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Number 66: 11 May 1979

Reclassification, phylogeny and zoogeography of the Australian species of *Cicindela* (Coleoptera : Cicindelidae). *Richard Freitag*

### Abstract

Australian components of the subfamilies Collyrinae and Cicindelinae, tribes Collyrini, Megacephalini and Cicindelini, and genera *Tricondyla* Latreille, *Megacephala* Latreille, *Distipsidera* Westwood, *Rhysopleura* Sloane, *Nickerlea* W. Horn, and *Cicindela* Linné are distinguished in a key. For each of the first five genera, numbers of Australian species, geographical distributions, and habitats of the adults are described.

Diagnostic characteristics are provided for the genus *Cicindela* Linné. Twenty-nine Australian species are arranged in seven species-groups as follows: the *iosceles* group, six species; the *nigrina* group, two species: the *carnarvona* group (= subgenus *Grandpronotalia* W. Horn, genus *Prothyma*), one species, *C. carnarvona*, sp. et comb. nov.; the *tetragramma* group, seven species, including *C. levitetragramma*, sp. nov. (type locality, Western Australia, Port Hedland); the *ypsilon* group, four species; the *igneicollis* group, five species, including *C. gairdneri*, sp. nov. (type locality, South Australia, Lake Gairdner, south-west gulf); the *semicincta* group, four species, including *C. parasemicincta*, sp. nov. (type locality, South Australia, Wobna Mound Spring about 8 km south-east of Coward Spring).

Placement of the *iosceles* and *carnarvona* groups is discussed. A key is provided for all species and five subspecies. Species-groups, species, and subspecies are revised, described and illustrated, and the ranges of species indicated by maps.

A history of the Australian species of *Cicindela* is derived, which comprises a reconstructed phylogeny, based on adult characteristics, and zoogeography based on patterns of geographical distributions of species-groups, ecological requirements, vicariance relations of sister groups, and climatic events of the past. It is concluded that five species-groups are endemic to Australia. Their origins are unknown, though geographical distributions indicate that four (*iosceles*, *nigrina*, *tetragramma*, *carnarvona*) are relicts of extinct Oriental lineages, and one (*igneicollis*) a relict of a south ancient lineage. Two species-groups (*ypsilon*, *semicincta*) are southernmost extensions of extant Oriental groups. Zoogeographical evidence suggests that most founding stocks invaded northern Australia through New Guinea during the Tertiary and Pleistocene, and speciation in the Pleistocene has been generated in the north-east by periodic retreats and invasions of the sea in the Gulf of Carpentaria during glacial and interglacial phases.

Number 67: 11 May 1979

A taxonomic revision of the lungworms (Nematoda : Metastrongyloidea) from Australian marsupials. *D. M. Spratt*

### Abstract

The taxonomic status of metastrongyloid nematodes from Australian marsupials is reviewed. Metastrongyloids are reported from 20 host species belonging to the Dasyuridae, Peramelidae, Phalangeridae, Petauridae, Macropodidae and Vombatidae. Three nematode genera in two families are recognized. The genus *Marsupostrongylus* Mackerras & Sandars, 1953, is redefined and placed

in the Angiostrongylidae Boehm & Gebauer, 1934 (*sensu* Anderson 1977). *M. bronchialis* is recognized as a spelling emendation for *M. bronchialis* Mackerras & Sandars, 1953, the species is redescribed and to the genus is added *M. coulstoni*, sp. nov., *M. dorrigoensis*, sp. nov., *M. lanceolatus*, sp. nov., *M. longilarvatus*, sp. nov., and *M. minesii*, sp. nov. The genus *Filostrongylus* Mackerras, 1955 is redefined, also placed in the Angiostrongylidae, and its single species, *F. peramelis* Mackerras, 1955 is redescribed. *Plectrostrongylus* Mackerras & Sandars, 1953 is reduced to a synonym of *Marsupostrongylus* Mackerras & Sandars, 1953 and *M. fragilis* (Mackerras & Sandars, 1953), comb. nov. is redescribed. *Filaroides* (*Filaroides*) *pilbarensis*, sp. nov. is placed in the Filaroididae Schulz, 1951 (*sensu* Anderson 1977) and represents the only species of the genus known from a marsupial.

