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A review of the New Zealand stick insects: new genera and synonymy, keys, and a catalogue

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Abstract

This catalogue lists all genera and species of stick insects recorded or described from New Zealand. Genera are listed in alphabetical order within established subfamilies and tribes. Some taxonomic changes are made, with major changes as follows: 2 new genera in the subfamily Pachymorphinae are erected - Niveaphasma (type species - Pachymorpha annulata Hutton 1898) and Asteliaphasma (type species - Spinotectarchus jucundus Salmon 1991). Mimarchus tarsatus Carl 1913 is reduced to synonymy under Argoarchus horridus (White 1846), resulting in Mimarchus Carl 1913 becoming a synonym of Argoarchus Hutton 1898. Lectotypes are designated for Argoarchus schauinslandii Brunner 1907, Citarchus interruptileineatus Brunner 1907, Citarchus laievicus Stål 1875, Micarchus parvulus Carl 1913, Micarchus tarsatus Carl 1913 and Pachymorpha bouvieri Brunner 1907. Keys to adults and eggs of genera are given. The bibliography includes all references containing descriptions of species recorded or described from New Zealand.

Introduction

Whilst studying the New Zealand fauna, it became evident that a detailed catalogue was necessary in order to fully evaluate the largely endemic fauna. Salmon’s 1991 book on the subject unfortunately omits certain references to the fauna. Brock (1997) made some taxonomic changes due to omissions in Salmon (1991). Further changes are made in this work.

All genera are endemic to New Zealand and have a close affinity within the subfamilies Pachymorphinae and Phasmataceae. Apart from the genus Pachymorpha Gray 1835, which may, despite genitalia differences, be close to Micarchus Carl 1913, the wingless New Zealand fauna are not closely related to Australian phasmids (catalogued in Balderson et al. 1998), which include many winged species. Although Citarchus Stål 1875 includes the Australian species C. longipes Brunner 1907, it belongs to another genus. Acanthoxyla Ulvarov 1944 is represented by 5 parthenogenetic species and no males have been found. Whilst unusual not to find males in a genus of several species, this is not unique in phasmids, which often reproduce parthenogenetically.

Phasmids are found throughout New Zealand (including outlying islands), in forests, scrublands and often in gardens (Salmon 1991). Salmon (pers. comm. 1997) believed that Argoarchus species may be extinct, however they are currently known to exist, having been found in a number of locations. Generally, most New Zealand species are quite common but, being nocturnal, may easily be overlooked.

Further Studies

Whilst Salmon’s book (1991) relies on morphological taxonomic principles, it is evident that a full evaluation of the fauna also requires genetic studies. The fauna is small enough to obtain meaningful results in a relatively short period of time. It is hoped that specialists will take up the challenge and undertake such studies, in order to clarify uncertain issues. For instance, are there 2 (or more) Argoarchus species, or only one? Is Citarchus tuberculatus a ‘form’ of C. hookeri? Are the 4 Tectarchus species from the Port Hills, Banks Peninsula, distinct species, and are Acanthoxyla species correctly classified? Undescribed species, including some from mountainous areas, are currently being researched.

Treatment

Species are listed in alphabetical order within genera. Reported synonyms and variations in spelling for each species are listed in order, with a brief explanation of each record.

After details on genera (including any synonymy), references to the original description of species and type details are given, followed by any subsequent references to the same species, along with a summary of the main area(s) covered in each paper. Our research on type and non-type material and culture stocks has resulted in the necessity to make taxonomic changes. Type material has been examined, (several types deposited in Wellington by Salmon were only briefly checked and loan of material was not permitted due to the fragility of the specimens). Species described by Salmon are well illustrated in the literature, although they are in need of genetic studies as mentioned above (Further Studies). Lectotypes have been designated for 6 species in this paper.

Keys to adults and eggs of genera are provided. Species are not illustrated, as excellent figures of adults and eggs may be found in Salmon’s 1991 book on New Zealand phasmids.

