molecular analysis are as follows:

1. The Geometrinae is monophyletic apart from *Anomogenes*, a 'grey' geometrine (Pseudopterpnini), which forms a clade with the Boarmiini using 28S D2 data;
2. The Pseudopterpnini, apart from *Anomogenes*, forms a clade within the Geometrinae;
3. *Oenochlora imperialis*, a large emerald, that occurs in sub-tropical Australia is well supported as having basally derived characters in the Geometrinae;
4. '*Chlorocoma*' *cadmaria* is distinct genetically from *Chlorocoma* s. str. This species is the only *Chlorocoma* that feeds on *Leptospermum*;
5. '*Prasinocyma*' *semicrocea* is genetically and morphologically very close to *Chlorocoma*.
6. The Dysphanini, represented by *Dysphania numana*, forms a distinct sister group to the Geometrinae (LW Rhodopsin data only).

This study is not complete. More taxa are yet to be included in the molecular analysis and relationships will be further explored in the context of morphological structures.

Recent developments in our understanding of the southern Australian Larentiinae

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There is renewed interest in the Larentiinae since their basal position in the family was inferred from molecular data (Abraham et al. 2001, Young 2004).

Southern Australia, defined as the Bassian biogeographical region, has a moderately diverse fauna of larentiines of perhaps 200 species. Several major tribes (e.g. Xanthorhoini, Eupitheciini, Trichopterygiini) are represented although Australian "Hydriomenini" need further study to clarify their tribal relationships (Schmidt 2001) and enigmatic taxa such as *Chaetolopha*, associated with ferns, currently defy tribal placement (Schmidt 2002).

Larentiine diversity in Australia is greatest in regions of higher rainfall. The Xanthorhoini are strongly concentrated in the moister parts of southern Australia and there is considerable local endemism at higher elevations. The genus *Chrysolarentia* is available for many of the Australian members of this tribe.

There are several genera shared with New Zealand, including *Austrocidaria* (Tasmania), *Epyaxa* and "*Anzarhoe*". The phenotypically variable and multivoltine *E. subidaria* is one the most familiar urban moths in southern Australia, thriving in lawns and gardens on *Plantago* and other weeds.

The Eupitheciini is poorly studied though relatively diverse with a number of undescribed species. Many are associated with the reproductive parts of plants as they are elsewhere in the world. Some are highly vagile, including *Phrissogonus laticostatus*, which is a member of a suite of (often) polyphagous moths which experience breeding peaks is wet years in the semi-arid parts of Australia and then disperse widely to coastal areas and off-shore islands. A few eupitheciines (e.g. *Chloroclystis approximata*) and xanthorhoines (e.g. *Epyaxa* spp.) have adapted to agricultural crops and orchards. Alpine adaptation is apparent in several lineages: *Aponotoreas*, *Melitulias*, "*Hydriomena*" and several xanthorhoine genera.

Foodplant associations remain poorly known. As elsewhere, most xanthorhoines are herb-feeders although *Austrocidaria* on *Coprosma* (as in New Zealand). *Tympanota* on *Podocarpus* is the only larentiine associated with Australian conifers (Dugdale 1980). Sclerophyllous understorey shrubs are important hosts of many "Hydriomenini": *Hibbertia* (Dilleniaceae) supports *Anachloris* (Schmidt 2001) and Fabaceae shrubs support several other taxa. Epacridaceae is eaten by some *Poecilasthena*. It is noteworthy that almost no larentiines feed on *Eucalyptus*, but the reasons for this are unclear. Although Schmidt (2005, 2006a,b) has subjected some tropical taxa to recent review, much remains to be done.

