



Larval food plants of Australian Larentiinae (Lepidoptera: Geometridae) - a review of available data

Olga Schmidt ‡

‡ Zoologische Staatssammlung München, Munich, Germany

Corresponding author: Olga Schmidt (olga.schmidt@zsm.mwn.de)

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Abstract

Background

In Australia, the subfamily Larentiinae (Lepidoptera: Geometridae) comprises over 45 genera with about 270 species described so far. However, life histories of the Australian larentiine moths have barely been studied.

New information

The current paper presents a list of larval food plants of 51 Australian larentiine species based on literature references, data from specimen labels and own observations. Some Australian habitats are shown. Possible relationships among the taxa based on food preference of the larvae are discussed. Additionally, a list of Australasian larentiine species from the genera occurring in Australia and their food plants is presented.

Keywords

Australasia, Australia, checklist, host plants, geometrid moths, larentiine moths

Introduction

The immature stages and biology of the Australian Larentiinae (Lepidoptera, Geometridae) have received little attention in the past and our knowledge of host plant affiliations of the Australian species is remaining scarce. Hudson (1898) was one of the first researchers who discussed food plants of New Zealand larentiine larvae. Turner (1904), Common (1966) and Common (1990) presented some details of biology and listed a few food plants of Australian Larentiinae. McFarland (1979) published an annotated list of food plants of 280 Australian geometrid moths, including 16 larentiine species, whereby four species were identified to genus. He also succeeded to rear a large number of south Australian geometrid moths and completed 72 life history studies, but only four larentiine species were included (McFarland 1988). McQuillan (1986), McQuillan et al. (1998), McQuillan (1999) and McQuillan (2004) has been studying some aspects of biology, ecology and conservation of Australian moths focusing on the Tasmanian species. Holloway (1997) presented data on food plants of Indo-Australian Larentiinae. Some data on the larvae and food plants of the species *Anachloris* Meyrick, *Chaetolopha* Warren, *Scotocyma* Turner and *Visiana* Swinhoe are given in the reviews of these genera (Schmidt 2001, Schmidt 2002, Schmidt 2005, Schmidt 2006b, Schmidt 2007, Schmidt 2013.) Descriptions of larvae and pupae are incomplete or absent. Some observations on the eggs of Australian moths have been published by McFarland (1973). The first comprehensive review of the southern Australian geometrid eggs, including 18 larentiine species was completed by Young (2006), who also reared Tasmanian larvae of Geometridae, including several Larentiinae. Craw (1986) briefly described and illustrated a few New Zealand larentiine larvae. Totally, more than 270 larentiine species referred to about 45 genera are currently described from Australia. However, life histories of the vast majority of Australian larentiine moths remain unstudied.

Materials and methods

The present report is based on literature references and personal observations. The following material has been used: *Anachloris uncinata* (Guenée) (Western Australia, Bremer Bay), "*Chloroclystis*" *approximata* (Walker) (New South Wales, Barren Grounds), "*Chloroclystis*" *insigillata* (Walker) (Queensland, Brisbane), *Epicyme rubropunctaria* (Doubleday) (New South Wales, Monga State Forest), *Epyaxa sodaliata* (Walker) (Queensland, Severnlea), *Gymnoscelis lophopus* Turner (Queensland, Brisbane), *Phriissogonus laticostata* (Walker) (Queensland, Brisbane), *Scotocyma albinotata* (Walker) (Queensland, Bunya Mountains), *Visiana brujata* (Guenée) (Queensland, Lamington National Park), *V. incertata* (Walker) (Queensland, Bunya Mountains). Additionally, data

were taken from labels of specimens deposited in the Australian National Insect Collection, CSIRO, Ecosystem Sciences, Canberra (ANIC).

Taxonomic affiliation for several species is questionable therefore several names are cited in quotation marks. Tribal association is only cited for the first member of the tribe in the section "Nomenclature". In the section "Notes" the source of data on the food plants is presented. A list of Australian species of Larentiinae and their larval food plants is available under "Supplementary Materials" (see Suppl. material 1). A list of Australasian larentiine species from the genera occurring in Australia and their food plants is also presented (see Suppl. material 2).

List of the Australian Larentiinae (Geometridae) and their food plants

Epicyme rubropunctaria (Doubleday, 1843)

Nomenclature:

Tribe Asthenini

Feeds on: *Geranium* sp. (Geraniaceae)

Notes: Roberts 1979. However, a newly hatched larva refused to feed on flowers and leaves of *Geranium* sp. (Schmidt, unpubl. data).

Fig. 1.



Figure 1.

Epicyme rubropunctaria, female

Habitat of *E. rubropunctaria* is presented on Fig. 2.



Figure 2.

Habitat of *Epicyme rubropunctaria*, New South Wales, Monga State Forest

Epicyme rubropunctaria (Doubleday, 1843)

Feeds on: *Haloragis alata* (Haloragaceae)

Notes: Hudson 1898.

Epicyme rubropunctaria (Doubleday, 1843)

Feeds on: *Haloragis glauca* (Haloragaceae)

Notes: S. Williams, pers. comm., in: Marriott 2011.

Epicyme rubropunctaria (Doubleday, 1843)

Feeds on: *Haloragis heterophylla* (Haloragaceae)

Notes: McFarland 1979.

Poecilasthena balioloma (Turner, 1907)

Feeds on: *Leptospermum myrtifolium* (Myrtaceae)

Notes: McFarland 1979. Larvae of a New Zealand species *P. schistaria* (Walker, 1861) feed on *Leptospermum* sp. (Myrtaceae) (Hudson 1898).

***Poecilasthena ischnophrica* Turner, 1941**

Feeds on: *Leptospermum myrtifolium* (Myrtaceae)

Notes: McFarland 1979.

***Poecilasthena ischnophrica* Turner, 1941**

Feeds on: *Leptospermum myrsinoides* (Myrtaceae)

Notes: McFarland 1979.

***Poecilasthena pulchraria* (Doubleday, 1843)**

Feeds on: *Macropiper excelsum* (Piperaceae)

Notes: Hudson 1898.

***Poecilasthena pulchraria* (Doubleday, 1843)**

Feeds on: *Monotoca? scoparia* (Epacridaceae)

Notes: McQuillan 1986.

***Poecilasthena pulchraria* (Doubleday, 1843)**

Feeds on: *Monotoca glauca* (Epacridaceae)

Notes: C. Byrne, pers. comm., 2008.

***Poecilasthena pulchraria* (Doubleday, 1843)**

Feeds on: *Epacris* sp. (Epacridaceae)

Notes: McQuillan 1986.

***Poecilasthena pulchraria* (Doubleday, 1843)**

Feeds on: *Leucopogon juniperinus* (Epacridaceae)

Notes: McQuillan 1986.

