

**Fauna of  
New Zealand**  
Ko te Aitanga Pepeke  
o Aotearoa

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**Fauna of New Zealand  
Ko te Aitanga Pepeke o Aotearoa**

**Number / Nama 44**

**Lycosidae**  
**(Arachnida: Araneae)**

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**Manaaki  
Whenua  
P R E S S**

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2002**

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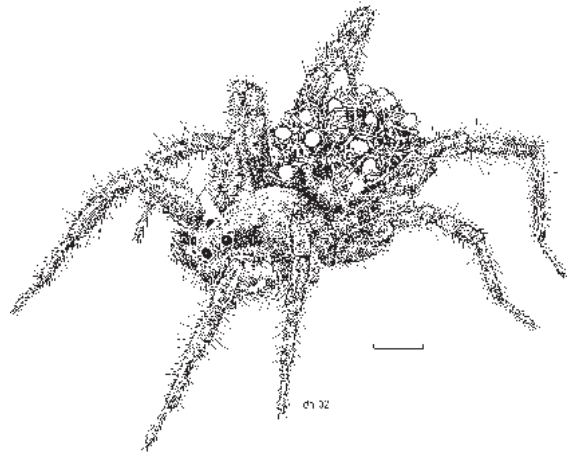
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Front cover: *Anoteropsis hilaris* (L. Koch) (Illustrator: D. W. Helmore).

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## POPULAR SUMMARY

## HE WHAKARĀPOPOTOTANGA

Class **Arachnida**Order **Araneae**Family **Lycosidae****Wolf spiders**

The family Lycosidae has more than 2200 known species that are found worldwide, especially in open habitats. Wolf spiders are easily recognised by the carrying of the spherical egg sac behind the adult female and the subsequent transport of the young on her abdomen. Most are well camouflaged in their surroundings and are often seen hunting during the daytime. They do not build a web for prey capture, except for some ancestral species not found in New Zealand. Wolf spiders are amongst the most numerous invertebrate predators in many environments, especially in open habitats, and are viewed as beneficial predators.

Twenty-seven species of wolf spider are found in New Zealand. Two of these have been introduced, probably naturally – one is found throughout Australia and one is found throughout the South Pacific. The remaining twenty-five species are endemic to New Zealand. The endemic species in the genera *Allotrochosina* and *Artoria* have related species in Australia. *Anoteropsis* and *Notocosa* are believed to be genera endemic to New Zealand, with their most closely related genera in Australia.

Like most lycosid species, New Zealand wolf spiders are habitat specific and are found in mountain screes, riverbeds, beaches, tussock grasslands, forest, swamps and marshes. The most commonly seen species is *Anoteropsis hilaris*, which is found in grasslands throughout New Zealand including human modified habitats such as gardens and pasture. This species is thought to be a beneficial predator of insect pests and has been investigated as a possible indicator of insecticide contamination.

**Illustration / Whakaahua:** *Anoteropsis hilaris* (L. Koch), female with spiderlings on her abdomen (Illustrator / Kaiwhakaahua: D. W. Helmore).

**Ngā pūngāwerewere wuruhi**

He nui ake i te 2200 ngā momo o te whānau Lycosidae e mōhiotia ana puta noa i te ao, ā, kei ngā ripoinga māraakerake te nuinga. Ko tētahi tino tohu o te pūngāwerewere wuruhi, ko te mau mai o te kahu hua porotaka ki muri o te uwaha pakeke, ko ia anō tērā ki te waha i ana punua ina whānau mai. He kiri hunahuna te nuinga o ngā mea nei, engari tērā tonu ka kitea i a rātou e kimi kai ana i te awatea. Kāore ngā pūngāwerewere nei e hanga māwhaiwhai hei hopu kai, hāunga anō ētahi momo pūtaka i tāwāhi. Arā ētahi taiao e noho ai ko ngā pūngāwerewere wuruhi tētahi ōrau nui o ngā konihi tuarā-kore katoa o taua taiao. Me kōrero tēnei āhua i ngā takiwā māraakerake. Heoi anō, he konihi pai te wuruhi nei, ki tā te tangata titiro.

E 27 ngā momo pūngāwerewere wuruhi e kitea ana i Aotearoa. E rua i tau māori mai i whenua kē – ko tētahi e noho ana ki ngā tōpito katoa o Ahitereiria, ko tētahi, kei te whānuitanga atu o Te Moana-nui-a-Kiwa. Nō Aotearoa taketake ake ērā atu momo e 25. Ko ētahi o ēnei, nō te puninga *Allotrochosina* me te puninga *Artoria*, ā, he whanaunga ō rātou i Ahitereiria. E whakapaetia ana nō konei anō, taketake ake, te puninga *Anoteropsis* tae atu ki te *Notocosa*, ā, ko ngā uri tata o ērā, kei Ahitereiria anō.

Pērā anō i te nuinga o ngā momo lycosid, noho ai tēnā me tēnā momo pūngāwerewere wuruhi o Aotearoa ki tōna

(haere tonu)

Contributor **Cor Vink** was born and educated in Christchurch, New Zealand. He recently completed a Ph.D. at Lincoln University on the taxonomy and systematics of New Zealand Lycosidae of which this *Fauna* contribution formed a major part. Cor is particularly interested in the taxonomy and systematics (both morphological and molecular) of wolf spiders but has also published work on the ecology of spiders and the taxonomy of New Zealand spiders in other families including Oxyopidae and Stiphidiidae.



ake ripoiinga whāiti. Anei ētahi o aua ripoiinga: ngā tahataha kirikiri o ngā maunga, te whaiawa, te tahamoana, ngā raorao pātītī taranui, te ngahere, ngā rēpo, me ngā whenua tāpotupotu. Ko te momo ka tino kitea, ko te *Anoteropsis hilaris*. Arā tana kāinga kei ngā whenua pātītī huri i te motu, tae atu ki ngā ripoiinga kua rawekehia e te ringa tangata (hei tauira, ngā māra me ngā pātītī ahuhenua). E whakaarotia ana he konihi pai tēnei, i te mea ka pau i a ia ētahi pepeke kino te kai. Kua rangahautia ana anō hoki tana noho hei waitohu o ngā wāhi kua kinongia e te tāoke patungārara.

I whānau mai te kaituhi, a **Cor Vink**, i Ōtautahi, ā, i reira anō e kura ana. Nō nā tata nei i tutuki ai tana tohu kairangi i Te Whare Wānaka o Aoraki, e tiro whāiti ana ki te whakapapa o ngā Lycosidae o Aotearoa. Ko tana tuhinga i tēnei putanga o te pukapuka nei tētahi wāhanga nui o taua rangahautanga. He tino kaupapa ki a Cor te whakapapa (taha hanga, taha rāpoi-ngota) o ngā pūngāwerewere wuruhi, otirā, kua puta anō i a ia ētahi kōrero mō te noho tahi a te pūngāwerewere ki tana ripoiinga, me te whakapapa o ngā pūngāwerewere o ētahi atu whānau, tae atu ki ngā Oxyopidae me ngā Stiphidiidae.

Translation by **H. Jacob**  
Huatau Consultants, Levin

## DEDICATION

This revision is dedicated to the memory of Dr Raymond R. Forster (1922-2000), whose wisdom, friendship, and guidance were a key part of my development as an arachnologist. The incredible amount of material collected by Ray was a cornerstone to this revision, and he had collected specimens of all but one of the species described here. Although Ray did not revise the New Zealand Lycosidae, it was apparent, by the publications that do mention wolf spiders (Forster 1975, Forster & Forster 1973, 1999) and by the labels in the Otago Museum lycosid collection, that Ray had a deep understanding of the taxonomy of the family. His numerous publications on the taxonomy and systematics of spiders, both of New Zealand and abroad (see Patrick *et al.* 2000) are an inspiration to me and to other arachnologists.

## ABSTRACT

The 27 species of Lycosidae found in New Zealand are revised with one new genus and 14 new species. *Allotrochosina* Roewer, 1960 includes *A. schauinslandi* Simon, 1889. *Anoteropsis* L. Koch, 1878 includes: *A. adumbrata* (Urquhart, 1887), *A. aerescens* (Goyen, 1887) (= *Lycosa maura* Urquhart, 1892 and *Lycosa albovestita* Dalmas, 1917, new synonymies), *A. alpina* sp. nov., *A. arenivaga* (Dalmas, 1917), *A. blesti* sp. nov., *A. canescens* (Goyen, 1887), *A. cantuaria* sp. nov., *A. flavescens* L. Koch, 1878, *A. forsteri* sp. nov., *A. hallae* sp. nov., *A. hilaris* (L. Koch, 1877) (= *Lycosa umbrata* L. Koch, 1877, *Pardosa vicaria* L. Koch, 1877, *Lycosa taylora* Goyen, 1887, *Lycosa tremula* Simon, 1899, *Lycosa virgatella* Roewer, 1951, and *Lycosa subantarctica* Forster, 1964, new synonymies), *A. insularis* sp. nov., *A. lacustris* sp. nov., *A. litoralis* sp. nov., *A. montana* sp. nov., *A. okatainae* sp. nov., *A. ralphi* (Simon, 1905) (= *Lycosa turbida* Simon, 1905, *Lycosa retruga* Simon, 1905, and *Lycosa algida* Simon, 1905, new synonymies), *A. senica* (L. Koch, 1877) (= *Lycosa goyeni* Roewer, 1951, new synonymy), *A. urquharti* (Simon, 1898), and *A. westlandica* sp. nov. *Artoria* Thorell, 1877 includes: *A. hospita* sp. nov., *A. segregata* sp. nov., and *A. separata* sp. nov. *Geolycosa* Montgomery, 1904 includes *G. tongatabuensis* (Strand, 1911). *Notocosa* gen. nov. includes *N. bellicosa* Goyen, 1888. *Venatrix* Roewer, 1960 includes *V. goyderi* (Hickman, 1944). All genera and species are described, with information on synonymy, type data, material examined, geographical distribution, and subfamilial status. Habitus images of adults, illustrations of important structural features, and distribution maps are provided. A key to adults is given. A phylogenetic analysis examining the relationships of species in the genus *Anoteropsis* is presented and contains significant phylogenetic structure.