Unpublished work is included in the references section, but excluded from species listings. Parfitt (1975, 1980) and Buckley (1995) have completed projects on New Zealand phasmids without yet publishing results.
Abbreviations for Depositories

AMNZ  Auckland Institute and Museum, Auckland, New Zealand
BMNH  Natural History Museum, London, United Kingdom
CMNZ  Canterbury Museum, Christchurch, New Zealand
HLHD  Hessisches Landesmuseum, Darmstadt, Germany
MNHN  Museum National d’Histoire Naturelle, Paris, France
MHNG  Museum d’Histoire Naturelle, Geneva, Switzerland
MONZ  Museum of New Zealand, Wellington, New Zealand
NHMW  Naturhistorisches Museum, Wien, Austria
UMBB  Ubersee-Museum, Bremen, Germany
ZMHB  Museum fur Naturkunde der Humboldt Universitat, Berlin, Germany
ZMLH  Universitat von Hamburg, Hamburg, Germany

Key to adult females

1 Length of cerci slightly greater than length of anal segment ............................ 2
— Length of cerci distinctly shorter than length of anal segment .......................... 3
2 Cerci bluntly pointed; two black stripes beneath head .................................. 3
— Cerci with rounded tips; no black markings beneath head .............................. Clitarchus
3 Metatarsals of mid and hind limbs with a dorsal lobe ...................................... 5
— Metatarsals of mid and hind limbs lacking a dorsal lobe ................................... Argosarchus
4 Operculum reaching to or beyond tip of anal segment ................................. 5
— Operculum reaching up to half-way along anal segment ............................... 2
5 Head smooth or with a pair of short stout spines between the eyes ............... 6
— Numerous short slender spines across top of head ...................................... Micarchus
6 Operculum extends to, but not beyond, tip of anal segment ......................... 2
— Operculum extends well beyond tip of anal segment ................................... Spinotectarchus
7 Cerci extend beyond tip of the anal segment .............................................. 8
— Cerci do not reach the tip of the anal segment .......................................... Micarchus
8 Operculum with a pair of sub-apical, lateral carinae .................................... Niveaphasma n. gen.
— No lateral carinae on operculum ............................................................. Tectarchus

Key to adult males

1 Body length > 50 mm ............................................................................... 2
— Body length < 50 mm ............................................................................. 4
2 Thorax with several long, sharp spines .......................................... Argosarchus
— Thorax smooth or at most with a few tubercles ...................................... 3
3 Claspers each with a single tooth ......................................................... Pseudolarchus
— Claspers each with 4 to 5 teeth .............................................................. Clitarchus
4 Claspers extend into elongate tongue-like pinchers, each with a series of separate black teeth ......................................................... 5
— Each clasper with one or more teeth arising from a single black swelling ......................................................... 6
5 Dorsal abdominal spines situated on anterior margin of tergites ............. Micarchus
— Dorsal abdominal spines situated on posterior margin of tergites .......... 2
— Antennae reach base of fore tibiae ......................................................... Tectarchus
— Antennae shorter than base of fore tibiae ............................................. Spinotectarchus

Key to eggs

1 Spine-like setae present on at least anterior dorsal region of capsule ................... 2
— Setae completely absent ........................................................................ 3
2 Setae numerous over entire egg capsule length up to 2.2 times width ................. 2
— Setae restricted to anterior and dorsal regions; capsule length at least 2.5 times width ................................................................. Spinotectarchus
3 Capsule 1.7 or more times longer than broad .............................................. 4
— Capsule up to 1.6 times as long as broad .............................................. Clitarchus
4 Capsule up to 2.4 times longer than broad .............................................. 5
— Capsule at least 2.5 times longer than broad ...................................... 2
5 Keel prominent, arising steeply ahead of micropylar plate ................................ 6
— Keel rudimentary or absent .................................................................. 2
6 Capitulum elongate with a broadly domed tip ............................................. 7
— Capitulum very short, flatly conical with sharp tip ................................ 2
7 Margin between keel and main capsule defined by small scale-like plates. .......... 2
— Scale-like plates absent ...................................................................... Argosarchus

Diapheromeridae, Pachyphorinae, Pachyphorini
Niveaphasma new genus

Niveaphasma is erected for a species recorded from the far south and far north of South Island (Southland, Otago and Nelson provinces), from sea level up to 1360 m, although part of the range may not be accurate (undescribed taxa are being researched). The undescribed species which Salmon (1991) mistakenly included in his notes on Mimarchus tarsatus Carl, is excluded pending further investigation. The tongue-like claspers of the male suggest Niveaphasma is most closely allied to Micarchus. Dorsal abdominal spines are situated on the posterior margin of tergites in Niveaphasma, but on the anterior margin in Micarchus. Females are distinguished by the shorter cerci in Micarchus.