***Poecilasthena pulchraria* (Doubleday, 1843)**

Feeds on: *Leptospermum scoparium* (Myrtaceae)

Notes: C. Byrne, pers. comm., 2008.

***Poecilasthena pulchraria* (Doubleday, 1843)**

Feeds on: *Astrolooma humifusum* (Ericaceae)

Notes: McFarland 1979, McFarland 1988. Captured larvae were reared.

***Poecilasthena pulchraria* (Doubleday, 1843)**

Feeds on: *Brachyloma* sp. (Ericaceae)

Notes: Scoble 1999.

***Poecilasthena xylocyma* (Meyrick, 1891)**

Feeds on: *Leptospermum scoparium* (Myrtaceae)

Notes: ANIC label, C. Byrne, pers. comm., 2008.

***Bosara minima* (Warren, 1897)**

Nomenclature:

Tribe Eupitheciini

Feeds on: *Glochidion ferdinandi* (Euphorbiaceae)

Notes: Turner 1904. The plant species is described as *Phyllanthus ferdinandi*. An Indian larentiine species, *Bosara emarginaria* (Hampson, 1893) is known to feed on *Breynia* sp. (Euphorbiaceae) (P. Bell, pers. comm., in: Holloway 1997). The species *Bosara minima* was associated with the genera *Chloroclystis* Hübner and *Gymnoscelis* Mabille. The synonymy with *B. refusaria* Walker needs to be checked (see Holloway 1997).

"*Chloroclystis*" *approximata* (Walker, 1869)

Feeds on: *Malus domestica* (Rosaceae)

Notes: Common 1990. Larvae occasionally damage the young fruits of apples.

Fig. 3.



Figure 3.

Chloroclystis approximata, female

Habitat of *C. approximata* is presented on Fig. 4.



Figure 4.

Habitat of "*Chloroclystis*" *approximata*, New South Wales, Barren Grounds

***"Chloroclystis" approximata* (Walker, 1869)**

Feeds on: *Prunus avium* (Rosaceae)

Notes: Common 1990. Larvae occasionally damage the young fruits of cherries.

"Chloroclystis" approximata (Walker, 1869)

Feeds on: *Acacia terminalis* (Fabaceae)

Notes: Turner 1904, McQuillan 1986, Common 1990, Schmidt, unpubl. data. Larvae usually feed on the flowers of *Acacia* sp. The foodplant is known as *Acacia botrycephala*.

"Chloroclystis" catastreptes (Meyrick, 1891)

Feeds on: *Bertia mitchellii* (Euphorbiaceae)

Notes: McFarland 1979. Larvae feed on flowers and flower buds of various unrelated plants.

"Chloroclystis" catastreptes (Meyrick, 1891)

Feeds on: *Acacia* sp. (Fabaceae)

Notes: McFarland 1979, McQuillan 1986. Larvae feed on flowers and flower buds of various unrelated plants.

"Chloroclystis" catastreptes (Meyrick, 1891)

Feeds on: *Clematis microphylla* (Ranunculaceae)

Notes: McFarland 1979. Larvae feed on flowers and flower buds of various unrelated plants.

"Chloroclystis" catastreptes (Meyrick, 1891)

Feeds on: *Solidago* sp. (Asteraceae)

Notes: McFarland 1979, McQuillan 1986. Larvae feed on flowers and flower buds of various unrelated plants.

"Chloroclystis" filata (Guenée, 1858)

Feeds on: *Pultenaea largiflorens* var. *latifolia* (Fabaceae)

Notes: McFarland 1979. Larvae feed on leaves and buds of the foodplant.

"Chloroclystis" filata (Guenée, 1858)

Feeds on: *Hebe* sp. (Plantaginaceae)

Notes: White 1991.

"Chloroclystis" insigillata (Walker, 1863)

Feeds on: *Macadamia* sp. (Proteaceae)

Notes: Common 1990. Larvae attack the flowers of *Macadamia* sp.

"Chloroclystis" insigillata (Walker, 1863)

Feeds on: *Acacia* sp. (Fabaceae)

Notes: Common 1990, Schmidt, unpubl. data.

"Chloroclystis" insigillata (Walker, 1863)

Feeds on: *Bertia* sp. (Euphorbiaceae)

Notes: Common 1990.

"Chloroclystis" insigillata (Walker, 1863)

Feeds on: *Clematis* sp. (Ranunculaceae)

Notes: Common 1990, Schmidt, unpubl. data.

"Chloroclystis" insigillata (Walker, 1863)

Feeds on: *Solidago* sp. (Asteraceae)

Notes: Common 1990.

***Chloroclystis s.l.* sp.**

Feeds on: Scrophulariaceae

Notes: McQuillan 1986.

***Collix ghosha* (Walker, 1863)**

Feeds on: *Ardisia* sp. (Primulaceae)

Notes: P. Bell, pers. comm., in: Holloway 1997, Tominaga 1998. Bell describes biology of *Collix ghosha*. The foodplant *Ardisia* sp. was in the former Myrsinaceae. A south-east Asian species *C. griseipalpis* Wileman, 1916 has been reared from *Allophylus* sp.

(Sapindaceae). A subspecies *C. g. phaeochiton* Prout, 1932 has been reared from *Ardisia* sp. and *Trigonostemon* sp. (Euphorbiaceae) (Prout 1932).

***Collix ghosha* (Walker, 1863)**

Feeds on: *Embelia* sp. (Primulaceae)

Notes: P. Bell, pers. comm., in: Holloway 1997, Tominaga 1998. Bell describes biology of *Collix ghosha*. The foodplant *Embelia* sp. was in the former Myrsinaceae.

***Gymnoscelis delocyma* Turner, 1904**

Feeds on: *Scyphiphora hydrophyllaceae* (Rubiaceae)

Notes: F.P. Dodd, pers. comm., in: Turner 1904. The larvae of the Malaysian species *Gymnoscelis pseudotibialis* Holloway, 1997 apparently feed on *Hevea* sp. (Euphorbiaceae) and *Mangifera* sp. (Anacardiaceae) (Yunus & Ho 1980, in: Holloway 1997).

***Gymnoscelis derogata* (Walker, 1866)**

Feeds on: *Macadamia* sp. (Proteaceae)

Notes: Zhang 1994. The species is known as *Gymnoscelis subrufata* Warren, 1898.

***Gymnoscelis lophopus* Turner, 1904**

Fig. 5.



Figure 5.

Gymnoscelis lophopus, female

Feeds on: *Acacia aulacocarpa* (Fabaceae)

Notes: Turner 1904, Common 1990. Larvae feed on the flowers of the foodplant.

Habitat of *Gymnoscelis lophopus* is presented on Fig. 6.



Figure 6.