Keywords. Arachnida, Araneae, Lycosidae, New Zealand, wolf spiders, classification, distribution, ecology, biology, new genus, new species, keys.

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## CHECKLIST OF TAXA

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## INTRODUCTION

Spiders of the family Lycosidae Sundevall, 1833 (wolf spiders) are found worldwide and constitute the fourth largest spider family with 2253 described species in 100 genera (Platnick 2002). The monophyly of the Lycosidae is supported by four characters: eye arrangement, absence of a retrolateral tibial apophysis on the male pedipalp, egg sac carried on spinnerets of females, and young carried on specialised setae on the dorsal surface of the mother's abdomen (Dondale 1986, Griswold 1993).

The eyes are in three rows (see Figs 3–5); the anterior row consists of four small eyes, the eyes in the middle row (formed by the two posterior median eyes), and in the posterior row (formed by the two posterior lateral eyes) are much larger. The posterior median eyes and the posterior lateral eyes have the strongest visual acuity (Rovner 1993). The anterior lateral, posterior median, and posterior lateral eyes have a layer of light-reflecting cells called the grate-shaped tapetum (Homann 1971). Presence of the grate-shaped tapetum is a synapomorphy for the superfamily Lycosoidea (Griswold 1993). Within the Lycosoidea, both Pisauridae Simon, 1890 and Trechaleidae Simon, 1890 have eye arrangements that are similar to lycosids, but the posterior median and the posterior lateral eyes are not as enlarged nor are the eye rows that they form as strongly recurved as those of Lycosidae.

Unlike closely related spider families (see Griswold 1993), Lycosidae lack a retrolateral tibial apophysis (RTA). The loss of this structure is believed to be the derived character state (Dondale 1986, Griswold 1993). Males of some species in the subfamily Venoniinae Lehtinen & Hippa, 1979 possess a tibial apophysis that is small, weak, and situated near the base of the tibia on the ventral surface (Lehtinen & Hippa 1979, Hippa & Lehtinen 1983). The location and nature of this apophysis suggests it is not homologous with the RTA found in related families (Dondale 1986).

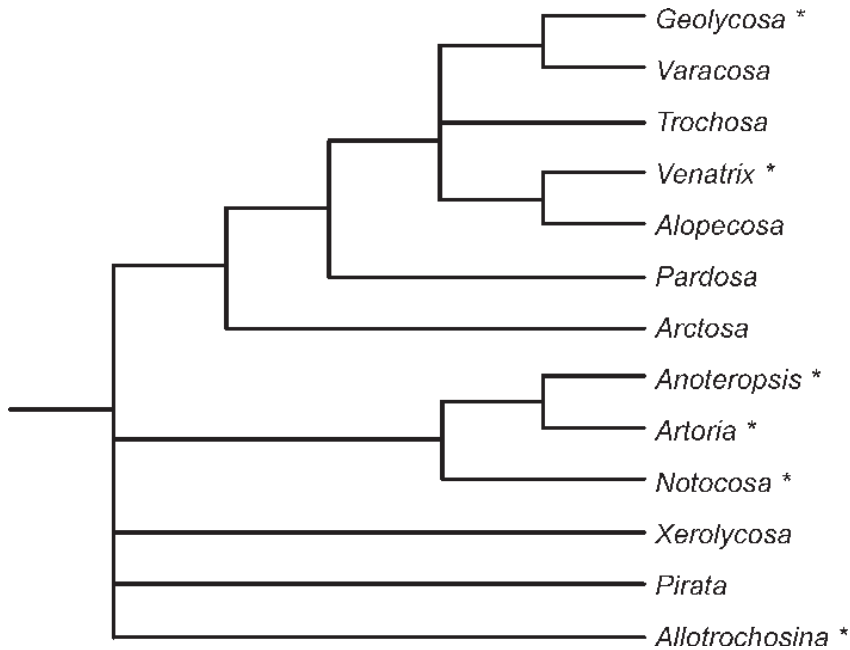
All species of the Lycosidae carry their spherical egg sacs on spinnerets. Trechaleidae, a possible sister family, also carry egg sacs in this way but their egg sacs are hemispherical (van Berkum 1982, Carico 1993). In Lycosidae, active transport of young (see Fig. 98) is made possible by special setae to which the young cling (Rovner *et al.* 1973), while in Trechaleidae young are carried on the empty egg sac (Carico 1993).

Like all spiders, lycosids are predators and their main prey is arthropods, mostly insects (Stratton 1985, Nentwig 1987). Apart from some extralimital genera (*Anomalomma* Simon, 1890, *Hippasa* Simon, 1885, *Venonia* Thorell, 1894), lycosids do not build a web for prey capture and are sit-and-wait predators (Kronk & Riechert 1979). Adult

size in lycosids is extremely variable (e.g., Miyashita 1968, Workman 1979, Uetz *et al.* 1992). Lycosid life cycles can extend over 1 (e.g., Framenau *et al.* 2002), 2 (e.g., Framenau *et al.* 1996), or 3 years (e.g., Humphreys 1976, Workman 1979), and *Pardosa glacialis* (Thorell, 1872) may live up to 6 years (Leech 1966). Within a species, life cycle length and synchrony may vary with altitude and latitude (e.g., Edgar 1971, Workman 1979). New Zealand lycosid adults occur in greatest numbers from late spring to late summer (Martin 1983, pers. obs.) and females are usually seen with egg sacs in late spring/early summer and in late summer/early autumn (pers. obs.).

Early instar lycosids disperse by ballooning on long buoyant strands of silk (Richter 1970, Greenstone 1982, Greenstone *et al.* 1987, pers. obs.), and can travel hundreds of kilometres. As a result, lycosid species are often not restricted by geographic boundaries but are often confined to a particular habitat (e.g., McKay 1974) and, despite their wide distribution, can be restricted to local areas of suitable habitat (e.g., Halloran *et al.* 2000). Lycosids are found in a wide range of habitats but are most common in open country. The majority of studies examining the role of lycosids in ecosystems have focused on agroecosystems. Within a given habitat, lycosids are numerically abundant predators, e.g., up to 76/m<sup>2</sup> (Workman 1978) and, in New Zealand, they have been found to be among the numerically dominant arthropod predators in agroecosystems (Martin 1983, Sivasubramaniam *et al.* 1997, Topping & Lövei 1997, Hodge & Vink 2000). Because of its abundance in agroecosystems, *Anoteropsis hilaris* (L. Koch, 1877) has been investigated as a possible bioindicator (Hodge & Vink 2000) and biomarker (Van Erp *et al.* 2000, in press) for organophosphate insecticide contamination. In natural ecosystems, such as subalpine and alpine herb fields, lycosids have been reported as the dominant spider family along with Linyphiidae (Forster 1975).

While the first lycosid to be described from New Zealand was *Lycosa nautica* Walckenaer, 1837, this species is here excluded from the New Zealand fauna — see page 11. Most New Zealand lycosid species (23 species) were described between 1877 and 1925. Except for the description of *Lycosa subantarctica* Forster, 1964 (here synonymised with *Anoteropsis hilaris*), no further taxonomic publications on New Zealand lycosids were produced until 2001, which saw the publication of revisions of the Australasian genera *Allotrochosina* Roewer, 1960 (Vink 2001) and *Venatrix* Roewer, 1960 (Framenau & Vink 2001), both of which included species found in New Zealand. In 1996, I completed a thesis as part of a Master of Science degree (Vink 1996) on the taxonomy and systematics of a group of 10 New Zealand lycosids. This work was not published, as there were many more New



Text-fig. 1 A reconstruction of the phylogeny of wolf spider genera based on Vink *et al.* (2002). An asterisk indicates genera present in New Zealand.

Zealand species of Lycosidae that awaited description, and Australian fauna needed to be considered before correct generic placements could be made.

Most New Zealand lycosid species previously described have been placed in genera that are otherwise Holarctic. Two generic names in particular, *Lycosa* Latreille, 1804 and *Pardosa* C. L. Koch, 1847, have been frequently used in New Zealand and elsewhere as convenient genera in which to “dump” new lycosid species. *Lycosa* is considered to be a Mediterranean genus (Zyuzin & Logunov 2000) and *Pardosa* appears to be Holarctic (Vink *et al.* 2002). The redefinition of *Lycosa* (Zyuzin & Logunov 2000) and recent taxonomic work on *Pardosa* (Alderweireldt & Jocqué 1992, Dondale 1999, Kronstedt 1975, 1981, 1986, 1987, 1993) show they have no synapomorphic characters in common with New Zealand species. Other genera in which previously described New Zealand species have been placed include *Allocosa* Banks, 1900, *Alopecosa* Simon, 1899, *Arctosa* C.L. Koch, 1847, *Hogna* Simon, 1885, and *Schizocosa* Chamberlain, 1904. These genera are also considered to be Holarctic, and none of the characters in recent revisions that define them (e.g., Dondale & Redner 1978, 1979, 1983a, 1983b, 1990) are found in New Zealand species.