Diagnosis.—Female: Body stout, length 49 to 56 mm, wingless, median segment (= first abdominal segment) completely fused with metathorax. Head with pair of short stout spines between eyes. Antennae slightly shorter to slightly longer than fore femora. Whole body lightly granulated, thoracic spines absent or rudimentary. Abdomen with pair of small to large spines on posterior margin of tergites 5 to 8, fifth segment commonly with expanded lateral lobes. Operculum boat-shaped, reaching approximately half length of anal segment. End of anal segment truncated or slightly rounded. Cerci short, reaching just beyond tip of anal segment. Male short, length ca 40 mm, as for female except slenderer and less granulated, spines often rudimentary. Claspers extended into stout tongue-like pinchers which extend well beyond abdomen, each clasper with a series of several black teeth along inner margin. Cerci elongate, of similar length to claspers. Eggelongate, cylindrical, finely pitted and often lightly rugose, sometimes with a rudimentary keel; capitulum elongate-conical.
Etymology.—From the Latin niveus (snow, snowy), plus the stem word for the order Phasmda. The intended meaning (‘stick insects of the snow’) alludes to the fact that many populations occur in alpine habitats where they must contend with regular snow cover.

Diaperomeriidae, Pachymorphinae, Hemipachymorphini

**Asteliaphasma** new genus

**Type species.** Spinotectarchus jucundus Salmon, here designated.

Asteliaphasma is represented by two little-known species found in forest on North Island (collected up to 900 m above sea level). The genus is distinguished from the closely related Spinotectarchus Salmon by its more elongate female form. Eggs are also more elongate in Asteliaphasma, with setae restricted to anterior and dorsal regions of the capsule, unlike Spinotectarchus, where setae are numerous over the entire egg. Asteliaphasma may be a sister-genus of Niveaphasma, with which it shares similar (though more slender) adult morphology, and also eggs (although setae are absent in Niveaphasma).

However, males and/or genetic data would be required to confirm such a relationship.

**Diagnosis.**—Only females known. Body slender (64 to 88 mm), wingless, median section completely fused with metathorax. Head with pair of short spines between eyes. Antenna slightly shorter than fore femora. Whole body lightly granulated, sometimes with a few tubules set present. Fifth abdomen segment sometimes with small lateral lobes. Operculum boat-shaped, reaching to tip of anal segment. End of anal segment slightly rounded or with a short median notch. Cerci short, reaching just beyond tip of anal segment. Egg elongate, cylindrical, finely pitted and lightly rugose with rudimentary keel, anterior and dorsal regions with numerous minute spine-like setae; capitulum elongate-conical.

Etymology.—From the plant genus Astelia (Lilacae) and the stem word for the order Phasmda. Asteliaphasma species are so far known only from Astelia species and the Astelia-like Freycinetia banksii (Pandanaceae).

**CATALOGUE OF SPECIES**

**Diaperomeriidae, Pachymorphinae, Pachymorphini**

**Mircarchus** Carl 1913

**Type species.** *Mircarchus parvulus* Carl by monotypy.

**Mircarchus**; Salmon 1991: 88 (Synonym of Pachymorpha Gray 1835; incorrectly listing Kaup as author of the genus Mircarchus)

*Mircarchus*; Zompro and Brock [in press]. Revised status.

**hystriculus** (Westwood) 1859: 16, pl. 1: 4 (Pachymorpha hystriculae). Holotype $\varphi$, New Zealand (BMNH).

**Pachymorpha hystriculae** Westwood; Hutton 1899: 52 (Returned to *Pachymorpha*); Tepper 1902: 279 (Catalog); Kirby 1904: 342 (Catalog); Brunner 1907: 214 (Redescription); Wise 1977: 51 (Catalog of NZ species); Salmon 1991: 88 (Taxonomy [distribution extended to Australia and Papua New Guinea] but considered unlikely, as no material has been traced during extensive studies on the Australian phasmids); male; egg; figs.

**Bacillus hystriculae** (Westwood); Hutton 1881: 75 (Transfer to Bacillus; Catalog).

**Mircarchus hystriculus** [sic] (Westwood); Bandsma and Brandt 1963: 21, pl. 44 (photo of mating pair).

**Mircarchus hystriculus** (Westwood); Zompro and Brock [in press] (Transfer to Mircarchus).

**Mircarchus parvulus** Carl 1913: 24, pl. 1: 12-13. Lectotype $\delta$, New Zealand: Greythorn, Helms, Ref. no. 602/66, here designated. Paratypes $\delta$, New Zealand: Heteranga [Heretaunga on label], 623.5 (MHNZ). (Synonymized by Salmon 1991). [This lectotype designation will guarantee the stability of the name]

**Mircarchus parvulus** Carl; Wise 1977: 51 (Catalog of NZ species); Salmon 1991: 88 (Synonym of Pachymorpha hystriculae; egg; figs).

**Niveaphasma** Jewell & Brock new genus

**Type species.** Pachymorpha annulata Hutton, by original designation.


**Pachymorpha annulata** Hutton; 1899: 53 (Taxonomy); Tepper 1902: 279 (Catalog); Kirby 1904: 342 (Catalog); Wise 1977: 51 (Catalog of NZ species); Nicholls et al. 1998: 30 (Type data).