Keys to the genera of metastrongyloids and the species of *Marsupostrongylus* from Australian marsupials are provided. Brief details of the life cycles of some described species are presented. The evolution of Australian metastrongyloids is discussed briefly. A host-parasite list for metastrongyloids of Australian marsupials is given.

## Number 68: 8th June 1979

### Catenicellid cheilostome Bryozoa. I. Frontal walls. *William C. Banta and Robin Wass*

#### *Abstract*

Twenty-two species from 16 genera in the Family Catenicellidae were studied by use of scanning electron microscopy combined with transmission electron microscopy and numerous light microscopy methods. The probably primitive species *Costaticella solida* was emphasized. The family is considered relatively homogeneous. Every known type of frontal wall and both known methods of ascus formation found among ascophoran Bryozoa occur in the family. All the types of frontal wall found can be derived from a spinose, pericystal frontal wall similar to that of some cribrimorph cheilostomes. Many wall types occur in combination in the same species, even on the same zoid.

Several independent sequences of evolution of frontal wall types are seen. A proximal apertural notch or sinus evolved at least four times. Ascospores are present in at least three genera; they represent persistent lacunae. Cryptocystal components of the frontal wall evolved at least four times from four different structures; twice as incomplete, imperforate ledges and twice from floors of coelomic chambers provided with communication pores. Umbonuloid frontal walls are represented by calcified ascus roof overlain by uncalcified areas of gymnocyst.

Primitive catenicellids possess one uncalcified window per spine. Spines tend to be lost by fusion and shortening; windows may be lost, multiplied or enlarged. Reduction and loss of the spinose area (pericyst) was accompanied by expansion of the gymnocyst. In many catenicellids spines are reduced to a pair of folds of body wall which fuse just proximal to the aperture. In a few species, including all vittate forms, vestiges of spines are lost.

Umbonuloid ascus formation is associated with pericysts, gymnocysts and sometimes umbonuloid frontal walls, and is always accompanied by some subsequent lepralioid ascus formation. Umbonuloid asci probably preceded lepralioid asci during evolution. Some species, including vittate forms, have exclusively lepralioid ascus formation. Lepralioid ascus formation is associated with gymnocysts, cryptocysts and most umbonuloid frontal walls.

These findings suggest that many of the frontal wall morphologies found among ascophoran cheilostomes may have evolved independently. Higher taxa based exclusively on frontal wall type may be artificial.

Some aspects of the ultrastructure, development and functional significance of the frontal wall are discussed.

Number 69: 8 June 1979

A taxonomic revision of the Panesthiinae of the world. II. The genera *Salganea* Stål, *Microdina* Kirby and *Caeparia* Stål (Dictyoptera : Blattaria : Blaberidae).  
Louis M. Roth

*Abstract*

Descriptions, keys, and distribution are given for 42 species (20 new) and four subspecies (two new) of *Salganea*, and four species (two new) of *Caeparia*; the one known species of *Microdina* is redescribed. The shape of the anterior margin of the pronotum, and the shape of the male genital phallomere L2d are used as principal characters to erect five species-groups. Eleven species are not assigned to any species-group because of lack of males (either unknown or not present in collections) or because their L2d's are not characteristic of a particular group. A number of species, for the most part previously undescribed, have been confused with known taxa. *Salganea rugulata* Saussure, previously synonymized with and considered to be the adult of *Salganea conica* (Walker) is a valid species. *Salganea conica*, which was based on a nymph, is synonymized with *Salganea morio* (Burmeister). *Salganea amboinica* Brunner, previously synonymized with *Salganea nigrita* Stål, is considered a valid species. *Panesthia incerta* Brunner is placed in the genus *Salganea*. *Salganea* and *Microdina* are placed in the tribe Salganeini and *Caeparia* is assigned to the Caepariini.