Vink *et al.* (2002) analysed DNA sequence data from a portion of the mitochondrial 12S rRNA gene of the small ribosomal subunit for several New Zealand, Australian and

northern hemisphere taxa. The phylogeny they developed showed that most New Zealand species are basal in the Lycosidae and related to the Australian fauna (Text-fig. 1). Many New Zealand and Australian species do not fit in the current lycosid subfamilies (Dondale 1986, Zyuzin 1985, Alderweireldt & Jocqué 1993, Zyuzin 1993), which are based on Holarctic and African species. The two species of the derived Lycosinae (*Geolycosa tongatabuensis* and *Venatrix goyderi*) found in New Zealand appear to be more recent arrivals.

## SPECIES NOT CONSIDERED PART OF THE NEW ZEALAND FAUNA

***Lycosa leuckarti* (Thorell, 1870).** In 1985, a female specimen of this large Australian species was collected in a warehouse in Dunedin and labelled by R.R. Forster as “ex Australia?” (OMNZ). This one-off introduction is likely to have come from Australia in cargo (the label does not specify which type) and is not considered part of the fauna.

***Allocosa palabunda* (L. Koch, 1877).** Koch’s original description (Koch 1877) is based on specimens from Australia and the South Sea Islands (presumably Polynesia). I have examined many specimens of *A. palabunda* from Australia, and have not seen any examples from New Zea-

land. The erroneous New Zealand record of this species can be traced to Dalmás (1917), who included it (preceded by a question mark) in his list of New Zealand spiders. Dalmás (1917) wrote (translated from French), “The habitat given by the author [Koch] includes Australia and the South Sea Islands (Polynesia I think). The distribution could extend to New Zealand because young individuals collected at various localities seems to belong to this species”. It is possible that Dalmás mistook for *A. palabunda*, juveniles of *Geolycosa tongatabuensis* (Strand), which are of a similar size, appearance, and coastal habitat. In any case, *A. palabunda* should not be considered part of the New Zealand fauna unless adult specimens are found, as it is difficult to identify juvenile specimens with any certainty.

***Lycosa nautica* Walckenaer, 1837.** Walckenaer (1837) listed this species from (or as occurring in) Australia and New Zealand. His description was superficial and the type has been lost. Roewer (1955b: 1565) listed this species as “*nicht zu deuten!*” (cannot be determined) in his catalogue. It was listed as a *nomen dubium* by Platnick (2002). Walckenaer’s brief description is poor even by the standards at the time of its publication. It was possible, however, to determine that the species he “described” is not one of the lycosid species found in both Australia and New Zealand. It should remain as a *nomen dubium*.

***Pirata piraticus* (Clerck, 1757).** Simon (1899) recorded this Holarctic species from a specimen(s) collected by H.H. Schauinsland at French Pass (40°56’S, 173°50’E). He noted that *Diplocephalus cristatus* (Blackwall, 1833), a Holarctic linyphiid spider, was also found in New Zealand. Following his note, on the next page in the same publication he described *Allotrochosina schauinslandi* (Simon), a New Zealand endemic species that, like *P. piraticus*, is found in marshes and other damp habitats. *P. piraticus* was listed in the catalogues of New Zealand spiders of Dalmás (1917) and Parrott (1946). I have collected extensively and examined lycosid specimens from throughout New Zealand, and no specimens of *P. piraticus* have been found in this country since Simon’s (1899) publication. There are three possibilities: 1) a European specimen of *P. piraticus* was accidentally included in Schauinsland’s collection at the MNHN before Simon’s examination; 2) *P. piraticus* was introduced to New Zealand by European settlers but, unlike *D. cristatus*, it was not successful in establishing; 3) Simon misidentified a specimen(s) of *A. schauinslandi* as *P. piraticus*, which has similar markings, size, and simple male and female genitalia. Whichever scenario is contemplated, *P. piraticus* is not here considered part of the New Zealand fauna.

## MORPHOLOGY AND TERMINOLOGY

The morphological structures required for the identification of New Zealand Lycosidae are referred to in Fig. 1–6, 36a–b, and explained in the glossary of technical terms (Appendix A), and Forster (1967). The male pedipalp and the female epigyne are crucial when identifying lycosids to species (or even to genera). Juveniles, therefore, are often impossible to identify to species with certainty. The morphological nomenclature follows Dondale & Redner (1978) and Dondale (1986).

A character-based phylogenetic species concept (Baum & Donoghue 1995) has been implemented in this study. It defines a species as the smallest group of populations diagnosable by a unique combination of character states in comparable individuals.

## METHODS AND CONVENTIONS

**Collecting.** Lycosids can be collected by a variety of methods. Pitfall trapping is effective but unless the specimens are collected within a couple of days of being caught they can start to decay, which can make identification difficult. Decay can be prevented by the use of a good preservative such as ethylene glycol. Gault’s solution does not preserve spiders well. Another useful method is daytime hand searching, either by looking for specimens directly on the ground or by picking up substrate (e.g., litter, clumps of grass) and shaking them onto a large white sheet. The best method for collecting lycosids is with a strong head torch at night (about two hours after sunset, when a large number of species appear to be most active, pers. obs.). The light is reflected in the tapeta of the eyes and the spider’s presence is indicated by a bluish sparkle.

**Preservation.** Lycosids are best preserved in 70–75% ethanol. They can be stored in 95–100% ethanol to preserve DNA; however, this makes them brittle and unsuitable for morphological examination.

**Preparation.** Specimens should be labelled with the locality (including area code (Crosby *et al.* 1976, 1998) and, if known, latitude and longitude), collection date, collector’s name, and habitat data.

Most morphological features used for identifications can be seen under an ordinary dissecting microscope. When examining specimens in alcohol they should be rested in washed quartz sand to provide support for the spider. External sclerites of the epigyne can be viewed *in situ*. Occasionally, however, the abdomen is distended, which can change the appearance of the epigyne, or shrivelled,

which can result in the epigyne being obscured. The features of the male pedipalp are best viewed by removing the left pedipalp at the junction between the trochanter and the femur and viewed ventrally. Some figures of the male pedipalp are slightly tilted to one side to show the differences in the median apophysis (Figs 8, 11, 17, 18, 21, 25).

Internal genitalia were prepared for examination by placing the dissected genitalia in 10% KOH solution for one hour at 50°C to dissolve soft tissue. An alternative to KOH is the use of trypsin (Griswold 1993). Internal genitalia were illustrated for representative species from all genera as they show too much intra-species variation to be useful diagnostic characters at the species level. In the majority of species the external structures are just as, and often more, informative than internal genitalia. Male pedipalps were expanded to reveal obscured sclerites. They were immersed in 10% KOH for 30 minutes at 50°C, then placed in water until they had fully expanded. None are shown here as no useful diagnostic characters were found.

**Measurements.** All measurements are in millimetres (mm). Where the measurements are expressed as a fraction, the numerator refers to the length of the structure and the denominator refers to its width. Measurements outside parentheses are for males and inside parentheses for females. The order of leg lengths is given in a four-digit sequence, longest to shortest (e.g., 4123). The size range given for each species represent the smallest and largest individual of each sex found in all specimens examined.

**Types.** Type specimens were examined whenever possible. New Zealand collections were searched and enquiries were made at all major overseas collections for type specimens of New Zealand lycosids. It was possible to locate and examine the type specimens of only seven out of 27 previously described species; the remainder have apparently been lost or destroyed through damage of European museums during World War II.

In the descriptive part of this work, the status, repositories, and full label data for all type specimens examined are given. Label data are listed as follows: different labels are denoted by a solidus (/), and different lines on a label by a semicolon. All other punctuation is as it appears on the label. Additional information not included on the label is placed between square brackets.

**Descriptions.** New species' illustrations, digital images, measurements, and colour pattern descriptions were made from a designated holotype male and an allotype female. For existing species, when types were lost, damaged, faded, or brittle, illustrations, digital images, measurements, and colour pattern descriptions were prepared from a non-type representative male and female specimen (with collection information shown).

Epigynal and male pedipalpal illustrations omit the setae for clarity. Shading in the illustrations of male pedipalps was applied only to the diagnostic median apophysis.

Descriptions of colours are for alcohol-preserved specimens. It should be noted that colours and colour patterns can fade in older specimens that have not been stored away from light.

Characters diagnostic in other spider families (e.g., eye size and position, leg spination) were not diagnostic for *Lycosidae* and have not been included in the descriptions.

**Digital images.** Habitus images (Figs 68–94) and external genitalia images (Figs 41–67) were made at Landcare Research using the computer software package Auto-Montage (Syncrosopy) and a video camera attached to a stereomicroscope. Auto-Montage software gives an increased depth of field by producing a focused montage image from a series of partially focused source images. For the habitus images a Z-stepper was also used, which allows the Auto-Montage software to capture a series of images automatically.

Line drawings were made using a drawing tube attached to a stereomicroscope. Setae were omitted from illustrations for clarity. Images were scanned at a resolution of 600 dpi (dots per inch).

Map images were created using the geographic information system (GIS) software ArcView (ESRI).

All final figure layouts and the addition of text and symbols were prepared using CorelDRAW® version 8.0 (Corel).