**Mimarchus annulatus** (Hutton); Salmon 1991: 96 (Transfer to Mimarchus; male; egg; figs); Brock 1997: 21 (Taxonomy).

**Pachymorpha bouvieri** Brunner 1907: 214. Lectotype $\varphi$, New Zealand: Nelson 1876, leg. Filhol, “Mus. Paris” (NHMW, No. 378 – clearly part of the series originally obtained from Paris for examination), here designated. Paratypes: 3 $\delta$, 3 $\varphi$, New Zealand: Invercargill, leg. Burr; $\delta, \varphi$, New Zealand: Nelson 1876, leg. Filhol, “Mus. Paris”; $\varphi$, no locality, labelled n.s.p. (NHMW, No. 378); 2 $\varphi$, New Zealand: Nelson, Filhol, 1878 (MNHN). (Synonymized by Brock 1997). [This lectotype designation will guarantee the stability of the existing synonymy – see below]

[3 further $\varphi$ in NHMW without labels are not regarded as part of the type series]. Note: it is probable that specimens from Invercargill belong to an undescribed species (in progress).

**Pachymorpha bouvieri** Brunner; Wise 1977: 51 (Catalog of NZ species); Brock 1997: 22 (Synonym of Mimarchus annulatus); Brock 1998: 19 (Type data; as synonym of Mimarchus annulatus).

Diaperomeriidae, Pachymorphinae, Hemipachymorphini

**Asteliaphasma** Jewell & Brock new genus

**Type species.** Spinotectarchus jucundus Salmon, by original designation.

**jucunda** (Salmon), 1991: 116, figs (Spinotectarchus jucundus).

Holotype $\varphi$, New Zealand: Waipoua, Kauri Forest, Northland, 22.iii.1945, J.T. Salmon (MONZ).

Paratypes: 3 $\varphi, \varphi$, New Zealand: Waipoua, Kauri Forest, Northland, J.T. Salmon; Mt Te Aroha, J.T. Salmon (MONZ). New combination.

**Tectarchus** Salmon 1954

Type species.— *Tectarchus diversus* Salmon, by original designation.

*Tectarchus* Salmon 1991: 100.


*Pachymorpha huttoni* Brunner; Wise 1977: 51 (Catalog of NZ species); Brock 1997: 21 (Transfer to *Tectarchus*); Brock 1998: 33 (Type data).


*Pachymorpha finitima* Brunner; Wise 1977: 51 (Catalog of NZ species); Brock 1997: 21 (Synonym of *Tectarchus huttoni*); Brock 1998: 28 (Type data).

*Tectarchus diversus* Salmon 1954: 163, pl. 7: 1-2; pl. 8: 1-2, 4, 8, pl. 9: 1, 5. Holotype ♀, New Zealand, Johnston's Hill, Karori, Wellington, 3.vi.1944, J.T. Salmon (MONZ). Paratypes: ♂ ♂ and ♀ ♀ as follows: Akatarawa Saddle; Balloon Saddle, Mt. Arthur Tableland; Days Bay; Johnston's Hill, Karori, Wellington; Kennedy's Bush, Banks Peninsula; Leslie Valley; Mt. Ross, Wairarapa; Miramar Reserve, Wellington; Orongorongo; Parematia; Picton; Silverstream, South Karori; Wilton's Bush, Wellington (MONZ); Upper Maitai, Nelson (coll. G. Ramsay). (Synonymized by Brock, 1997).

*Tectarchus diversus* Salmon; Salmon 1991: 100 (Taxonomy; egg figs); Wise 1977: 51 (Catalog of NZ species); Brock 1997: 21 (Synonym of *Tectarchus huttoni*).


*Tectarchus ovobessus* Salmon; Wise 1977: 51 (Catalog of NZ species); Salmon 1991: 106 (Taxonomy; egg figs).

*salebrosus* (Hutton) 1899: 52 (*Pachymorpha salebrosa*). Holotype ♀, New Zealand: Dunedin (CMNZ), (new name for *Pachymorpha hystriculosa*; Hutton 1898: 162 [not of Westwood 1859]). New combination (on basis of comparison of genitalia).

*Pachymorpha salebrosa* Hutton; Tepper 1902: 279 (Catalog); Kirby 1904: 342 (Catalog); Brunner 1907: 215 (Redescription); Wise 1977: 51 (Catalog of NZ species); Nicholls et al. 1998: 30 (Type data).

*Mimarchus salebrosus* (Hutton); Salmon 1991: 94 (Transfer to *Mimarchus*; male; egg figs).

