941: 44. Lectotype: male, [Australia], Qld, Injune. Paralectotypes: several specimens of both sexes (not studied), Injune and Cunnamulla are type localities.

Lectotype specimen labels: *Scopula* Type *loxographa* Turn. [in A. J. Turner's handwriting]; T. 8021; Injune, Q., 22.viii.1934, W. B. Barnard; specimen photographed, 24/26, E. S. Nielsen, ANIC. This specimen is here designated lectotype in order to preserve stability of nomenclature.

Notes: The lectotype is labelled "Type", a paralectotype is deposited in the collection. The number of types is not mentioned in the original description. The generic placement of the species needs to be reconsidered.

Comments

The following species is recorded as an ennomine geometrid moth although it belongs to the family Noctuidae (McQuillan & Edwards 1996):

Lacistophanes hackeri Turner

Lacistophanes hackeri Turner, 1947: 111. Holotype: female, Australia, Qld, Bunya Mts.

Holotype specimen labels: *Lacistophanes hackeri* Turn. Type [in A. J. Turner's handwriting]; T. 8067; Bunya Mts, 10.xii.1925, H. Hacker; specimen photographed for Checklist Aust. Lep., film 177/25.

Notes: The original description was based on a single specimen. The genus *Lacistophanes* was described as a geometrid boarmiine genus with the following comment: An anomalous genus, not near any other (Turner 1947). *Lacistophanes* is a monotypic genus.

According to the reference (Turner 1943) the types of the following oenochromine species should be deposited in QMB but have not been located in the geometrid moth collection:

***Dichromodes lygrophanes* Turner**

Dichromodes lygrophanes Turner, 1943: 108. Syntypes: two females, [Australia], Qld, Cunnamulla.

Current name: *Taxeotis lygrophanes* (Turner).

Four specimens in the QMB geometrid moth collection bear red type labels but the species have not been formally described. The species names were not mentioned by Common (1990), McQuillan and Edwards (1996) and Scoble (1999).

Checklist of current names, including the relevant synonyms

Aelochroma pammiges (Turner)
Aglossophanes adoxima Turner
Amelora conia Turner
Anomogenes morphnopa Turner
Apheloceros dasciodes Turner
Bracca rosenbergi (Pagenstecher) (= *Tigridoptera leucoplethes* Turner)
Chlenias belophora (Turner) (= *Chlenias chytrinopa* Turner)
Chlorocoma cyclosema Turner
Chrysochloroma megaloptera (Lower)
Chrysocraspeda eumeles Turner
Chrysolarentia bertha (Swinhoe)
Chrysolarentia phaulophanes (Turner)
Cleora repetita (Butler) (= *Syneora speciosa* Turner)
"Cyclophora" lechriostropha (Turner)
"Cyclophora" rhodobapta (Turner)
"Cyclophora" sticta (Turner)
Dichromodes emplecta Turner
Dichromodes estigmaria (Walker) (= *Dichromodes tritospila* Turner)
Dichromodes lechria Turner
Dichromodes leptozona Turner
Dichromodes loxotropha Turner
Dichromodes mesotoma Turner
Ecnomophlebia argyrospila Turner
Ecphyas holopsara Turner
"Ectropis" fragilis Turner
Epidesmia phoenicina Turner
Epipristis oxycyma Meyrick (= *Epipristis australis* Goldfinch)
Eucyclodes goniota (Lower)
Eupithecia aphanes (Turner)
Gonodontis luteola (Turner) (= *Orsonoba diplodonta* Turner)
Gonodontis stramenticea (Turner)
Heterogena exitela Turner
Hypobapta barnardi Goldfinch
"Hypomecis" catephes (Turner)
"Hypomecis" conspersa (Turner)
"Hypomecis" curtaria (Walker) (= *Boarmia harmodia* Turner)
"Hypomecis" platyleuca (Turner)
Idaea trissomita (Turner)
Idiochroa rufifrons Turner
Maxates orthodesma orthodesma (Lower)
Maxates selenosema (Turner)
Milionia aetheria (Turner)
Oxyphanes thiobapta Turner
Pachyplocia atmocyma (Turner) (= *Boarmia loxosticha* Turner)
Pachyplocia prionodes (Turner)
Parepisparis multicolora (Lucas)
Poecilasthena glaucosa (Lucas)
Poecilasthena ischnophrica Turner
Poecilasthena pisicolor Turner
Psilosticha attacta (Walker) (= *Boarmia cymatias* Turner)
Rhinodia undiferaria (Walker) (= *Casbia ereutha* Turner)
Scopula loxographa Turner
Scotocyma albinotata (Walker)
Smyriodes trigramma (Lower) (= *Cleora dolichoptila* Turner)
Syneora euboliaria (Walker) (= *Syneora sinuosa* Turner)
Syneora odontosticha (Turner)
Taxeotis pleurostigma Turner
Taxeotis spodoides Turner
Thallogama aellographa (Turner)
Thallogama pansticta (Turner)
Xanthorhoe emmelopis Turner
Xanthorhoe propinqua (Turner)

Checklist of newly designated lectotypes

Aglossophanes adoxima Turner
Anisodes lechriostropha Turner (current name: *"Cyclophora" lechriostropha* (Turner))
Anisodes rhodobapta Turner (current name: *"Cyclophora" rhodobapta* (Turner))
Anomogenes morphnopa Turner
Dichromodes lechria Turner
Dichromodes loxotropha Turner
Dichromodes mesotoma Turner
Dichromodes tritospila Turner (syn.) (current name: *Dichromodes estigmaria* (Walker))
Eois trissomita Turner (current name: *Idaea trissomita* (Turner))
Epidesmia phoenicina Turner
Gelasma selenosema Turner (current name: *Maxates selenosema* (Turner))
Idiochroa rufifrons Turner
Pisoraca sticta Turner (current name: *"Cyclophora" sticta* (Turner))
Poecilasthena ischnophrica Turner
Scopula loxographa Turner
Taxeotis pleurostigma Turner
Taxeotis spodoides Turner
Tephroclystia aphanes Turner (current name: *Eupithecia aphanes* (Turner)

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References

Common, I. F. B. 1990. Moths of Australia. 535 pp., Melbourne (Melbourne University Press).