**Text conventions.** The area codes of Crosby *et al.* (1976, 1998) are used in collection records.

The following acronyms for repositories are used:

AMNZ	Auckland Museum, Auckland, New Zealand
CMNZ	Canterbury Museum, Christchurch, New Zealand
LUNZ	Entomology Research Museum, Lincoln University, New Zealand
MNHN	Muséum National d'Histoire Naturelle, Paris, France
MONZ	Museum of New Zealand Te Papa Tongarewa, Wellington, New Zealand
NHMW	Naturhistorisches Museum, Vienna, Austria
NZAC	New Zealand Arthropod Collection, Auckland, New Zealand
OMNZ	Otago Museum, Dunedin, New Zealand
SMF	Forschungsinstitut und Naturmuseum Senckenberg, Frankfurt, Germany.

## PHYLOGENETIC ANALYSIS

**Methods.** A reconstruction of the phylogenetic history of New Zealand lycosid species was attempted using a cladistic analysis of morphological characters. The analysis included all species of *Anoteropsis* and the three New Zealand *Artoria* species as the outgroup taxa. *Allotrochosina schauinslandi*, *Geolycosa tongatabuensis*, and *Venatrix goyderi* were not included in the analysis as they were polyphyletic to *Anoteropsis* and *Artoria* (see Vink *et al.* 2002). *Artoria* appears to be the sister genus to *Anoteropsis* (Vink *et al.* 2002) and was, therefore, selected as an outgroup (see Watrous & Wheeler 1981 and Maddison *et al.* 1984 for a discussion of outgroups). *Notocosa bellicosa* was considered too distant from *Anoteropsis* and *Artoria* (see Vink *et al.* 2002) to be a meaningful outgroup taxon in the analysis. Although it has been argued that the outgroup need not be the sister group of the ingroup (Nixon & Carpenter 1993), the inclusion of *N. bellicosa* in the data matrix lowered the resolution of the cladogram.

Eight morphological characters used in the analysis were from male pedipalpal morphology. Male genitalia are commonly used in spider phylogenetic analyses (e.g., Coddington 1990, Hormiga 1993, Griswold 2001). Characters were also taken from somatic morphology (seven), female genitalia (six), and ecology (one). Distinct gaps in ratios and measurements were used to separate character states.

### Character list

1. *Anterior eye row*: (0) slightly procurved or straight (Fig. 3, 5); (1) strongly procurved (Fig. 4).
2. *Anterior eye row*: (0) no more than one anterior lateral eye width apart; (1) more than one anterior lateral eye width apart.
3. *Retromarginal cheliceral teeth*: (0) three – none reduced; (1) three – proximal reduced.
4. *Scopulae on tarsi and metatarsi I and II*: (0) absent; (1) weak (comparatively large spaces between adjacent scopulae); (2) intermediate (small spaces between adjacent scopulae); (3) dense (an almost solid mass, scopulae contiguous).
5. *White pubescence below PME*: (0) absent; (1) present.
6. *Cymbium/tibia length ratio*: (0) more than 2.1; (1) 2.0–1.5; (2) less than 1.4.
7. *Minimum adult body length*: (0) less than 8 mm; (1) greater than 9 mm.
8. *Basoembolic apophysis*: (0) without spur; (1) with short spur (small, sclerotised bump); (2) with long spur (at least ¼ length of median apophysis).
9. *Lobe at base of terminal apophysis*: (0) no lobe; (1) weak lobe; (2) rounded lobe; (3) tooth-like lobe.
10. *Length of median apophysis after bend*: (0) without bend; (1) median apophysis with weak bend; (2) less than or equal to length before bend; (3) longer than before bend.
11. *Median apophysis dorsoventrally flattened*: (0) no; (1) partially.
12. *Median apophysis with basal spur*: (0) absent; (1) present.
13. *Median apophysis shape after bend*: (0) absent; (1) pointing anteriorly (e.g., Fig. 11); (2) wave-like (e.g., Fig. 25); (3) straight (e.g., Fig. 18); (4) pointing posteriorly (e.g., Fig. 24).
14. *Median apophysis tip*: (0) rounded; (1) mesially directed tooth; (2) one laterally directed tooth; (3) two laterally directed teeth; (4) one laterally directed tooth and blunt protrusion below tooth.
15. *Tip of terminal apophysis*: (0) pointed; (1) rounded; (2) multifaceted.
16. *Epigynal hoods*: (0) absent; (1) shallow; (2) regular; (3) deep.
17. *Posterior lip*: (0) absent; (1) present.
18. *Median septum*: (0) not raised; (1) raised and unsclerotised; (2) raised and sclerotised.
19. *Bends in internal genitalia*: (1) 1; (2) 2; (3) 3; (4) 4; (5) 5 or more.
20. *Epigyne raised either side of septum*: (0) no; (1) yes.
21. *Genitalia lateral sclerites*: (0) absent; (1) present.
22. *Habitat*: (0) grassland – including open scrub and swamp; (1) stony or sandy – including riverbed, scree and beach; (2) forest – including forest litter.

**Results.** The data matrix (Table 1) was analysed with PAUP\* version 4.0b8 (Swofford 2001) using the branch and bound search, which finds all most parsimonious trees. Characters 8, 16, and 19 were ordered. Polarity was not assigned to any characters and all characters had equal weighting *a priori*, as there was no obvious weighting scheme. All 22 characters were phylogenetically informative. Characters that were autapomorphic or appeared to be homoplasious (e.g., colour pattern, which varied intraspecifically) were excluded *a priori* from the analysis. Bootstrap values (Felsenstein 1985) were calculated from 1000 replicate parsimony analyses using the closest addition sequence of the taxa and the heuristic search option in PAUP\*.

Table 1. Character state distribution matrix for phylogenetic analysis of *Anoteropsis*.

Taxa	Character states
<i>Artoria hospita</i>	1100010030010121021002
<i>Artoria segregata</i>	0100000020010121021012
<i>Artoria separata</i>	1100000030010121021002
<i>Anoteropsis adumbrata</i>	0002010122003203102000
<i>Anoteropsis aerescens</i>	0002010023002402113001
<i>Anoteropsis alpina</i>	0003021022002210101011
<i>Anoteropsis arenivaga</i>	0012010023101402113001
<i>Anoteropsis blesti</i>	0001010021000001102011
<i>Anoteropsis canescens</i>	0011110023101402113000
<i>Anoteropsis cantuaria</i>	0012010122003203103001
<i>Anoteropsis flavescens</i>	0002010213102402121000
<i>Anoteropsis forsteri</i>	0002110023003402113001
<i>Anoteropsis hallae</i>	0001010021000300102012
<i>Anoteropsis hilaris</i>	0011010203003312115000
<i>Anoteropsis insularis</i>	0003010113004312104001
<i>Anoteropsis lacustris</i>	0012010122003203113001
<i>Anoteropsis litoralis</i>	0012110023003402113001
<i>Anoteropsis montana</i>	0002021021000000102011
<i>Anoteropsis okatainae</i>	0011010003002412123101
<i>Anoteropsis ralphi</i>	0011010103004312115000
<i>Anoteropsis senica</i>	0002010103002412122101
<i>Anoteropsis urquharti</i>	0012110023101402113001
<i>Anoteropsis westlandica</i>	0001010021000321102012

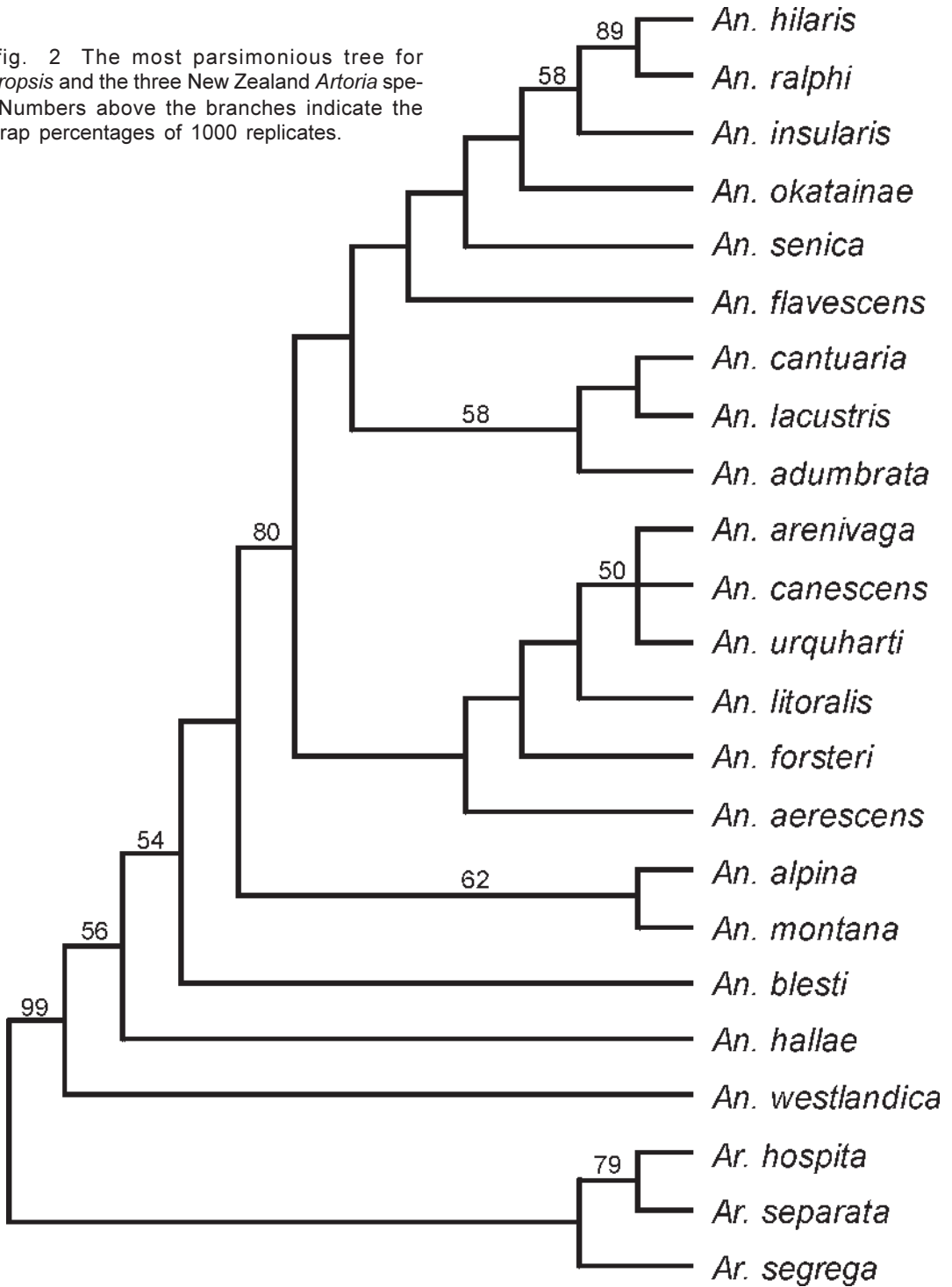
Parsimony analysis produced one most parsimonious tree (Text-fig. 2), with a length of 77 steps, a consistency index of 0.571 and a retention index of 0.761.