*Tectarchus tuberculatus* Salmon 1954: 167, pl. 7: 5-6, pl. 8: 7, 10, 12, pl. 9: 4, 7. Holotype ♀, New Zealand, Price's Bush, Banks Peninsula, 10.i.1944, J.T. Salmon (MONZ). Paratypes:


*Tectarchus tuberculatus* Salmon; Wise 1977: 51 (Catalog of NZ species); Salmon 1991: 94 (Synonym of *Mimarchus salebrosus*).


*Tectarchus semilobatus* Salmon; Wise 1977: 51 (Catalog of NZ species); Salmon 1991: 108 (Taxonomy; egg figs).

**Spinotectarchus** Salmon 1991

Type species.— *Pachymorpha acornuta* Hutton, by original designation.

*Spinotectarchus* Salmon 1991: 36, 111.

*acornuts* (Hutton) 1899: 52 (*Pachymorpha acornuta*). Holotype ♀, New Zealand: Great Barrier Island (CMNZ – in alcohol).

*Pachymorpha acornuta* Hutton; Tepper 1902: 279 (Catalog); Kirby 1904: 342; Brunner 1907: 214 (Redescription); Wise, 1977: 51 (Catalog of NZ species); Nicholls et al. 1998: 30 (Type data – syntype ♂ mentioned. Hutton stated 'male unknown', but did refer to a nymph 'probably belonging to this species').

*Spinotectarchus acornuts* (Hutton); Salmon 1991: 111 (Transfer to *Spinotectarchus*; egg figs).

**Phasmatidae, Phasmatinæ, Acanthosylini**

**Acanthosyla** Uvarov 1944

Type species.— *Acanthoderus prasinus* Westwood, by indication.

*Acanthosyla* Uvarov 1944: 95 (New name for the preoccupied *Macracanatha* Kirby).


*fasciata* (Hutton) 1899: 58 (*Acanthoderus*). Holotype ♀ nymph, New Zealand: Great Barrier Island (CMNZ – in alcohol). Revised status. *Acanthoderus fasciatus* Hutton; Brunner 1907: 239 (Redescription); Günter 1931: 756 (Synonym of *Macracanatha prasinus*); Salmon 1955c: 1153 (Synonym of *Acanthosyla sutera*); Wise 1977: 50 (Catalog of NZ species; as synonym of *Acanthosyla sutera*); Nicholls et al. 1998: 30 (Type data; listed as ♂).

*Macracanatha fasciata* (Hutton); Kirby 1904: 340 (Transfer to *Macracanatha*).

*Acanthosyla fasciata* (Hutton); Uvarov 1944: 94 (Transfer to *Acanthosyla*); Salmon 1991: 69 (As synonym of *Acanthosyla sutera*).

geisovii (Kaup), 1866: 578 (Bacillus). Holotype ♀ nymph, New Zealand (HLDH). Bacillus geisovii Kaup; Hutton 1881: 75 (Catalog); Zompro 2001: 134, fig. 7 (Type data). [Citharchus geisovii; Hutton 1898: 165 (Transfer to Citharchus. Refers to  ♀ – see Hutton (1899): specimen misidentified and given new name of Acanthodorus suteri )].

Acanthodorus geisovii (Kaup); Hutton 1899: 57 (Returned to Acanthodorus); Tepper 1902: 285 (Catalog); Brunner 1907: 239 (Redescription).

Macracantha geisovii (Kaup); Kirby 1904: 340 (Transfer to Macracantha); Günther 1931: 756 (Synonym of Macracantha prasina).

Acanthochara geisovii (Kaup); Uvarov 1944: 94 (Transfer to Acanthochara; British species cited as prasina); Salmon 1955c: 1154, figs 6, 16 (Taxonomy); Salmon 1955a: 1190 (Notes - parthenogenesis); Salmon 1955b: 79 (Notes; figs); Salmon 1970: 70 (Notes); Sharrell 1971: 126, fig. (Notes); Wise 1977: 49 (Catalog of NZ species); Mantovani & Scal 1987: 141 (Egg. comparison with other Acanthochara species); Brock 1999: 78, 132, pl. 21b, 22a-b (Notes in Britain and New Zealand).

Acanthochara geisovii (Kaup) [sic]; Bandsma & Brandt 1963: 21, pl. 40, 46 (photos).

Acanthochara prasina (misidentification); Ragge 1965: 38, pl. 1: 1 (In Britain; egg).

Acanthochara prasina geisovii (Kaup); Salmon 1991: 71, figs (Subspecies of prasina).


Paratypes ♀, New Zealand: Karori, Wellington (MONZ).