Habitat of *Gymnoscelis lophopus*, Queensland, Brisbane

***Gymnoscelis lophopus* Turner, 1904**

Feeds on: *Lantana camara* (Verbenaceae)

Notes: Schmidt, unpubl. data. Larvae feed on the flowers of the foodplant.

***Gymnoscelis lophopus* Turner, 1904**

Feeds on: *Lantana* sp. (Verbenaceae)

Notes: Common 1990.

***Gymnoscelis lophopus* Turner, 1904**

Feeds on: *Macadamia* sp. (Proteaceae)

Notes: Common 1990. Larvae sometimes damage the flowers of *Macadamia* sp.

***Gymnoscelis* sp.**

Feeds on: *Pittosporum venulosum* (Pittosporaceae)

Notes: D. Herbison-Evans, pers. comm., 2015.

***Microdes oriochares* Turner, 1922**

Feeds on: *Olearia ramulosa* (Asteraceae)

Notes: McFarland 1979. Larvae feed on leaves of the foodplant.

***Microdes squamulata* Guenée, 1858**

Feeds on: *Acacia baileyana* (Fabaceae)

Notes: McFarland 1979.

***Microdes squamulata* Guenée, 1858**

Feeds on: *Acacia buxifolia* (Fabaceae)

Notes: McFarland 1979.

***Microdes squamulata* Guenée, 1858**

Feeds on: *Acacia dealbata* (Fabaceae)

Notes: McFarland 1979.

***Microdes squamulata* Guenée, 1858**

Feeds on: *Acacia decurrens* (Fabaceae)

Notes: Turner 1904.

***Microdes squamulata* Guenée, 1858**

Feeds on: *Acacia mearnsii* (Fabaceae)

Notes: McFarland 1979.

***Microdes villosata* Guenée, 1858**

Feeds on: *Acacia* sp. (Fabaceae)

Notes: McQuillan 1999.

***Pasiphila testulata* (Guenée, 1858)**

Feeds on: *Malus domestica* (Rosaceae)

Notes: Common 1990. Larvae occasionally damage the young fruits of apples. Three European species, *P. chloerata* (Mabille, 1870), *P. debiliata* (Hübner, 1817) and *P. rectangulata* (Linnaeus, 1758) feed on *Prunus* spp. (Rosaceae), *Vaccinium* spp. (Ericaceae) and *Malus* sp., *Pyrus* sp., *Prunus* spp., *Crataegus* sp. and *Amelanchier* sp. (Rosaceae) (Mironov 2003). A New Zealand species *P. urticae* (Hudson, 1939) feed on *Urtica ferox* (Urticaceae).

***Pasiphila testulata* (Guenée, 1858)**

Feeds on: *Prunus avium* (Rosaceae)

Notes: Common 1990. Larvae occasionally damage the young fruits of cherries. *P. testulata* is known as *Chloroclystis testulata* (Guenée).

***Pasiphila testulata* (Guenée, 1858)**

Feeds on: *Acacia terminalis* (Fabaceae)

Notes: Common 1990, Schmidt, unpubl. data, C. Byrne, pers. comm., 2008. Larvae usually feed on the flowers of *Acacia* sp. The foodplant is known as *Acacia botrycephala*.

***Phriessogonus laticostata* (Walker, 1863)**

Feeds on: *Acacia* sp. (Fabaceae)

Notes: Common 1990. Larvae usually feed on the flower buds and flowers of *Acacia*.

***Phriessogonus laticostata* (Walker, 1863)**

Feeds on: *Clematis* sp. (Ranunculaceae)

Notes: Common 1990. Larvae can damage the foliage of the foodplant.

***Phriessogonus laticostata* (Walker, 1863)**

Feeds on: *Cosmos* sp. (Asteraceae)

Notes: Schmidt, unpubl. data. Larvae readily accepted flowers of *Cosmos* sp. from a garden in Brisbane.

***Phriessogonus laticostata* (Walker, 1863)**

Feeds on: *Helianthus annuus* (Asteraceae)

Notes: Common 1990. Larvae can damage the foliage of the foodplant.

***Phriessogonus laticostata* (Walker, 1863)**

Feeds on: *Hypericum* sp. (Hypericaceae)

Notes: Common 1990. Larvae can damage the foliage of the foodplant.

***Phriessogonus laticostata* (Walker, 1863)**

Feeds on: *Malus domestica* (Rosaceae)

Notes: Common 1990. Larvae can damage the foliage of the foodplant.

***Phriessogonus laticostata* (Walker, 1863)**

Feeds on: *Medicago sativa* (Fabaceae)

Notes: Zhang 1994.

***Phriessogonus laticostata* (Walker, 1863)**

Feeds on: *Prunus avium* (Rosaceae)

Notes: Zhang 1994.

***Phriessogonus laticostata* (Walker, 1863)**

Feeds on: *Prunus cerasus* (Rosaceae)

Notes: Zhang 1994.

***Phriessogonus laticostata* (Walker, 1863)**

Feeds on: *Rosa odorata* (Rosaceae)

Notes: D. Herbison-Evans, pers. comm., 2015. Captured larvae readily accepted the flower petals from *Rosa* sp.

***Symmimetus* sp.**

Feeds on: *Aglaia* sp. (Meliaceae)

Notes: Holloway 1997.

***Sauris cirrhigera* (Warren, 1897)**

Nomenclature:

Tribe Trichopterygini

Feeds on: *Cinnamomum* sp. (Lauraceae)

Notes: Dugdale 1980. One specimen of the Indo-Pacific species *Sauris eupitheciata* (Snellen, 1881) was reared from the foliage of *Loranthus* sp. (Loranthaceae) (Holloway 1997), of *Sauris hirudinata* Guenée, 1858 from *Alseodaphne* sp. (Lauraceae) and *Lagerstroemia* sp. (Lythraceae) (P. Bell, pers. comm., in: Holloway 1997), of *Sauris interruptata* (Moore, 1888) on *Cinnamomum* sp. (Lauraceae) Holloway 1997), and of one species occurring on Niue Island on *Ficus prolixa* (Moraceae) (Dugdale 1980).

***Sauris commoni* Dugdale, 1980**

Feeds on: *Exocarpos latifolius* (Santalaceae)

Notes: ANIC label. One larva was beaten from *Exocarpos latifolia*.

***Sauris malaca* (Meyrick, 1891)**

Feeds on: *Litchi chinensis* (Sapindaceae)

Notes: Dugdale 1980, Common 1990. Larvae have been reported feeding on the young foliage of *Litchi* sp.

***Sauris malaca* (Meyrick, 1891)**

Feeds on: *Toona ciliata* (Meliaceae)

Notes: Dugdale 1980, Common 1990. Larvae have been reported feeding on the young foliage of *Toona* sp. The foodplant is known as *Toona australis*.