**Relationships.** There is strong (>75%) bootstrap support for *A. hilaris* and *A. ralphi* as sister species. *Anoteropsis alpina*, *A. blesti*, *A. hallae*, *A. montana*, and *A. westlandica* appear to be basal within *Anoteropsis* and all other species form a derived clade, with strong bootstrap support. *Anoteropsis arenivaga*, *A. canescens*, and *A. urquharti* are morphologically similar and form an unresolved trichotomy.

The Lycosidae is a morphologically conservative

family, which makes it difficult to generate large morphological datasets for phylogenetic analysis. Because of this the data matrix was relatively small (fewer characters than taxa); however, there was still good resolution and bootstrap support within the tree. Further resolution through additional phylogenetic analyses was carried out on *Anoteropsis* species using data from partial sequences from cytochrome c oxidase subunit I and NADH dehydrogenase subunit I plus tRNA<sup>Leu(CUN)</sup> DNA (Vink & Paterson, in prep.). The phylogenies inferred from these molecular data were significantly similar ( $p < 0.001$ ) to the phylogeny presented here.

Text-fig. 2 The most parsimonious tree for *Anoteropsis* and the three New Zealand *Artoria* species. Numbers above the branches indicate the bootstrap percentages of 1000 replicates.



## KEY TO NEW ZEALAND LYCOSIDAE

N.B. *Anoteropsis hilaris* is the most common New Zealand species (see Fig. 6, 18, 35, 52a–c, 79a–g, 97–98) but it was not possible to key it out until the end of the key. Some figures of the male pedipalp are slightly tilted to one side to show the differences in the median apophysis (Fig. 8, 11, 17, 18, 21, 25).

- 1 Pedipalp tibial length subequal to length of cymbium in males and to pedipalpal tarsus in females. First pair of legs longest in male (Fig. 95). Male pedipalp, when viewed ventrally, with pommel-shaped median apophysis (Fig. 7). Cymbium tip without macrosetae. Female epigyne with hoods extending posteriorly from epigynal area .....  
 ... (p. 18) ... *Allotrochosina schauinslandi* Simon  
 —Pedipalp tibial length much less than length of cymbium or pedipalpal tarsus. Fourth pair of legs longest in males. Male pedipalp not as above. Cymbium tip with macrosetae. Female epigyne not as above ..... 2
- 2(1) Distance between anterior lateral eyes and anterior median eyes greater than the width of two anterior lateral eyes (Fig. 4) ..... (*Artoria*) ... 3  
 —Distance between anterior lateral eyes and anterior median eyes equal to or less than the width of one anterior median eye (Fig. 3, 5) ..... 5
- 3(2) Anterior eye row strongly procurved when viewed anteriorly (Fig. 4). Male pedipalp with a mesially directed hook-like spur near the base of the median apophysis (Fig. 28, 30). Epigyne with a large, spatulate median septum (Fig. 62, 64) ..... 4  
 —Anterior eye row not strongly procurved when viewed anteriorly. Male pedipalp with weak spur near the base of the median apophysis (Fig. 29). Epigyne with a relatively undeveloped median septum (Fig. 63). ...  
 ..... (p. 35) ... *Artoria segregata* sp. nov.
- 4(3) Hook-like spur nearer to the middle of the median apophysis. Male pedipalp as in Fig. 28. Spatulate median septum short. Epigyne as in Fig. 62 .....  
 ..... (p. 35) ... *Artoria hospita* sp. nov.  
 —Hook-like spur nearer to the base of the median apophysis. Male pedipalp as in Fig. 30. Spatulate median septum long. Epigyne as in Fig. 64 .....  
 ..... (p. 36) ... *Artoria separata* sp. nov.
- 5(2) Male fang with tubercle (Fig. 5). Claw-like macrosetae at tip of cymbium (Fig. 33). Epigyne forming a triangular opening (Fig. 67) .....  
 ..... (p. 39) ... *Venatrix goyderi* (Hickman)  
 —Male fang without tubercle. No claw-like macrosetae at tip of cymbium. Epigyne not forming a triangular opening ..... 6

- 6(5) Males with elongate cymbium. Male bulb with sickle-shaped terminal apophysis, embolus long, slender, curved, and parallel to terminal apophysis (Fig. 31). Epigyne with large median septum shaped like inverted “T” (Fig. 65) .....  
 ..... (p. 36) ... *Geolycosa tongatabuensis* (Strand)  
 —Males without elongate cymbium. Male bulb not as above. Epigyne not as above. .... 7
- 7(6) Median apophysis of male bulb large with spherical tip (Fig. 32). Epigyne simple with large, wide median septum (Fig. 66) .....  
 ..... (p. 38) ... *Notocosa bellicosa* (Goyen)  
 —Male bulb not as above. Median apophysis with a laterally directed distal bend. In most species an approximate 90° bend, shaped like an inverted “L” (e.g., Fig. 18). In some species the bend is very slight (Fig. 12, 17, 22, 27). Epigyne not as above and with sclerotised posterior lip (e.g., Fig. 52) .....  
 ..... (*Anoteropsis*) ... 8
- 8(7) Patch of white pubescence lateral to posterior lateral eyes (e.g., Fig. 87) ..... 9  
 —No patch of white pubescence lateral to posterior lateral eyes ..... 12
- 9(8) Carapace pale yellow to light orange-brown. Abdomen light yellow to yellow-orange with black blotches 10  
 —Carapace brown to black. Abdomen mostly grey to dark grey ..... 11
- 10(9) Median apophysis tip straight (Fig. 21). Posterior lip of epigyne wide (Fig. 55) .....  
 ..... (p. 29) ... *Anoteropsis litoralis* sp. nov.  
 —Median apophysis tip slightly bent posteriorly (Fig. 16). Posterior lip of epigyne not wide (Fig. 50) .....  
 ..... (p. 25) ... *Anoteropsis forsteri* sp. nov.
- 11(9) Median apophysis approximately twice as long after bend than before bend. Male bulb as in Fig. 26. Epigyne as in Fig. 60 .....  
 ..... (p. 33) ... *Anoteropsis urquharti* (Simon)  
 —Median apophysis slightly longer after bend than before bend. Male bulb as in Fig. 13. Epigyne as in Fig. 47 .  
 ..... (p. 23) ... *Anoteropsis canescens* (Goyen)
- 12(8) Carapace straw colour to yellow, and abdomen light yellow to yellow-orange with black splotches. Male bulb as in Fig. 19. Epigyne as in Fig. 53 .....  
 ..... (p. 28) ... *Anoteropsis insularis* sp. nov.  
 —Carapace and abdomen not as above. Male bulb not as above. Epigyne not as above ..... 13
- 13(12) Carapace dark orange-brown, brown, or dark brown and abdomen brown to grey-brown, grey, or dark grey ..... 14  
 —Carapace and abdomen not as above ..... 18