Glen, I. 1993. Barnard, Henry Greensill (Harry) (1869–1966). Australian Dictionary of Biography, Volume 13, Melbourne (Melbourne University Press).

Goldfinch, G. M. 1929. Revision of Australian Geometridae (Lepidoptera). Proceedings of the Linnean Society of New South Wales 54 (4): 379–407, pls 14–16.

Holloway, J. 1997. The Moths of Borneo: family Geometridae, subfamilies Sterrhinae and Larentiinae. Malayan Nature Journal 51: 1–242.

ICZN 1999. International code of zoological nomenclature. 4th edition, 365 pp., London (International Trust for Zoological Nomenclature, c/o The Natural History Museum).

Lower, O. B. 1894. New Australian Heterocera. Transactions of the Royal Society of South Australia 18: 77–113.

McQuillan, P. B. 1996. The Tasmanian geometrid moths associated with the genus *Amelora* auctorum (Lepidoptera: Geometridae: Ennominae). Invertebrate Taxonomy 10: 433–506.

– – & Edwards, E. D. 1996. Geometridae. Pp. 200–228 in: Nielsen, E. S., Edwards, E. D. & Rangsi, T. V. (eds). Checklist of the Lepidoptera of Australia. Monographs on Australian Lepidoptera, Vol. 4. Melbourne (CSIRO).

Schmidt, O. 2005. Revision of *Scotocyma* Turner (Lepidoptera: Geometridae: Larentiinae). Australian Journal of Entomology 44 (3): 257–278.

– – 2006. Australasian genus *Scotocyma* Turner and the recently described species *S. sumatrensis* Schmidt (Lepidoptera, Geometridae, Larentiinae). Heterocera Sumatrana 12 (6): 241–255.

– – 2007. Description of the male of the north-eastern Australian species *Scotocyma rutilimixta* Schmidt (Insecta, Lepidoptera, Geometridae, Larentiinae, Xanthorhoini). Spixiana 30 (1): 93–97.

Scoble, M. J. 1999. Geometrid moths of the world: a catalogue (Lepidoptera, Geometridae). Collingwood, Victoria (CSIRO Publishing).

– – & Edwards, E. D. 1990. *Parepisparis* Bethune-Baker and the composition of the Oenochrominae (Lepidoptera: Geometridae). Entomologica Scandinavica 20: 371–399.

Swinhoe, C. 1902. New and little known species of Drepanulidae, Epiplemidae, Microniidae and Geometridae in the National Collection. Transactions of the Entomological Society of London: 585–677.

Turner, A. J. 1904. Revision of Australian Lepidoptera. Family Geometridae. Proceedings of the Royal Society of Victoria 16: 218–284.

– – 1922. Australian Lepidoptera of the group Geometrites. Transactions of the Royal Society of South Australia 46: 225–294.

– – 1926. A revision of the Lepidoptera of Tasmania. Papers and Proceedings of the Royal Society of Tasmania: 118–151.

– – 1929. Revision of Australian Oenochromidae (Lepidoptera). I. Proceedings of the Linnean Society of New South Wales 54 (5): 463–504.

– – 1930. Revision of Australian Oenochromidae (Lepidoptera). II. Proceedings of the Linnean Society of New South Wales 55 (2): 1–40.

– – 1930a. Revision of Australian Oenochromidae (Lepidoptera). III. Proceedings of the Linnean Society of New South Wales 55 (3): 191–220.

– – 1931. Revision of Australian Lepidoptera. Supplementary. Proceedings of the Linnean Society of New South Wales 56 (4): 325–344.

– – 1932. New Australian Lepidoptera. Transactions of the Royal Society of South Australia 56: 175–196.

– – 1936. New Australian Lepidoptera. Proceedings of the Royal Society of Queensland 47: 25–50.

– – 1941. New species of Lepidoptera from the Barnard collection. Memoirs of Queensland Museum 12 (1): 40–52.

– – 1942. Fragmenta lepidopterologica. Proceedings of the Royal Society of Queensland 53 (4): 61–96.

– – 1943. New species of Lepidoptera from the Barnard collection. No.2. Memoirs of Queensland Museum 12 (2): 105–116.

– – 1947. New Australian species of Boarmiadae (Lepidoptera). Proceedings of the Royal Society of Queensland 58: 71–112.

Walker, F. 1861. List of specimens of lepidopterous insects in the collection of the British Museum. Part 22. Geometrites (continued). Pp. 499–755, London (British Museum (Natural History)).

Xue, D. & Scoble, M. J. 2002. A review of the genera associated with the tribe Asthenini (Lepidoptera: Geometridae: Larentiinae). Bulletin of the Natural History Museum London (Entomology) 71 (1): 77–133.