***Tympanota perophora* (Turner, 1922)**

Feeds on: *Podocarpus lawrencei* (Podocarpaceae)

Notes: ANIC label, Dugdale 1980. The species has been reared by I.F.B. Common (ANIC).

Acodia* sp.*Nomenclature:**

Tribe Xanthorrhoini

Feeds on: *Coprosma* sp. (Rubiaceae)

Notes: McQuillan 1999, McQuillan 2004.

***Austrocidaria* sp.**

Feeds on: *Coprosma* sp. (Rubiaceae)

Notes: Hudson 1898, Dugdale 1964, Dugdale 1988, McQuillan 1999, McQuillan 2004.

One New Zealand species feeds on *Myrsine* sp. and *Rapanea crassifolia* (Myrsinaceae) (Dugdale 1971).

***Chrysolarentia decisaria* (Walker, 1863)**

Feeds on: *Pelargonium rodneyanum* (Geraniaceae)

Notes: McFarland 1979, McFarland 1988, C. Byrne, pers. comm., 2008.

***Chrysolarentia decisaria* (Walker, 1863)**

Feeds on: *Ranunculus prasinus* (Ranunculaceae)

Notes: McFarland 1979, McFarland 1988, C. Byrne, pers. comm., 2008.

***Chrysolarentia insulsata* (Guenée, 1858)**

Feeds on: *Plantago lanceolata* (Plantaginaceae)

Notes: McFarland 1979, McFarland 1988.

***Chrysolarentia lucidulata* (Walker, 1963)**

Feeds on: *Plantago lanceolata* (Plantaginaceae)

Notes: McFarland 1979, McFarland 1988.

***Chrysolarentia vicissata* (Guenée, 1858)**

Feeds on: *Hibbertia* sp. (Dilleniaceae)

Notes: McFarland 1979, McFarland 1988.

***Chrysolarentia vicissata* (Guenée, 1858)**

Feeds on: *Lythrum* sp. (Lythraceae)

Notes: McFarland 1979, McFarland 1988.

***Chrysolarentia vicissata* (Guenée, 1858)**

Feeds on: *Malva* sp. (Malvaceae)

Notes: McFarland 1979, McFarland 1988.

***Chrysolarentia vicissata* (Guenée, 1858)**

Feeds on: *Mentha* sp. (Lamiaceae)

Notes: McFarland 1979, McFarland 1988.

***Chrysolarentia vicissata* (Guenée, 1858)**

Feeds on: *Polygonum* sp. (Polygonaceae)

Notes: McFarland 1979, McFarland 1988.

***Chrysolarentia vicissata* (Guenée, 1858)**

Feeds on: *Centaurium* sp. (Gentianaceae)

Notes: McFarland 1979, McFarland 1988. Larvae were feeding on introduced weeds in capture.

***Chrysolarentia vicissata* (Guenée, 1858)**

Feeds on: *Chenopodium* sp. (Chenopodiaceae)

Notes: McFarland 1979, McFarland 1988. Larvae were feeding on introduced weeds in capture.

***Chrysolarentia vicissata* (Guenée, 1858)**

Feeds on: *Medicago* sp. (Fabaceae)

Notes: McFarland 1979, McFarland 1988. Larvae were feeding on introduced weeds in capture.

***Chrysolarentia vicissata* (Guenée, 1858)**

Feeds on: *Plantago* sp. (Plantaginaceae)

Notes: McFarland 1979, McFarland 1988. Larvae were feeding on introduced weeds in capture.

***Chrysolarentia vicissata* (Guenée, 1858)**

Feeds on: *Solidago* sp. (Asteraceae)

Notes: McFarland 1979, McFarland 1988. Larvae were feeding on introduced weeds in capture.

***Chrysolarentia vicissata* (Guenée, 1858)**

Feeds on: *Stellaria* sp. (Caryophyllaceae)

Notes: McFarland 1979, McFarland 1988. Larvae were feeding on introduced weeds in capture.

***Epyaxa sodaliata* (Walker, 1963)**

Fig. 7.



Figure 7.

Epyaxa sodaliata, female

Feeds on: *Anagallis arvensis* (Primulaceae)

Notes: McFarland 1979. Larvae readily accepted leaves and buds of *Anagallis arvensis* but refused to feed on *Plantago*. A New Zealand species *E. rosearia* (Doubleday, 1843) feeds on *Nasturtium officinale* (Brassicaceae) (Hudson 1898).

Habitat of *Epyaxa sodaliata* is presented on Fig. 8.



Figure 8.

Habitat of *Epyaxa sodaliata*, Queensland, Severnlea

***Epyaxa sodaliata* (Walker, 1963)**

Feeds on: *Primula* sp. (Primulaceae)

Notes: Schmidt, unpubl. data. Larvae were feeding on *Primula* sp. from a garden in Brisbane.

***Epyaxa sodaliata* (Walker, 1963)**

Feeds on: *Myosotis arvensis* (Boraginaceae)

Notes: D. Herbison-Evans, pers. comm., 2015.

***Epyaxa subidaria* (Guenée, 1858)**

Feeds on: *Medicago polymorpha* var. *vulgaris* (Fabaceae)

Notes: McFarland (1979), Schmidt, unpubl. data. Captured larvae were reared.

***Epyaxa subidaria* (Guenée, 1858)**

Feeds on: *Hydrocotyle sibthorpioides* (Araliaceae)

Notes: McQuillan (1999). Captured larvae were reared to the final instar.

***Epyaxa subidaria* (Guenée, 1858)**

Feeds on: *Plantago lanceolata* (Plantaginaceae)

Notes: McQuillan (2004). One New Zealand *Epyaxa* species is known to feed on *Rumex* sp. (Polygonaceae) and *Tropaeolum majus* (Tropaeolaceae) (White 1991).

***Scotocyma albinotata* (Walker, 1866)**

Feeds on: *Coprosma repens* (Rubiaceae)

Notes: Schmidt (2003), Schmidt (2005), Schmidt (2006a), Schmidt (2007).

Fig. 9.



Figure 9.

Scotocyma albinotata, female

Habitat of *Scotocyma albinotata* is presented on Fig. 10.



Figure 10.

Habitat of *Scotocyma albnotata*, Queensland, Bunya Mountains

***Xanthorhoe vacuaria* (Guenée, 1858)**

Feeds on: *Medicago polymorpha* var. *vulgaris* (Fabaceae)

Notes: McFarland (1979), McFarland (1988). Captured larvae were reared. Malaysian *Xanthorhoe liwagu* Holloway, 1997 were feeding on *Brassica* sp. (Cruciferae) and *Mentha* sp. (Labiatae) (Yunus and Ho 1980, Singh 1953, in: Holloway 1997).

