

Systematics and phylogenetic relationships of the Australian Agaristinae (Lepidoptera: Noctuidae) based on morphology, including a revised checklist of the subfamily

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ABSTRACT. The subfamily Agaristinae from Australia comprise a small group of largely diurnal and brightly coloured moths, but their phylogenetic relationships are largely unknown. Cladistic analysis of nearly all extant genera (20 out of 21, or 95%) and most described species (38 out of 45, or 84%) based on 39 male genital and adult morphological characters revealed several incongruencies with the current generic classification. Strict consensus and 50% majority rule analyses confirmed monophyly of the subfamily. The monotypic genus *Cremnophora* Hampson, 1901 (type species: *Apina angasii* Walker, 1855, a junior synonym and secondary homonym of *Agrista* [sic] *angasii* Angas, 1847) is excluded from the Agaristinae because the morphology of the male genitalia suggest it probably belongs in the Amphipyridae. Except for a few species-groups, deep level relationships among most clades were largely unresolved. Most genera were monophyletic, but *Zalissa* Walker, 1865, *Leucogonia* Hampson, 1908, *Argyrolepidia* Hampson, 1901 and *Idalima* Turner, 1903 were all non-monophyletic. Sister-group relationships were recovered between the monotypic genera *Apina* Walker, 1855 and *Agaristodes* Hampson, 1908, and between *Phalaenoides* Lewin, 1805 and *Comocrus* Jordan, 1896. Morphological and other evidence suggest each of these pairs are congeneric; thus, we propose the following new combinations following synonymy of *Agaristodes* **syn. nov.** with *Apina* and *Comocrus* **syn. nov.** with *Phalaenoides*: *Apina feisthamelii* (Herrich-Schäffer, [1853]) **comb. nov.** and *Phalaenoides behri* (Angas, 1847) **comb. nov.** *Idalima* (type species: *Agarista affinis* Boisduval, 1832) emerged as polyphyletic, with *Idalima affinis* (Boisduval, 1832) and *Idalima metasticta* Hampson, 1910 showing a closer relationship to *Periscepta* Turner, 1920 than to *Idalima aethrias* (Turner, 1908) or *Idalima leonora* (Doubleday, 1846). Thus, we synonymise *Periscepta* **syn. nov.** with *Idalima* and transfer *Periscepta polysticta* (Butler, 1875) and *Periscepta butleri* (Swinhoe, 1892) to this genus, resulting in the following new combinations: *Idalima polysticta* (Butler, 1875) **comb. nov.** and *Idalima butleri* (Swinhoe, 1892) **comb. nov.** A revised checklist of the Australian fauna is presented, including nomenclature for all valid subspecies.

Keywords: classification, day-moth, Insecta, phylogeny

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