- 14(13) Median apophysis with rounded tip. Male bulb as in Fig. 22. Epigyne as in Fig. 56. Large spiders (body length 9.1–15.9 mm) ..... (p. 30) ... *Anoteropsis montana* sp. nov.  
 —Median apophysis not rounded at tip. Male bulb not as above. Epigyne not as above. .... 15
- 15(14) Median apophysis with arrow-like tip. Male bulb as in Fig. 10. Epigyne as in Fig. 47 with “M” shaped sclerites. .... (p. 21) ... *Anoteropsis alpina* sp. nov.  
 —Median apophysis not rounded or arrow-like at tip. Male bulb not as above. Epigyne not as above. ... 16
- 16(15) Median apophysis shorter after bend than before bend. Male bulb as in Fig. 20. Epigyne with deep hoods (Fig. 54). ... (p. 29) ... *Anoteropsis lacustris* sp. nov.  
 —Median apophysis longer after bend than before bend. Male bulb not as above. Epigyne without deep hoods. .... 17
- 17(16) Tip of median apophysis directed anteriorly. Male bulb as in Fig. 11. Epigyne as in Fig. 45. .... (p. 22) ... *Anoteropsis arenivaga* (Dalmis)  
 —Tip of median apophysis directed mesially. Median apophysis wave-like after bend. Male bulb as in Fig. 9. Epigyne as in Fig. 43a–b. .... (p. 21) ... *Anoteropsis aerescens* (Goyen)
- 18(13) Median apophysis wave-like after bend. Epigyne with raised areas adjacent to median septum. ... 19  
 —Median apophysis not wave-like after bend. Epigyne without raised areas adjacent to median septum. .... 20
- 19(18) Median apophysis long, extending to or past edge of cymbium. Male bulb as in Fig. 25. Female epigyne as in Fig. 59. Large sized spiders (body length 7.4–15.8 mm). ... (p. 32) ... *Anoteropsis senica* (L. Koch)  
 —Median apophysis not extending to edge of cymbium. Male bulb as in Fig. 23. Female epigyne as in Fig. 57. Medium sized spiders (body length 4.2–7.6 mm). ... (p. 30) ... *Anoteropsis okatainae* sp. nov.
- 20(18) Median apophysis with an approximate 90° bend, shaped like inverted “L” (e.g., Fig. 18). Female epigyne without lateral sclerites (e.g., Fig. 52). .... 23  
 —Median apophysis with weak bend (e.g., Fig. 27). Female epigyne with lateral sclerites (e.g., Fig. 61) ... 21
- 21(20) Median apophysis weakly bifurcate. Male bulb as in Fig. 12. Female epigyne with weak posterior lip (Fig. 46). .... (p. 23) ... *Anoteropsis blesti* sp. nov.  
 —Median apophysis strongly bifurcate with crescent-shaped tip. Male bulb not as above. Female epigyne not as above. .... 22
- 22(21) Median apophysis wide at tip (Fig. 27). Posterior lip of epigyne V-shaped (Fig. 61). .... (p. 33) ... *Anoteropsis westlandica* sp. nov.  
 —Median apophysis tapers towards tip (Fig. 17). Posterior lip of epigyne not V-shaped (Fig. 51). .... (p. 26) ... *Anoteropsis hallae* sp. nov.
- 23(20) Median apophysis the same length, or shorter after bend than before bend. Basoembolic apophysis with very small spur (e.g., Fig. 8). Epigynal hoods deep or directed posteriorly and close to posterior lip. ... 24  
 —Median apophysis longer after bend than before bend. Basoembolic apophysis with medium to long spur (e.g., Fig. 18). Epigynal hoods not as above. .... 25
- 24(23) Male bulb as in Fig. 14. Epigynal hoods directed posteriorly. Female epigyne as in Fig. 48. .... (p. 24) ... *Anoteropsis cantuaria* sp. nov.  
 —Male bulb as in Fig. 8. Epigynal hoods not as above. Female epigyne as in Fig. 42. .... (p. 20) ... *Anoteropsis adumbrata* (Urquhart)
- 25(23) Median apophysis dorsoventrally flattened after bend. Basoembolic apophysis with long anteriorly directed spur. Male bulb as in Fig. 15. Female epigyne as in Fig. 49. Median septum long and sclerotised. .... (p. 24) ... *Anoteropsis flavescens* L. Koch  
 —Median apophysis not dorsoventrally flattened. Basoembolic apophysis short to medium length. Male bulb not as above. Female epigyne not as above. Median septum not long and sclerotised. .... 26
- 26(25) Median apophysis directed posteriorly after bend. Basoembolic apophysis short and directed mesially. Male bulb as in Fig. 24. Female epigyne as in Fig. 58. .... (p. 31) ... *Anoteropsis ralphi* (Simon)  
 —Median apophysis directed slightly anteriorly after bend. Basoembolic apophysis medium length and directed slightly anteriorly. Male bulb as in Fig. 18. Female epigyne as in Fig. 52a–c. .... (p. 26) ... *Anoteropsis hiliaris* (L. Koch)

## BIOSYSTEMATICS

### Family LYCOSIDAE

Small to large, three-clawed spiders. Eyes in three rows (Fig. 3–5). Trochanters with a notch on the distal edge of the ventral side. Male pedipalp without retrolateral tibial apophysis. Females carry the eggsac attached to the spinnerets and spiderlings, after hatching, are carried on the abdomen.

### Genus *Allotrochosina* Roewer

*Allotrochosina* Roewer, 1960: 927-928 (listed but not described in Roewer 1955a: 213). —Vink, 2001: 462. Type species: *Lycosa maunganuiensis* Berland, 1925 (= *Lycosa schauinslandi* Simon, 1899), by monotypy.

**Description.** Body length 2.0–9.7 mm. Carapace orange-brown with darker bands extending from the fovea. Abdomen yellow-brown with blackish patterning. Chelicerae with three promarginal teeth and two retromarginal teeth. Legs in descending order of length usually 4123 (male and female) with the fourth leg always longest, except males of *Allotrochosina schauinslandi*, in which the first leg is the longest. Male: without macrosetae at cymbium tip; pedipalp tibial length subequal to length of cymbium; embolus and terminal apophysis reduced and crowded together at the tip of the bulb; subtegulum elongated and along prolateral margin of tegulum. Female: genital openings extend posteriorly from epigynal area; internal genitalia simple, consisting of a straight copulatory duct and spermatheca at right angles to each other; pedipalp tibiae and tarsi subequal in length.

**Remarks.** *Allotrochosina schauinslandi* is the only New Zealand species in the genus; the only other known species, *A. karri* Vink, 2001, is found in karri forest (*Eucalyptus diversicolor* F. Muell.) in the southwest of Western Australia (Vink 2001).

*Allotrochosina* was placed in the subfamily Venoniinae by Vink (2001). Dondale (1986) defined the subfamily by the following characters; “median apophysis enlarged and oriented longitudinally on genital bulb”, “terminal apophysis small, situated distally on bulb and functioning as conductor” and “embolus small, situated distally”. The reduced embolus and terminal apophysis, both crowded together at the tip of the male bulb, place *Allotrochosina* in the Venoniinae. *Allotrochosina* lacks the usual venoniine characters of terminal apophysis acting as conductor and median apophysis enlarged. However, these two characters may have been secondarily lost or may be irrelevant to the subfamily classification (C.D. Dondale pers. comm.). The elongated subtegulum along the prolateral margin of the tegulum is shared with other venoniine genera (e.g., *Pirata* Sundevall, 1833, *Trabea* Simon, 1876, *Trabeops* Roewer, 1959 and *Proevippa* Purcell, 1903).

*Allotrochosina* is known only from New Zealand and the southwest of Western Australia. Species in the genus appear to be dependent on high humidity as they are usually found in damp habitats.

### *Allotrochosina schauinslandi* (Simon)

Fig. 7, 34, 41, 68, 95; Map 1

*Lycosa schauinslandi* Simon, 1899: 428–429.

*Lycosa maunganuiensis* Berland, 1925: 298–299, plate 43, figs 11-15. —Vink, 2001: 462.

*Allotrochosina mananganuiensis* [sic] (Berland). —Roewer, 1955a: 213.

*Alopecosa schauinslandi* (Simon). —Roewer, 1955a: 224.

*Trochosa maunganuiensis* (Berland). —McKay, 1979b: 278.

*Allotrochosina schauinslandi* (Simon). —Vink, 2001: 461–466.

**Diagnosis.** Distinguished from all other New Zealand species of this family by the following characters. Male: leg length in decreasing order 1423; cymbium tip without macrosetae; pedipalp tibial length subequal to length of cymbium; embolus and terminal apophysis reduced and crowded together at tip of bulb; subtegulum elongated and along prolateral margin of tegulum. Female: pedipalp tibiae and tarsi subequal in length; genital hoods extending posteriorly from epigynal area.

**Description.** Colour: carapace orange-brown with darker bands extending from the fovea (Fig. 68); sternum orange-brown; abdomen yellow-brown with blackish pattern (Fig. 68); ventral surface yellow-brown with three blotchy blackish longitudinal stripes; legs orange-brown with faint darker annulations.

Chelicerae with three promarginal teeth and two retromarginal teeth. Male bulb (Fig. 7) with pommel-shaped median apophysis (when viewed ventrally); macrosetae absent from tip of cymbium. Legs long and slender. Epigyne (Fig. 41) with genital hoods extending posteriorly from epigynal area.

**Dimensions** (mm). Male NN, Riwaka River (female NN, Motueka River Mouth): total length 7.4 (8.9); carapace 4.0/3.0 (4.0/2.9), height 1.5 (1.2); abdomen 3.8/2.2 (4.3/2.9); sternum 1.9/1.7 (1.9/1.0). Leg formula (in descending order of length) 1423 (male), 4123 (female). Size range: male body length 6.3–9.2, female body length 6.7–9.7.

**Type data.** Syntypes of *Lycosa schauinslandi*: 1 male, 1 female (MNHN 21415) labelled “N. Zeal. [New Zealand], French Pass [40°56’S, 173°50’E], Sch. [H.H. Schauinsland, collected Dec 1896 - Jan 1897] [handwritten].”

Lectotype of *Lycosa maunganuiensis* (designated by Vink 2001): female (MNHN) labelled “Chatham Islands, Maunganui [43°46’S, 176°46’W], 15.xii.1923, G Archey [handwritten]”.

Paralectotype of *Lycosa maunganuiensis* (designated by Vink 2001): female (MNHN), same data as lectotype.

**Material examined.** Syntypes of *Lycosa schauinslandi* and a lectotype of *Lycosa maunganuiensis*, plus 511 non-type specimens (168 males, 343 females) — see Appendix

B for collection details of specimens examined.