***Anachloris subochraria* (Doubleday)**

Nomenclature:

Unplaced to tribe

Feeds on: *Epilobium?* *ciliatum* (Onagraceae)

Notes: S. Williams, unpubl. data.

***Anachloris tofocolorata* Schmidt, 2001**

Feeds on: *Hibbertia virgata* (Dilleniaceae)

Notes: McFarland (1979), Schmidt (2001).

***Anachloris uncinata* (Guenée)**

Feeds on: *Hibbertia obtusifolia* (Dilleniaceae)

Notes: Common (1966), McFarland (1979), Schmidt (2001).

Fig. 11.



Figure 11.

Anachloris uncinata, male

Habitat of *A. uncinata* is presented on Fig. 12.



Figure 12.

Habitat of *Anachloris uncinata*, Western Australia, Stirling Range

***Anachloris uncinata* (Guenée)**

Feeds on: *Hibbertia riparia* (Dilleniaceae)

Notes: S. Williams, unpubl. data.

***Anachloris uncinata* (Guenée, 1858)**

Feeds on: *Hibbertia stricta* (Dilleniaceae)

Notes: McFarland (1979), Schmidt (2001).

***Chaetolopha emporias* (Turner, 1904)**

Feeds on: *Pteridium esculentum* (Polypodiaceae)

Notes: ANIC label, Schmidt (2002). In ANIC there is a specimen with a label written by I.F.B. Common, "Larvae eat bracken fern".

***"Chrysolarentia" actinipha* (Lower, 1902)**

Feeds on: *Medicago polymorpha* var. *vulgaris* (Fabaceae)

Notes: McFarland (1979), McFarland (1988).

***"Chrysolarentia" leucophanes* (Meyrick, 1891)**

Feeds on: *Leptospermum scoparium* (Myrtaceae)

Notes: C. Byrne, pers. comm., 2008.

***"Chrysolarentia" leucophanes* (Meyrick, 1891)**

Feeds on: *Melaleuca squamea* (Myrtaceae)

Notes: C. Byrne, pers. comm., 2008.

***"Chrysolarentia" leucophanes* (Meyrick, 1891)**

Feeds on: *Monotoca glauca* (Epacridaceae)

Notes: C. Byrne, pers. comm., 2008.

***"Chrysolarentia" severata* (Guenée, 1858)**

Feeds on: *Astrolooma humifusum* (Ericaceae)

Notes: S. Williams, pers. comm., in: Marriott (2011).

"Chrysolarentia" sp. nr. severata

Feeds on: *Leptospermum scoparium* (Myrtaceae)

Notes: C. Byrne, pers. comm., 2016. The species is recorded as "*Euphyia*" nr. *severata*. The collection details are: Cape Bruny, Tasmania, 28/10/99, C. Byrne.

"Chrysolarentia" squamulata (Warren, 1899)

Feeds on: *Olearia ramulosa* (Asteraceae)

Notes: McFarland (1979).

***Heterohasta congregata* (Walker, 1963)**

Feeds on: *Hibbertia scandens* (Dilleniaceae)

Notes: ANIC label. Larvae feed on leaves and shoots of *Hibbertia scandens*.

***Melitulias* sp.**

Feeds on: Fabaceae

Notes: McQuillan (1986).

***Melitulias* s.l. sp. undescribed**

Feeds on: *Casuarina paludosa* var. *robusta* (Casuarinaceae)

Notes: McFarland (1988). The species cited as "*Horisme*" sp.? has been reared. The specimen apparently represents an undescribed species (Schmidt, unpubl. data).

***Polyclysta hypogrammata* Guenée, 1858**

Feeds on: *Ficus* sp. (Moraceae)

Notes: Turner (1904).

***Visiana brujata* (Guenée, 1858)**

Feeds on: *Urtica incisa* (Urticaceae)

Notes: ANIC label, Schmidt (2006b), Schmidt (2013). Larvae were reared from eggs.

***Visiana incertata* (Walker, 1862)**

Feeds on: *Urtica incisa* (Urticaceae)

Notes: Schmidt, unpubl. data. Larvae were reared from eggs.

Fig. 13.



Figure 13.

Visiana incertata, female

Habitat of *Visiana incertata* is presented on Fig. 14.



Figure 14.

Habitat of *Visiana incertata*, Bunya Mountains

***Visiana incertata* (Walker, 1862)**

Feeds on: *Urtica dioica* (Urticaceae)

Notes: Schmidt, unpubl. data. Final instar larvae readily accepted the leaves of *Urtica dioica* (flowers and buds were not offered).

Discussion

Larval food plants of 51 Australian larentiine species from the following tribes are presented, including Asthenini (5 species), Eupitheciini (17 species), Trichopterygini (4 species) and Xanthorhoini (10 species). Additionally, food plants of 15 species unplaced to tribe are listed. The larvae are recorded to feed on 36 plant families (Table 1). More than a half of plant species are native to Australia. Two species, namely *Lantana camara* (Verbenaceae) and *Acacia mearnsii* (Fabaceae) are recorded as invasive species.

Table 1.

Families of the larval food plants of Australian Larentiinae

No	Food plant	Tribe	Species
1	Araliaceae	Xanthorhoini	<i>Epyaxa subidaria</i>
2	Asteraceae	Eupitheciini	" <i>Chloroclystis</i> " <i>catastreptes</i>
2	Asteraceae	Eupitheciini	" <i>Chloroclystis</i> " <i>insigillata</i>
2	Asteraceae	Eupitheciini	<i>Microdes oriochares</i>
2	Asteraceae	Eupitheciini	<i>Phriissogonus laticostata</i>
2	Asteraceae	Eupitheciini	<i>Chrysolarentia vicissata</i>
2	Asteraceae	Unplaced to tribe	" <i>Chrysolarentia</i> " <i>squamulata</i>
3	Boraginaceae	Xanthorhoini	<i>Epyaxa sodaliata</i>
4	Caryophyllaceae	Xanthorhoini	<i>Chrysolarentia vicissata</i>
5	Chenopodiaceae	Xanthorhoini	<i>Chrysolarentia vicissata</i>
6	Dilleniaceae	Xanthorhoini	<i>Chrysolarentia vicissata</i>
6	Dilleniaceae	Unplaced to tribe	<i>Anachloris tofocolorata</i>
6	Dilleniaceae	Unplaced to tribe	<i>Anachloris uncinata</i>
6	Dilleniaceae	Unplaced to tribe	<i>Heterohasta conglobata</i>
7	Epacridaceae	Asthenini	<i>Poecilasthena pulchraria</i>
7	Epacridaceae	Unplaced to tribe	" <i>Chrysolarentia</i> " <i>leucophanes</i>
8	Ericaceae	Asthenini	<i>Poecilasthena pulchraria</i>
8	Ericaceae	Asthenini	<i>Phriissogonus laticostata</i>
8	Ericaceae	Unplaced to tribe	" <i>Chrysolarentia</i> " <i>severata</i>
9	Euphorbiaceae	Eupitheciini	<i>Bosara minima</i>