Virtually nothing is known about the biology of *Salganea*, *Caeparia* and *Microdina*, other than that some of the species of *Salganea* live in logs, and presumably feed on wood.

Number 70: 27 June 1979

Contributions to the knowledge of Australian Cholevidae (Catoptidae auct. : Coleoptera). Peter Zwick

*Abstract*

The nomenclature, systematic position and diagnostic characters of the family are discussed and information on techniques of collection and study are given. Taxonomic and faunistic data for 43 of the 56 known Australian species of Cholevidae are presented, based on abundant previously unstudied material. The distinctive characters of most species are illustrated.

Only Agyrtodini and Nemadini occur in Australia. *Choleva macleayi* Blackburn is not a member of Anemadinae, but of Nemadinae : Nemadini. Agyrtodini are considered to be probably the sister-group of all other Cholevidae, instead of being a tribe of subfamily Nemadinae. A key to the Australian genera of Nemadini is provided.

After study of types, *Pseudonemadus nigricornis* Portevin is removed from the synonymy of *P. integer* (Portevin) and placed into the synonymy of *P. adelaidae* (Blackburn). The erroneous diagnosis of genus *Catoposchema* Jeannel is corrected and *C. semota* Szymczakowski is transferred to genus *Austronargus*.

The following new taxa are described: *Agyrtodes tasmanicus*, sp. nov.; *A. decoratus*, sp. nov.; *A. eucalypti*, sp. nov.; *A. crassus*, sp. nov.; *Pseudonemadus* (*P.*) *irregularis*, sp. nov.; *P.* (*P.*) *pusillus*, sp. nov.; *Leptonemadus*, subgen. nov. of *Pseudonemadus*, with type-species *P.* (*L.*) *transvestitus*, sp. nov., and *P.* (*L.*) *elegans*, sp. nov.; *Austrocholeva*, gen. nov., with type-species *A. platypus*, sp. nov., and *A. williamsi*, sp. nov.; *Austronargus*, gen. nov., with type-species *A. tidbinbillae*, sp. nov., and *A. semota* (Szymczakowski); *Austronemadus*, gen. nov. (type-species: *Choleva macleayi* Blackburn); *A. neboissi*, sp. nov.; *Paranemadus*, gen. nov., with type-species *P. striatopunctatus*, sp. nov.; *Rangiola* (?) *rubrifasciata*, sp. nov.; *Nargiotes procerus*, sp. nov.; *Nargomorphus crassicornis*, sp. nov.; *N. acutangulus*, sp. nov.; *N. catopoides*, sp. nov.; *N. ornativenter*, sp. nov.

Number 71 : 27 June 1979

Drosophilidae of Australia. III. *Leucophenga* (Insecta : Diptera). Ian R. Bock

*Abstract*

The Australian species of *Leucophenga* are reviewed. Redescriptions are provided for all species (several previously unknown from Australia are recorded for the first time), and eight additional species are described as new. The total fauna comprises 21 described species, plus several others for which adequate material is not yet available. Sexual dimorphism within the Australian *Leucophenga* fauna ranges from extreme to nil. *Leucophenga* species occur over much of the Australian continent, but appear to be absent from the south-west. The Australian *Leucophenga* fauna probably originated by immigration(s) from the north.

Number 72 : 27 June 1979

A revision of the Australian genus *Blackburnium* Boucomont (Coleoptera : Scarabaeidae : Geotrupinae). H. F. Howden

*Abstract*

The Australian genus *Blackburnium* Boucomont is revised; 30 species and subspecies are recognized and keyed. Fifteen previously proposed names are considered valid. Fifteen new taxa are described as follows: *acutipenne*, *ambiguum*, *angulicorne convexicolle*, *barretti*, *brooksi*, *canningense*, *centrale*, *cooperi*, *darwinense*, *harslettae*, *monteithi*, *neocavicolle*, *pauperculum*, *seticolle*, and *triceratops*. Head and pronotal characters and male genitalia are figured by means of scanning electron micrographs. Available biological information and distribution data are summarized following the species descriptions.