**Distribution** (Map 1). Found throughout New Zealand, including Chatham Island and South East Island.

ND, AK, CL, BP, GB, TO, TK, HB, RI, WI, WN, WA / SD, NN, BR, WD, MB, KA, NC, MC, SC, DN, CO, FD, SL, SI / CH.

**Biology.** *Allotrochosina schauinslandi* inhabits forests, swampland, riverbeds, and damper parts of grassland and open scrub. It appears to be dependent on high humidity as it died in a short time when kept in a dry container (Forster & Forster 1973, 1999). *Allotrochosina schauinslandi* is a nocturnal hunter and is found under logs or among leaf litter in the daytime. Adults have been found throughout the year but most commonly in December and January. The courtship behaviour of *A. schauinslandi* was briefly described by Forster & Forster (1973). Females produce a bluish eggsac, which is smaller than eggsacs produced by other comparable-sized New Zealand lycosid species (Forster & Forster 1973, 1999). The female carries the eggsac under the abdomen rather than behind (Forster & Forster 1973, 1999). Eggsacs have been found from August to February and females carrying spiderlings have been seen between December and February.

Despite thorough searching by me in December 1999 and extensive invertebrate surveys on other occasions, e.g., Emberson *et al.* 1996, only three specimens (all females) of *A. schauinslandi* have been collected from Chatham Island. It is possible that *A. schauinslandi* is now rare on Chatham Island due to predation by the introduced buff weka, *Gallirallus australis hectori* (Hutton), which occurs in higher numbers than on the New Zealand mainland (Marchant & Higgins 1993). Several other Chatham Islands invertebrates, including the spider *Dolomedes schauinslandi* Simon, 1899 (Pisauridae), are now only found on weka-free islands (Dugdale & Emberson 1996).

**DNA.** 12S rRNA and NADH dehydrogenase subunit I plus tRNA<sup>Leu(CUN)</sup> partial DNA sequences for this species are listed in GenBank (Benson *et al.* 2000) under accession numbers AF380502 and AY059996 respectively.

**Remarks.** In the Lycosidae leg IV is normally the longest leg (McKay 1985). However, in male *Allotrochosina schauinslandi* leg I is the longest, which is also the case for *Artoria flavimanus* Simon, 1909 from Australia (Framenau 2002).

### Genus *Anoteropsis* L. Koch

*Anoteropsis* L. Koch, 1878: 971, plate 85, fig. 1a–b. — Simon, 1898b: 314. Forster, 1979: 11. McKay, 1985: 73. Type species: *Anoteropsis flavescens* L. Koch, 1878, by subsequent designation of Simon, 1898b.

*Dalmasicos* Roewer, 1960: 730. Type species: *Lycosa arenivaga* Dalmas, 1917, by original designation of Roewer, 1960. **New synonymy.**

**Description.** Body length 4.2–17.4 mm. Carapace ranging from pale yellow to dark brown. Some species have distinct markings on carapace. Abdomen often with light heart stripe; colour pattern ranges from monochromatic to stripes and blotches and varies between and within species. Chelicerae with two to three promarginal teeth (distal tooth often reduced) and three retromarginal teeth (proximal tooth often reduced). Legs in descending order of length usually 4123 (male and female) with the fourth leg always longest. Male: with 2 to 8 macrosetae at cymbium tip; pedipalp tibial length shorter than cymbium length; terminal apophysis and lobe of the tegulum form the conductor together; terminal apophysis with a groove in which the embolus rests; all species have a laterally directed bend in the median apophysis, in most species the median apophysis has an approximate 90° bend (shaped like inverted “L”); basoembolic apophysis bent ventrally, sometimes with spur; tegulum partially divided; subtegulum at posterior lateral margin of tegulum. Female: epigyne with sclerotised posterior lip and paired hoods; internal genitalia consisting of a copulatory duct with one or more bends before the spermatheca.

**Remarks.** *Anoteropsis* shares the ventrally bent basoembolic apophysis with *Artoria* and *Notocosa*, but it is much broader in *Artoria* and never with a spur. The synapomorphy for *Anoteropsis* is the enlarged and longitudinally oriented median apophysis with a laterally directed bend.

*Anoteropsis* is known only from New Zealand (including the Chatham Islands, Snares Islands, and Auckland Islands); however, three other species have been listed from New Caledonia (*A. flavovittata* Simon, 1880), Australia (*A. longipes* L. Koch, 1878) and Papua New Guinea (*A. papuana* Thorell, 1881). *Anoteropsis flavovittata* has a retrolateral tibial apophysis and, therefore, cannot be a lycosid; it is here placed *incertae sedis* in the Lycosoidea. Koch’s (1878) description and illustrations of a female *A. longipes* (the type is missing) do not conform to *Anoteropsis*. *Anoteropsis papuana* is described but not illustrated (Thorell 1881) from a female specimen (type not seen) and also does not conform to *Anoteropsis*. Both *A. longipes* and *A. papuana* belong in other lycosid genera, but as the genera of the Lycosidae are in a state of flux it is not possible to better place them. They are here considered *incertae sedis* in the Lycosidae.

*Dalmasicos* is a junior synonym of *Anoteropsis*. Roewer’s (1960) diagnosis of *Dalmasicos* was short and lacked a description of key genitalic characters. However, the type species of *Dalmasicos*, *Lycosa* [*Anoteropsis*]

*arenivaga*, clearly conforms to *Anoteropsis*. The Hawaiian species *Dalmasicosica virgata* (Karsch, 1880) (not an Australian species as incorrectly noted by Roewer 1955a) (type examined) is not a species of *Anoteropsis* but is likely to belong to an undescribed pacific genus (see *Geolycosa tongatabuensis* remarks, p. 37). It is here considered *incertae sedis* in the Lycosidae.

*Anoteropsis* was originally described as a lycosid genus by Koch (1878). Simon (1898b) transferred it to Pisauridae when he added *A. flavovittata* to the genus and designated *A. flavescens* as the type-species. *Anoteropsis* was returned to the Lycosidae from the Pisauridae by Forster (1979) and McKay (1985).

*Anoteropsis* does not fit any of the five main lycosid subfamilies as defined by Dondale (1986), or the additional Evippinae Zyuzin, 1985, Wadicosinae Zyuzin, 1985, Piratinae Zyuzin, 1993, or Tricassinae Alderweireldt & Jocqué, 1993. The lobe of the tegulum forming part of the conductor is similar to some genera in the subfamily Lycosinae Simon, 1898 (*sensu* Dondale 1986). However, the enlarged and longitudinally oriented median apophysis and the terminal apophysis functioning as a conductor are characters that Dondale (1986) listed as occurring in Venoniinae. The groove in the terminal apophysis, in which the embolus rests, is known only from *Anoteropsis* spp. and *Artoria* spp. (C.D. Dondale, pers. comm.). The terminal apophysis forming part of the conductor, the partially divided tegulum, and the ventrally bent basoembolic apophysis, are shared with *Artoria* Thorell, 1877 and *Notocosa* gen. nov. Molecular data also support this relationship and places these genera basally in the Lycosidae (Vink *et al.* 2002). Further revisions of Australasian lycosids may result in a separate subfamily at least for *Anoteropsis*, *Artoria*, and *Notocosa*.

### ***Anoteropsis adumbrata* (Urquhart) new combination**

Fig. 1, 2, 3, 8, 42, 69a–c; Map 2

*Lycosa adumbrata* Urquhart, 1887: 114–115.

*Pardosa adumbrata* (Urquhart) —Bryant 1933: 8, plate 3, fig. 24, plate 4, fig. 41 (f).

**Diagnosis.** Distinguished from all other *Anoteropsis* species by the shape of the median apophysis of the male bulb and the external sclerites of the female epigyne, especially the deep hoods. This species is very similar in appearance to the common *A. hilaris* and both can be found in the same habitat. However, the species can be easily differentiated by their genitalia. The bulb of *A. adumbrata* is similar to *A. cantuaria* and *A. lacustris*, however, *A. adumbrata* has a strong, mesially directed tooth. The

epigyne is similar to *A. lacustris*, however, *A. adumbrata* has a straight posterior lip, deeper hoods, and is a smaller spider.

**Description.** Colour: carapace orange-brown with three yellow-brown longitudinal stripes, two stripes run adjacent to the edge of the cephalothorax, the other stripe runs from the ALE to the posterior (Fig. 69a–c); sternum brown; abdomen variable in colour (see Fig. 69a–c) but usually grey-brown with a yellow heart stripe to half way along dorsal midline, female has black markings surrounding the heart stripe and black markings on the posterior midline; legs yellow-brown (femora orange-brown) with darker annulations.

Chelicerae with three promarginal teeth (distal tooth very reduced in female) and three retromarginal teeth. Tarsi and metatarsi with scopulae, especially evident on legs I and II. Male bulb (Fig. 8) with an approximate 90° bend in the median apophysis, which is subequal in length before and after bend. Epigyne with deep hoods (Fig. 42). Internal genitalia with two bends in the copulatory duct.

**Dimensions** (mm). Male WD, Arthur's Pass (female MC, Klondyke Corner): total length 8.2 (8.9); carapace 4.7/3.5 (4.5/3.2), height 1.5 (1.6); abdomen 3.7/2.9 (4.7/3.1); sternum 2.2/1.7 (2.0/1.6). Size range: male body length 5.6–8.2, female body length 4.9–10.4.