Acanthochara huttoni Salmon; Wise 1977: 49 (Catalog of NZ species); Brock 1999: 132.

Acanthochara prasina huttoni Salmon; Salmon 1991: 74 (Egg; figs).


Acanthochara inermis Salmon; Wise 1977: 49 (Catalog of NZ species); Brock 1987: 129, figs 3, 4C (First record in Britain; correction of misidentification as Citharchus hookeri; taxonomic notes; egg); Brock 1999: 132.

Acanthochara prasina inermis Salmon; Salmon 1991: 64 (Subspecies of prasina; figs).


Paratypes: ♀ ♂, New Zealand: Johnson’s Hill, Karori; Kilbirnie, Wellington; Makino; Taupharenikuau Valley; Wairarapa; Wairongomai; Wilton’s Bush (MONZ).

Acanthochara intermedia Salmon; Wise 1977: 50 (Catalog of NZ species); Brock 1999: 132.

Acanthochara prasina intermedia Salmon; Salmon 1991: 62 (Subspecies of prasina; egg; figs).

prasina (Westwood), 1859: 49, pl. 3: 2 (Acanthodorus prasinus).

Holotype ♀, New Zealand (BMNH).

Acanthodorus prasinus Westwood; Hutton 1881: 77 (Catalog); Hutton 1899: 56 (Returned to Acanthodorus); Brunner 1907: 239 (Redescription).

Citharchus prasinus (Westwood); Hutton 1898: 164 (Transfer to Citharchus).

Macracantha prasina (Westwood) [sic]; Kirby 1904: 340 (Transfer to Macracantha).

Macracantha prasina (Westwood); Günther 1931: 756, 766 (Taxonomic notes).

Acanthochara prasina (Westwood); Uvarov 1944: 95 (Transfer to Acanthochara); Salmon 1955c: 1149, 1152 (Revision; figs); Salmon 1955a: 1190 (Notes - parthenogenesis); Salmon 1955b: 79 (Notes; figs); Salmon 1970: 70 (Notes); Sharrell 1971: 127, pl. 173 (Notes); Wise 1977: 50 (Catalog of NZ species); Jackson 1982: 50 (Sketches; notes); Brock 1987: 125 (Taxonomic notes); Bragg 1988: 11 (Rearing notes); Salmon 1991: 58 (Taxonomic notes; egg; figs); Brock 1999: 132 (Notes).


B[acillus] filiformis Colenso; Hutton 1899: 59 (Synonym of Argosarchus horridus); Kirby 1904: 340 (As syn. of Argosarchus horridus).

Citharchus filiformis (Colenso); Hutton 1898: 164 (Transferto Citharchus); Wise 1977: 50 (As syn. of Argosarchus horridus); Wise 1977: 50 (As syn. of Argosarchus horridus); Salmon 1991: 58 (Synonym of Acanthochara prasina).


Bacillus atrotauricus Colenso; Kirby 1904: 340 (As syn. of Macracantha prasina).

Citharchus atrotauricus (Colenso); Hutton 1889: 164 (Transfer to Citharchus); Hutton 1899: 56 (Synonym of Acanthodorus prasinus); Wise 1977: 50 (As syn. of Acanthochara prasina); Salmon 1991: 58 (Synonym of Acanthochara prasina [Also listed as syn. of Argosarchus spiniger, p. 531]).


Acanthochara speciosa Salmon; Wise 1977: 50 (Catalog of NZ species); Brock 1999: 132.

Acanthochara prasina speciosa Salmon; Salmon 1991: 67 (Subspecies of prasina; egg; figs).

suteri (Hutton) 1899: 56 (Acanthodorus), Holotype ♀, New Zealand: Morton, near Dunedin (see Salmon 1955c: 1154 – originally “Marton, near Wanganui”, but Type locality in Canterbury Museum library volume later corrected by Hutton) (CMNZ – in alcohol) (new name for Bacillus geisovii; Hutton 1898: 165 [not of Kaup]).

Acanthodorus suteri Hutton; Brunner 1907: 239 (Synonym of Acanthodorus geisovii); Günther 1931: 756 (Synonym of Macracantha prasina); Nicholls et al. 1998: 30 (Type data). Macracantha suteri (Hutton); Kirby 1904: 340 (Transfer to Macracantha).
Acanthoxyla suteri (Hutton); Uvarov 1944: 94 (Transfer to Acanthoxyla); Salmon 1955c: 1153, figs 1, 8, 12 (Taxonomy); Wise 1977: 50 (Catalog of NZ species); Brock 1999: 132. Acanthoxyla prasina suteri (Hutton); Salmon 1991: 69 (Subspecies of prasina; egg, figs).