9	Euphorbiaceae	Eupitheciini	<i>"Chloroclystis" catastreptes</i>
9	Euphorbiaceae	Eupitheciini	<i>"Chloroclystis" insigillata</i>
10	Fabaceae	Eupitheciini	<i>"Chloroclystis" approximata</i>
10	Fabaceae	Eupitheciini	<i>"Chloroclystis" catastreptes</i>
10	Fabaceae	Eupitheciini	<i>"Chloroclystis" filata</i>
10	Fabaceae	Eupitheciini	<i>"Chloroclystis" insigillata</i>
10	Fabaceae	Eupitheciini	<i>Gymnoscelis lophopus</i>
10	Fabaceae	Eupitheciini	<i>Microdes squamulata</i>
10	Fabaceae	Eupitheciini	<i>Microdes villosata</i>
10	Fabaceae	Eupitheciini	<i>Pasiphila testulata</i>
10	Fabaceae	Eupitheciini	<i>Phriessogonus laticostata</i>
10	Fabaceae	Xanthorhoini	<i>Chrysolarentia vicissata</i>
10	Fabaceae	Xanthorhoini	<i>Epyaxa subidaria</i>
10	Fabaceae	Xanthorhoini	<i>Xanthorhoe vacuaria</i>
10	Fabaceae	Unplaced to tribe	<i>"Chrysolarentia" actinipha</i>
10	Fabaceae	Unplaced to tribe	<i>Melitulias</i> sp.
11	Gentianaceae	Xanthorhoini	<i>Chrysolarentia vicissata</i>
12	Geraniaceae	Asthenini	<i>Epicyme rubropunctaria</i>
12	Geraniaceae	Xanthorhoini	<i>Chrysolarentia decisaria</i>
13	Haloragaceae	Asthenini	<i>Epicyme rubropunctaria</i>
14	Lauraceae	Trichopterygini	<i>Sauris cirrhigera</i>
15	Lamiaceae	Xanthorhoini	<i>Chrysolarentia vicissata</i>
16	Lythraceae	Xanthorhoini	<i>Chrysolarentia vicissata</i>
17	Malvaceae	Xanthorhoini	<i>Chrysolarentia vicissata</i>
18	Meliaceae	Eupitheciini	<i>Symmimetis</i> sp.
18	Meliaceae	Trichopterygini	<i>Sauris malaca</i>
19	Moraceae	Unplaced to tribe	<i>Polyclysta hypogrammata</i>
20	Myrtaceae	Asthenini	<i>Poecilasthena balioloma</i>
20	Myrtaceae	Asthenini	<i>Poecilasthena ischnophrica</i>
20	Myrtaceae	Asthenini	<i>Poecilasthena pulchraria</i>
20	Myrtaceae	Asthenini	<i>Poecilasthena xylocyma</i>
20	Myrtaceae	Unplaced to tribe	<i>"Chrysolarentia" leucophanes</i>
21	Onagraceae	Unplaced to tribe	<i>Anachloris subochraria</i>
22	Piperaceae	Asthenini	<i>Poecilasthena pulchraria</i>
23	Pittosporaceae	Eupitheciini	<i>Gymnoscelis</i> sp.
24	Plantaginaceae	Eupitheciini	<i>"Chloroclystis" filata</i>
24	Plantaginaceae	Xanthorhoini	<i>Chrysolarentia insulsata</i>

24	Plantaginaceae	Xanthorhoini	<i>Chrysolarentia lucidulata</i>
24	Plantaginaceae	Xanthorhoini	<i>Chrysolarentia vicissata</i>
24	Plantaginaceae	Xanthorhoini	<i>Epyaxa subidaria</i>
25	Podocarpaceae	Trichopterygini	<i>Tympanota perophora</i>
26	Polygonaceae	Xanthorhoini	<i>Chrysolarentia vicissata</i>
27	Primulaceae	Eupitheciini	<i>Collix ghosha</i>
27	Primulaceae	Eupitheciini	<i>Epyaxa sodaliata</i>
28	Proteaceae	Eupitheciini	" <i>Chloroclystis</i> " <i>insigillata</i>
28	Proteaceae	Eupitheciini	<i>Gymnoscelis lophopus</i>
28	Proteaceae	Eupitheciini	<i>Gymnoscelis derogata</i>
29	Ranunculaceae	Eupitheciini	" <i>Chloroclystis</i> " <i>catastreptes</i>
29	Ranunculaceae	Eupitheciini	" <i>Chloroclystis</i> " <i>insigillata</i>
29	Ranunculaceae	Eupitheciini	<i>Phriessogonus laticostata</i>
29	Ranunculaceae	Xanthorhoini	<i>Chrysolarentia decisaria</i>
30	Rosaceae	Eupitheciini	" <i>Chloroclystis</i> " <i>approximata</i>
30	Rosaceae	Eupitheciini	<i>Pasiphila testulata</i>
30	Rosaceae	Eupitheciini	<i>Phriessogonus laticostata</i>
31	Rubiaceae	Eupitheciini	<i>Gymnoscelis delocyma</i>
31	Rubiaceae	Xanthorhoini	<i>Acodia</i> sp.
31	Rubiaceae	Xanthorhoini	<i>Astrocidaria</i> sp.
31	Rubiaceae	Xanthorhoini	<i>Scotocyma albinotata</i>
32	Santalaceae	Trichopterygini	<i>Sauris commoni</i>
33	Sapindaceae	Trichopterygini	<i>Sauris malaca</i>
34	Scrophulariaceae	Eupitheciini	<i>Chloroclystis</i> s.l. sp.
35	Urticaceae	Unplaced to tribe	<i>Visiana brujata</i>
35	Urticaceae	Unplaced to tribe	<i>Visiana incertata</i>
36	Verbenaceae	Eupitheciini	<i>Gymnoscelis lophopus</i>

"*Chloroclystis*" *approximata*, "C." *insigillata*, *Gymnoscelis lophopus*, *G. derogata*, *Pasiphila testulata*, *Phriessogonus laticostata* and *Sauris malaca* are known as minor pests of cultivated plants.

The food plants are recorded for about 20% of Australian species therefore conclusions about food preference are rather preliminary. Moreover, the larentiine larvae are often polyphagous, hence the assumptions that taxa are closely related based solely on food preference of the larvae should not be overestimated.