References

Abraham, D., N. Ryrholm, H. Wittzell, J. D. Holloway, M. J. Scoble, and C. Löfstedt 2001. Molecular phylogeny of the subfamilies in Geometridae (Geometroidea: Lepidoptera). – Mol. Phylog. Evol. 20: 65-77

Schmidt, O. 2001. The Australian species of *Anachloris* Meyrick (Lepidoptera: Geometridae: Larentiinae): taxonomy, male genitalia musculature and systematic position. – Austr. J. Ent. **40**: 219-230
– – 2002. A revision of the genus *Chaetolopha* Warren (Lepidoptera: Geometridae: Larentiinae) with a description of *Parachaetolopha*, gen. nov. – Invertebr. Sys. **16**: 703-733
– – 2003. Some results of taxonomic research on larentiine moths from the Australasian region. – Spixiana **26**: 204
– – 2005. Revision of *Scotocyma* Turner (Lepidoptera: Geometridae: Larentiinae). – Austr. J. Ent. **44**:, 257-278
– – 2006a. *Visiana sordidata* (Moore), a complex of species from the Indo-Pacific region (Insecta, Lepidoptera, Geometridae, Larentiinae). – Spixiana **29**: 77-85
– – Australasian genus *Scotocyma* Turner and the recently described species *S. sumatrensis* Schmidt (Lepidoptera, Geometridae, Larentiinae). – Heteroc. Sumatr. **12: 241-255**
Young, C. J. 2004. Characterisation of the Australian Nacophorini and a phylogeny for the Geometridae from molecular and morphological data. – PhD Thesis, University of Tasmania, Hobart

Filling in the gaps: South-Eastern Mountain Grassland as an important corridor and refuge for Montane Palaeogenic Elements within the southern African geometrid fauna (Lepidoptera, Geometridae)

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Revisionary work on various groups of moths, with a focus on Geometridae, since the late 1990's has provided substantial evidence for the existence of a Montane Palaeogenic Element as defined by Stuckenberg (1962) within the southern African geometrid fauna. However, although distribution patterns for several taxa are now well documented for the Western Cape, the Maloti Mountains of Lesotho and mountainous areas of the escarpment further north, virtually no data from suitable high-lying areas that may support this relictual fauna have been available for the vast area between the Western Cape and the foothills of the Malotis, representing a gap of more than 500 km.

A recent sample comprising 141 species of Geometridae collected in the Sneeuberge (approx. 32°10'S 24°55'E), situated in the western part of Eastern Cape Province, South Africa at altitudes between 993 and 1618 m, was analyzed for trends in composition according to altitude and/or vegetation type. (The highest peak in the area reaches 2122 m but areas above 1618 m could not be sampled due to difficulty of access.) Above 1600 m, the area is occupied by a southerly extension of South-Eastern Mountain Grassland (grassland biome), whereas the lower-lying areas fall into the semiarid Eastern Mixed Nama Karoo (Nama Karoo biome), a semiarid veld type ecotonal to grassland.

No trends were observed regarding altitudinal distribution at subfamily level, and representation of Geometrinae, Sterrhinae and Ennominae as a percentage of the species total for southern Africa was similar (9.94 to 12.96 %), although Larentiinae were more strongly represented (34 species or 21.94 % of the total for the subregion). When viewed in isolation, the fauna of South-Eastern Mountain Grassland is characterized by a marked reduction in Geometrinae and Sterrhinae, with a concomitant increase in Larentiinae. Within Ennominae, however, samples from Eastern Mixed Nama Karoo were dominated by Macariini, whereas the diversity of Ennomini, Gnophini and especially Nacophorini increased in South-Eastern Mountain Grassland. Nacophorini have only recently been recorded from southern Africa; the tribe remains unsatisfactorily defined but is probably basal within Ennominae and almost entirely limited in its distribution to the former Gondwanan continents Australia, South America and southern Africa.

As would be expected from its being contiguous to Alti-Mountain Grassland, one of the two dominant high-altitude veld types in Lesotho, in the eastern part of its range, the montane moth community dependent on South-Eastern Mountain Grassland is overall more similar to that of the Maloti range and adjacent montane areas than to that of the Western