**Argosarchus** Hutton 1898

_Type species._ — _Phasma_ (Acanthoderus) horridus_ White by subsequent designation of Kirby 1904: 340. (Kirby designated Species No. 1, which he listed as _Phasma (Acanthoderus) spinger_ White, _horridus_ listed as a synonym; _horridus_ (not spinger) was listed as one of the species by Hutton, hence it is the type species).

**Argosarchus** Hutton 1898: 165.

_Argosarchus_ Hutton 1899: 58; Kirby 1904: 340; Brunner 1907: 237; Wise 1977: 50; Salmon 1991: 48. **Mimarchus** Carl 1913: 22. Type species: _Mimarchus tarsatus_ Carl, by monotypy _new synonym_ [examination of the lectotype of _tarsatus_, shows it to be a nymph of _Argosarchus horridus_, the type species of _Argosarchus_]


**horridus** (White) 1846: 24, pl. 5: 3 (_Phasma_ (Acanthoderus)). Holotype ♂, New Zealand (BMNH). _Acanthoderus horridus_ (White); Westwood 1859: 49 (Redescription); Hutton 1881: 76 (Catalog); Hudson 1892: 110, pl. 19.

_Argosarchus horridus_ (White); Hutton 1898: 165 (Transfer to _Argosarchus_); Hutton 1899: 59 [part] [Notes. Salmon 1991: 48] regards Hutton’s _Argosarchus spinger_ [not of White] as _horridus_; Kirby 1904: 340 (As syn. of Argosarchus spinger); Brunner 1907: 238 (Redescription); Günther 1931: 766 [Notes]; Wise 1977: 50 (Catalog of NZ species); Salmon 1991: 48 (Desc. / clarification of ♂, egg, figs). _Bacillus gerhardii_ Kaup 1866: 577. Holotype ♂ nymph [not ♂], New Zealand [possibly nr. Invercargill, G. Müller] [HLDH]. (Synonymized by Hutton 1899: 59). _Bacillus gerhardii_ Kaup; Hutton 1881: 75 (Catalog); Hutton 1899: 59 (Synonym of _Argosarchus horridus_ - ♂ listed); Kirby 1904: 340 (As syn. of _Argosarchus horridus_); Zompro 2001: 134, fig. 8 (Type data).

_Argosarchus gerhardii_ (Kaup); Hutton 1898: 166 (Transfer to _Argosarchus_); Salmon 1991: 48 (As syn. of _Argosarchus horridus_).


_Argosarchus sylvaticus_ (Colenso); Hutton 1898: 166 (Transfer to _Argosarchus_); Kirby 1904: 341 (Catalog); Wise 1977: 50 (Catalog of NZ species); Salmon 1991: 48 (Synonym of _Argosarchus horridus_).

_Argosarchus schauinslandi_ Brunner 1907: 238, pl. 10: 3. Lectotype ♂, New Zealand, Greymouth, Helms, Ref. no. 602/66 (MHNG), here designated. Paralecotypes: ♂, ♀ nymphs, New Zealand: Gomolka (ZMHB), ♂, New Zealand: Chatham Is. (not traced in UMBB, believed lost). (Synonymized by Salmon 1991: 48). [This lectotype designation shall guarantee the stability of the name; Brunner’s figure resembles the selected specimen]

_Argosarchus schauinslandi_ Brunner; Günther 1931: 766 (Notes); Salmon 1991: 48 (Synonym of _Argosarchus horridus_); Dugdale & Emerson 1996: 98 (Mention from Chatham Is.). _Argosarchus schauinslandi_ [sic]; Salmon, 1970: 70 (Brief note).

_Mimarchus tarsatus_ Carl 1913: 23. Lectotype ♀ nymph, New Zealand: Greymouth, Blue Cliffs, Helms, Ref. no. 602/66 (MHNG), here designated. Paralecotypes: ♀ nymph, New Zealand: Blue Cliffs, 623.5 [immature specimen of _Argosarchus horridus_ White, det. J.T. Salmon 1946]; ♀ nymph, New Zealand, Marcell. _new synonym_ [This lectotype designation shall guarantee the stability of the name/in accordance with the synonymy proposed]

_Mimarchus tarsatus_ Carl; Wise 1977: 51 (Catalog of NZ species); Salmon 1991: 92 [in part] (Taxonomy; male; egg; figs [but misidentification of Carl’s species]).

_spinger_ (White) 1846: 24 (_Phasma_ (Acanthoderus)). Holotype ♂, New Zealand (BMNH). _Acanthoderus spinger_ (White); Westwood 1859: 48; Hutton 1881: 75 (Catalog); Hutton 1899: 59 [not of White] ([Synonym of _Argosarchus horridus_].)