Tribes Asthenini and Eupitheciini

Like in the Palaearctic region, larvae of Australian species of the tribe Eupitheciini are mostly polyphagous or oligophagous, tending to feed on flowers and buds of various plants. The tribes Eupitheciini and Asthenini are often considered closely related (e.g. Xue and Scoble 2002). Holloway (1997) treated the 'asthenine' genera in Eupitheciini, although he mentioned that *Poecilasthena* Warren, *Parasthena* Warren, *Eois* Hübner, *Polynesia* Swinhoe and *Pseudopolynesia* Holloway could be placed in Ashtenini. The present study revealed no evidence of concordance of the data on food preference of the larvae of these two tribes. The asthenine larvae mainly feed on leaves of native Epacridaceae, Ericaceae, Haloragaceae and Myrtaceae, with one species feeding on Piperaceae, whereas the larvae of Eupitheciini prefer feeding on the flowers and buds of Asteraceae, Euphorbiaceae, Fabaceae, Hypericaceae, Pittosporaceae, Plantaginaceae, Primulaceae, Proteaceae, Ranunculaceae, Rosaceae, Rubiaceae, Verbenaceae and occasionally on Meliaceae and Menispermaceae. The tribe Asthenini seems to be distinct from Eupitheciini, however, additional data need to be collected and analysed to clarify placement of several genera currently included in these tribes.

Tribe Trichopterygini

Food plants are recognized for several Indo-Pacific and South American species of the genera occurring in Australia. Larvae of one Japanese species of *Episteira* Warren from the tribe Trichopterygini feed on foliage of trees or shrubs of *Podocarpus* sp. (Podocarpaceae) (Sugi, 1987, in: Holloway 1997), like Australian trichopterygine species of *Tympanota*. Generally, the Australian trichopterygines are associated with Lauraceae, Meliaceae, Santalaceae and Sapindaceae. In Europe, larvae of Trichopterygini are associated with trees and shrubs from the families Anacardiaceae, Cupressaceae, Salicaceae and Sapindaceae, with a few polyphagous species feeding on Aquifoliaceae, Araliaceae, Caprifoliaceae, Cornaceae, Ranunculaceae, Rhamnaceae and Rosaceae (see Hausmann and Viidalepp 2012). Most of the trichopterygine food plants belong to the Sapindales in both Europe and Australasia.

Tribe Xanthorhoini

Like in the Palaearctic region, larvae of Australian xanthorhoines are polyphagous, feeding mainly on foliage of flowering plants and herbs. Most of the Australian larvae accepted Plantaginaceae, Fabaceae and Rubiaceae.

Genera unplaced to tribes

Larvae of a New Zealand species *Aponotoreas dissimilis* (Philpott, 1914) accepted *Dracophyllum* sp. (Epacridaceae), whereas *A. synclinalis* (Hudson, 1903) was feeding on *Empodium minus* (Restionaceae) (B. Patrick, pers. comm., in: Craw 1986). The genus *Aponotoreas* Craw is currently assigned to the tribe Hydriomenini (McQuillan and Edwards 1996) but does not share several morphological characters of the tribe and is in need of

taxonomic study (Schmidt, unpubl. data). Epacridaceae is a food plant of several asthenine species and of *Chrysolarentia leucophanes* of which the tribal assignment is still unclear. Apart from *A. synclinalis*, no further larentiine larvae are known to feed on Restionaceae. In Europe, the larvae of *Hydriomena* spp. are known to feed on Betulaceae, Corylaceae, Ericaceae, Fagaceae and Salicaceae (see Hausmann and Viidalepp 2012). Regarding the larval food preference of *Aponotoreas*, there is no indication of a close affinity with Hydriomenini.

Larvae of an Indo-Pacific species *Eois grataria* (Walker, 1861) feed on *Mallotus* sp. (Euphorbiaceae) (Singh, 1953, in: Holloway 1997), while most of South American species of the genus readily accept *Piper* sp. (Piperaceae) (Strutzenberger and Fiedler 2011). *Eois* Hübner is not assigned to any tribe currently although it has been cited in Asthenini and Eupitheciini, or excluded from both tribes (Holloway 1997, Xue and Scoble 2002, Strutzenberger and Fiedler 2011, Viidalepp 2011). *Glochidion* sp., *Bertya* sp., *Trigonostemon* sp., *Hevea* sp. (Euphorbiaceae) are food plants of the Indo-Australian eupitheciine larvae, which would indicate an affinity of *Eois* with Eupitheciini. However, larvae of one asthenine species feed on Piperaceae, like *Poecilasthena pulchraria* (Doubleday, 1843) that is placed in Asthenini. Adult morphological characters indicate a close relationship of the Australasian *Eois* to Eupitheciini (Schmidt, unpubl. data).

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References

- Common IF (1966) Australian Moths (revised ed.). Jacaranda Pocket Guides. Jacaranda Press, Brisbane, 131 pp.
- Common IF (1990) Moths of Australia. Melbourne University Press, Melbourne, 535 pp.
- Craw RC (1986) Review of the genus *Notoreas* (sensu auctorum) (Lepidoptera: Geometridae: Larentiinae). New Zealand Journal of Zoology 13: 134-140. DOI: [10.1080/03014223.1986.10422654](https://doi.org/10.1080/03014223.1986.10422654)