_Cliarchus spinger_ (White); Hutton 1898: 164 (Transfer to _Cliarchus_).


Notes on genus: The exact specific relationship is being studied by rearing specimens from different localities and checking variation within species and by comparing them with type material. So far, results indicate some geographical variation and our preliminary view is that the type of _spinger_ is almost certainly the male of _horridus_, confirming Hutton’s view as first reviser (1899); hence _horridus_ would take priority. The synonymy above follows Salmon (1991), but may have to be revised once additional studies have been made.
Clistarchus Stål 1875

Type species.—Clistarchus laeviusculus Stål, by subsequent designation of Kirby 1904: 339.

Clistarchus Stål 1875: 34, 82.

hookeri (White) 1846: 24, pl. 6: 6 (Phasme). Holotype ♂, New Zealand (BMNH).

Bacillus hookeri (White); Westwood 1859: 14 (Transfer to Bacillus); Hutton 1881: 74 (Catalog).

Clistarchus hookeri (White): Stål 1875: 83 (Transfer to Clistarchus); Hutton 1898: 163; Hutton 1899: 54 (Male); Tepper, 1902: 280 (Catalog); Kirby 1904: 339 (Catalog); Brunner 1907: 236 (Redescription); Günther 1931: 756, 765 (Notes); Salmon 1955a: 119 (Notes - parthenogenesis); Salmon 1955b: 78 (Notes, figs); Ragge 1965: 39, pl. 1: 2 (In Britain; egg); Stringer 1969: 41 (Embryology); Stringer 1970: 85 (Taxonomy, nymphs and adults); Sharrell 1971: 126, pl. 172 (Notes); Wise 1977: 51 (Catalog of NZ species); Salmon 1991: 82 (Taxonomy, figs); Brock 1999: 80, 132, pl. 23a-b (Notes in Britain and New Zealand).

Clistarchus laeviusculus Stål 1875: 82. Lectotype ♂, New Zealand, Boucard (NHMW), here designated. Paralecotypes: 3 ♀, New Zealand, Boucard (NHMW). (Synonymized by Ragge 1965). [This lectotype designation will guarantee the stability of the name]

Clistarchus laeviusculus Stål; Hutton 1898: 163; Hutton 1899: 55; Kirby 1904: 339 (Catalog); Brunner 1907: 236 (Redescription); Ragge 1965: 39 (Synonym of Clistarchus hookeri); Harz & Kaltenbach 1976: 31 (As synonym of Clistarchus hookeri); Wise 1977: 51 (Catalog of NZ species); Salmon 1991: 82 (As synonym of Clistarchus hookeri); Brock 1998: 38 (Type data; as synonym of Clistarchus hookeri)

Bacillus colorus Colenso 1885: 151. Syntypes ♂, New Zealand: Pourerere, E. Coast, near Blackhead, Waipawa County, 1884, W. Scott; ♂, ♀, New Zealand: same data (not traced – lost). (Synonymized by Brunner 1907).

Clistarchus colorus (Colenso); Hutton 1898: 163 (Transfer to Clistarchus); Hutton 1899: 55 (Taxonomy); Kirby 1904: 339 (Catalog); Brunner 1907: 237 (Synonym of Clistarchus hookeri); Wise 1977: 51 (Catalog of NZ species); Salmon 1991: 82 (As synonym of Clistarchus hookeri).


Bacillus minimus Colenso; Hutton 1898: 166 (Uncertain status).

Bacillus minimus [sic] Colenso; Salmon 1991: 82 (Synonym of Clistarchus hookeri).

Argosarchus minimus (Colenso); Kirby 1904: 341 (Transfer to Argosarchus); Caudell 1927: 20; Wise 1977: 50 (Catalog of NZ species).


Clistarchus reductus Hutton; Kirby 1904: 339 (Catalog); Brunner 1907: 237 (Redescription); Günther 1931: 756, 765 (Synonym of Clistarchus hookeri); Wise 1977: 51 (Catalog of NZ species).


Pseudoclistarchus Salmon 1991

Type species.—Acanthoxyla senta Salmon, by original designation.


Pseudoclistarchus senta; Salmon 1991: 77 (Transfer to Pseudoclistarchus; egg, figs [egg on p. 79 = duplication of Clistarchus tuberculatus]).

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References

In order to allow a full account of the literature on New Zealand phasmids, general publications such as Miller and Cumber (on eggs) are included, although as species are generally not mentioned, they are not cited above. Minor newspaper reports are omitted.


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