- Dugdale JS (1964) Insects of Campbell Island. Appendix. Lepidoptera: Geometridae. Pacific Insects Monograph 7: 607-623.
- Dugdale JS (1971) Entomology of the Aucklands and other islands south of New Zealand: Lepidoptera, excluding non-crambine Pyralidae . Pacific Insects Monograph 27: 55-172.
- Dugdale JS (1980) Australian Trichopterygini (Lepidoptera: Geometridae) with descriptions of eight new taxa. Australian Journal of Zoology 28: 301-340. DOI: [10.1071/zo9800301](https://doi.org/10.1071/zo9800301)
- Dugdale JS (1988) Lepidoptera – annotated catalogue, and keys to family-group taxa. Fauna of New Zealand 14: 1-262.
- Hausmann A, Viidalepp J (2012) Larentiinae I. The Geometrid Moths of Europe. Apollo Books, Stenstrup, 742 pp.
- Holloway JD (1997) The moths of Borneo: family Geometridae, subfamilies Sterrhinae and Larentiinae . Malayan Nature Journal 51: 1-242. [In English].
- Hudson GV (1898) New Zealand Moths and Butterflies (Macro-Lepidoptera). Newman & Co., London, West, 144 pp.
- Marriott P (2011) Moths of Victoria. Part 3 Waves, Carpets and Allies. Entomological Society of Victoria, Melbourne, 36 pp.
- McFarland N (1973) Some observations on the eggs of moths and certain aspects of first instar larval behaviour. Journal of Research on the Lepidoptera 12 (4): 199-208.
- McFarland N (1979) Annotated list of larval food plant records for 280 species of Australian moths. Journal of the Lepidopterists Society Supplement: 1-72.
- McFarland N (1988) Portraits of South Australian Geometrid Moths. Allen Press, Lawrence, Kansas, iv+400 pp.
- McQuillan PB (1986) Trans-Tasman relationships in the highland moth (Lepidoptera) fauna. In: Barlow BA (Ed.) Fauna and Flora of Alpine Australasia: ages and origins. E.J. Brill and CSIRO, Australia, 13 pp.
- McQuillan PB (1999) Program and Abstracts: Biodiversity in Australia 1699-1999 and beyond. In: George A, Harvey M, Majer J (Eds) Patterns of diversity in the phytophagous insects of southern Australia. Dampier 300. Western Australian Museum, Perth, 65-66 pp.
- McQuillan PB (2004) An overview of the Tasmanian geometrid moth fauna (Lepidoptera: Geometridae) and its conservation status. Journal of Insect Conservation 8: 209-220. DOI: [10.1007/s10841-004-1353-0](https://doi.org/10.1007/s10841-004-1353-0)
- McQuillan PB, Edwards ED (1996) Geometridae. In: Nielsen ES, Edwards ED, Rangsi TV (Eds) Checklist of the Lepidoptera of Australia. Monographs on Australian Lepidoptera, Vol. 4. CSIRO, Melbourne, 28 pp.
- McQuillan PB, Taylor RJ, Bereton RN, Cale PG (1998) Seasonal patterns of activity in geometrid moths (Lepidoptera: Geometridae) from a lowland and highland eucalypt forest in Tasmania. Australian Journal of Entomology 37: 228-237. DOI: [10.1111/j.1440-6055.1998.tb01576.x](https://doi.org/10.1111/j.1440-6055.1998.tb01576.x)
- Mironov V (2003) Larentiinae II (Perizomini and Eupitheciini). In: Hausmann A (Ed.) The geometrid moths of Europe 4. Appollo Books, Stenstrup, 462 pp.
- Prout LB (1932) New Exotic Geometridae . Novitates Zoologicae 38 (1): 103-126.
- Roberts LI (1979) Insects from the Cavalli Islands. Tane. The journal of the Auckland University Field Club 25: 125-132.

- Schmidt O (2001) The Australian species of *Anachloris* Meyrick (Lepidoptera: Geometridae: Larentiinae): taxonomy, male genitalia musculature and systematic position. *Australian Journal of Entomology* 40 (3): 219-230. DOI: [10.1046/j.1440-6055.2001.00232.x](https://doi.org/10.1046/j.1440-6055.2001.00232.x)
- Schmidt O (2002) A revision of the genus *Chaetolopha* Warren (Lepidoptera : Geometridae : Larentiinae) with a description of *Parachaetolopha*, gen. nov. *Invertebrate Systematics* 16 (5): 703-733. DOI: [10.1071/IT01013](https://doi.org/10.1071/IT01013)
- Schmidt O (2003) Some results of taxonomic research on larentiine moths from the Australasian region. *Spixiana* 26 (3): 204.
- Schmidt O (2005) Revision of *Scotocyma* Turner (Lepidoptera: Geometridae: Larentiinae). *Australian Journal of Entomology* 44 (3): 257-278. DOI: [10.1111/j.1440-6055.2005.00471.x](https://doi.org/10.1111/j.1440-6055.2005.00471.x)
- Schmidt O (2006a) *Visiana sordidata* (Moore), a complex of species from the Indo-Pacific region (Insecta, Lepidoptera, Geometridae, Larentiinae). *Spixiana* 29: 77-85.
- Schmidt O (2006b) Australasian genus *Scotocyma* Turner and the recently described species *S. sumatrensis* Schmidt (Lepidoptera: Geometridae: Larentiinae). *Heterocera Sumatrana* 12 (6): 241-255.
- Schmidt O (2007) Description of the male of the north-eastern Australian species *Scotocyma rutilimixta* Schmidt (Insecta, Lepidoptera, Geometridae, Larentiinae, Xanthorhoini). *Spixiana* 30 (1): 93-97.
- Schmidt O (2013) Review of the species of *Visiana* Swinhoe from the Papua New Guinea region (Lepidoptera: Geometridae: Larentiinae). *Zootaxa* 3693 (2): 189-199. DOI: [10.11646/zootaxa.3693.2.5](https://doi.org/10.11646/zootaxa.3693.2.5)
- Scoble MJ (1999) Geometrid Moths of the World: A Catalogue (Lepidoptera, Geometridae). CSIRO Publishing, Collingwood, Victoria, 1200 pp.
- Strutzenberger P, Fiedler K (2011) Temporal patterns of diversification in Andean *Eois*, a species-rich clade of moths (Lepidoptera, Geometridae). *Journal of Evolutionary Biology* 24: 919-925. DOI: [10.1111/j.1420-9101.2010.02216.x](https://doi.org/10.1111/j.1420-9101.2010.02216.x)
- Tominaga S (1998) Hostplant of *Collix ghosha* Walker Geometridae, Larentiinae in Okinawa. *Japan Heterocerist's Journal* 25: 4.
- Turner AJ (1904) Revision of Australian Lepidoptera. Family Geometridae . Proceedings of the Royal Society of Victoria 16: 218-284.
- Viidalepp J (2011) A morphological review of tribes in Larentiinae (Lepidoptera: Geometridae). *Zootaxa* 44 (3136): 1-44.
- White EG (1991) The changing abundance of moths in a Tussock Grassland, 1962-1989, and 50- to 70-year trends. *New Zealand Journal of Ecology* 15 (1): 5-22.
- Xue D, Scoble MJ (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. DOI: [10.1017/s0968045402000044](https://doi.org/10.1017/s0968045402000044)
- Young CJ (2006) Descriptions of the eggs of some southern Australian Geometridae (Lepidoptera). *Zootaxa* 1287: 1-294.
- Yunus A, Ho TN (1980) List of Economic Pests, Host Plants, Parasites and Predators in West Malaysia (1920-1978). *Bulletin of the Malaysian Department of Agriculture* 153: 1-538.
- Zhang BC (1994) Index of Economically Important Lepidoptera . CAB International, Wallingford, Oxford, UK, 599 pp.

Supplementary materials

Suppl. material 1: List of the Australian Larentiinae (Geometridae) and their food plants

Authors: O. Schmidt

Data type: food plants

Filename: Australian_Larentiinae_Foodplants_BDJ.xls - [Download file](#) (156.00 kb)

Suppl. material 2: List of the Australasian Larentiinae (Geometridae) and their food plants

Authors: O. Schmidt

Data type: food plants

Filename: Australasian_Larentiinae_Foodplants_BDJ.xls - [Download file](#) (134.50 kb)