**Type data.** Holotype: female (CMNZ) labelled "*L. adumbrata* [handwritten] / Female.; Holotype.; *Lycosa adumbrata* Urquhart.; Loc. TE KARAKA. [37°06'S, 174°52'E]; Urquhart, A. T., Trans. N.Z. Inst., Vol.19, p. 114.; 1887."

**Material examined.** Type specimen plus 452 non-type specimens (196 males, 256 females) — see Appendix B for collection details of specimens examined.

**Distribution** (Map 2). Found throughout New Zealand, including Stewart Island.

ND, AK, WO, BP, GB, TO, TK, HB, RI, WN, WA / NN, BR, WD, MB, KA, NC, MC, MK, OL, DN, CO, FD, SL, SI.

**Biology.** *Anoteropsis adumbrata* inhabits high altitude grassland, damp grassland and open scrub. Adults have been found throughout the year but most commonly in December and January. Eggsacs have been found from November to May and females carrying spiderlings have been seen in December and April to June.

**DNA.** 12S rRNA, two cytochrome c oxidase subunit I, and two NADH dehydrogenase subunit I plus tRNA<sup>Leu</sup>(CUN) partial DNA sequences for this species are listed in GenBank (Benson *et al.* 2000) under accession numbers AF380491, AY059961, AY059962, AY059998, and AY059999 respectively.

***Anoteropsis aerescens* (Goyen) new combination**

Fig. 9, 43a–b, 70a–b; Map 3

*Lycosa aerescens* Goyen, 1887: 206–207.

*Lycosa maura* Urquhart, 1892: 246–247. **New synonymy.**

*Lycosa albovestita* Dalmas, 1917: 412–413. **New synonymy.**

*Pardosa aerescens* (Goyen) —Roewer, 1955a: 185.

*Geolycosa albovestita* (Dalmas) —Roewer, 1955a: 242.

*Artoriella maura* (Urquhart) —Roewer, 1955a: 233. —  
Framenau, 2002: 211.

*Dalmasicosa albovestita* (Dalmas) —Roewer, 1960: 730.

**Diagnosis.** Distinguished from all other *Anoteropsis* species by the shape of the median apophysis of the male bulb and the external sclerites of the female epigyne, especially the wide median septum. *Anoteropsis aerescens* is morphologically similar to *A. arenivaga*, *A. canescens*, *A. urquharti* and darker specimens of *A. litoralis*. Males are distinguishable by the median apophysis, which has a wave-like after the bend and does not taper or point anteriorly. It is difficult to differentiate females but there are subtle differences in the shape of the posterior lip and median septum. *Anoteropsis aerescens* does not have the white pubescence below the PME found in *A. canescens*, *A. litoralis*, and *A. urquharti*.

**Description.** Colour: carapace dark brown with slight reddish tinge and with white pubescence (Fig. 70a–b); sternum dark brown with orange tinge; abdomen grey with black blotches with faint grey-yellow heart stripe, female with four yellow-brown blotches (Fig. 70a–b); legs dark brown with yellow-brown annulations.

Chelicerae with three promarginal teeth (distal tooth reduced) and three retromarginal teeth (proximal tooth reduced in male). Tarsi and metatarsi with scopulae, especially evident on legs I and II. Male bulb (Fig. 9) with an approximate 90° bend in the median apophysis with the section after the bend longer and wave-like. Epigyne with wide median septum (Fig. 43a–b). Internal genitalia with three bends in the copulatory duct.

**Dimensions** (mm). Male TK, Mt Egmont (female TK, Mt Egmont): total length 9.4 (12.5); carapace 5.3/3.9 (4.9/3.6), height 2.2 (2.0); abdomen 4.5/2.9 (7.5/4.6); sternum 4.7/4.0 (2.3/1.9). Size range: male body length 5.2–10.3, female body length 5.9–12.5.

**Type data.** Syntypes of *Lycosa aerescens*: Not seen. Original description (Goyen 1887) based on an unspecified number of male specimens and a single female specimen from Waitaki Valley (44°41'S, 170°25'E). The bulk of Goyen's collection has been destroyed (Forster 1967) and what remains of it are in OMNZ. Despite my thorough search of the collection these syntypes were not found and are presumed lost.

Syntypes of *Lycosa maura*: Not seen. Original description (Urquhart 1892) based on a male specimen and a female specimen from near Mount Cook (43°44'S,

170°06'E) in "Mr. H. Suter's collection". The syntypes were not found in any of the New Zealand collections and are presumed lost.

Lectotype of *Lycosa albovestita* (here designated): male (MNHN) labelled "*Lycosa albovestita* n.sp.; Temuka, Murchison [handwritten]." A second, undecipherable, handwritten label is also present with the specimens. The only adult syntype is designated here as a lectotype in order to fix this taxonomic concept of *Lycosa albovestita*; the immature syntypes lacked many characters necessary for the identification and confirmation of this species concept.

Paralectotypes of *Lycosa albovestita* (here designated): 23 immatures (MNHN) labelled "*Lycosa albovestita* n.sp.; Temuka, Murchison [handwritten]." A second, undecipherable, handwritten label is also present with the specimens.

**Material examined.** Lectotype and paralectotypes of *Lycosa albovestita* plus 83 non-type specimens (37 males, 46 females) — see Appendix B for collection details of specimens examined.

**Distribution** (Map 3). Found throughout New Zealand.

TO, TK, RI, WI, WN, WA / SC, MK, WD, OL, CO, FD, SL.

**Biology.** *Anoteropsis aerescens* is found in stony riverbeds, rocky lakeshores, and mountain scree. Adults have been found from August to May and eggsacs in September, December, and January. Females with spiderlings have been found in January.

**DNA.** Three cytochrome c oxidase subunit I and three NADH dehydrogenase subunit I plus tRNA<sup>Leu(CUN)</sup> partial DNA sequences for this species are listed in GenBank (Benson *et al.* 2000) under accession numbers AY059963, AY059964, AY059965, AY060000, AY060001, and AY060002 respectively.

**Remarks.** Despite the type of *Lycosa aerescens* not being found, the description (Goyen 1887) is adequate to identify the species. The types of *Lycosa maura* are missing and the species was considered *nomen dubium* by Framenau (2002). However, the description (Urquhart 1892) was adequate enough to be sure it is synonymous with *A. aerescens*.

***Anoteropsis alpina* new species**

Fig. 10, 44, 71; Map 4

**Diagnosis.** Distinguished from all other *Anoteropsis* species by its large size, the arrow-like tip of the median apophysis of the male bulb and the external sclerites of the epigyne, especially the long, posteriorly directed lateral sclerites.

**Description.** Colour: carapace dark brown with reddish tinge, blackish stripes radiating from fovea and black around eye group (Fig. 71); sternum brown with reddish tinge; abdomen brown to grey brown; legs dark brown with reddish tinge with darker annulations.

Chelicerae with two promarginal teeth and three retromarginal teeth. Tarsi and metatarsi with dense scopulae, especially evident on legs I and II. Male pedipalp (Fig. 10) with dorsal cymbium yellow and with an approximate 90° bend in the median apophysis, which is subequal in length before and after bend and with arrow-like tip. Epigyne with long posteriorly directed lateral sclerites (Fig. 44). Internal genitalia with one bend in copulatory duct.

**Dimensions** (mm). Male holotype (female allotype): total length 13.9 (17.2); carapace 7.7/4.5 (7.5/5.7), height 2.2 (2.5); abdomen 6.6/4.4 (10.1/6.5); sternum 3.4/2.6 (3.5/2.7). Size range: male body length 11.0–15.1, female body length 14.3–17.4.

**Type data.** Holotype: male (OMNZ) labelled “St. Bathans Mt [44°44’S, 169°46’E]; 6000 ft scree; D.R. + S. Forster; 27-xi-1971 [handwritten].”

Allotype: female (OMNZ) labelled “6000’ Hawkdun Ra [44°42’S, 169°57’E]; 12.xii.71; scree slopes; ♀ in retreat beside stone / Retreat entrance; of silk. Gravel; damp within retreat; ♂ in attendance [handwritten].”

Paratypes: 5 males, 1 female: 2♂, 1♀, CO, Hawkdun Range, 2000 m, 44°42’S, 169°57’E, 12.xii.1971, OMNZ; 3♂, Michael Peak, 2000 m, 44°45’S, 169°46’E, 27.xi.1971, S. Forster, OMNZ.

**Material examined.** Type specimens and 6 non-type specimens (3 males, 3 females) — see Appendix B for collection details of specimens examined.

**Distribution** (Map 4). Found only in alpine areas in the South Island.

– / BR, MC, MK, CO.

**Biology.** *Anoteropsis alpina* is found in alpine scree and rocky areas. Females appear to build silk lined retreats between rocks and stones. Adults have been found from November to April.

**DNA.** Cytochrome c oxidase subunit I and NADH dehydrogenase subunit I plus tRNA<sup>Leu(CUN)</sup> partial DNA sequences for this species are listed in GenBank (Benson *et al.* 2000) under accession numbers AY059966 and AY060003 respectively.

**Etymology.** The specific name is derived from *alpinus* (Latin, alpine) and refers to the habitat of the species.

### *Anoteropsis arenivaga* (Dalmas) new combination

Fig. 11, 45, 72; Map 5

*Lycosa arenaria* Urquhart, 1891: 182–183 (primary homonym of *Lycosa arenaria* Audouin, 1827).

*Lycosa arenivaga* Dalmas, 1917: 412 (replacement name for *Lycosa arenaria* Urquhart).

*Geolycosa arenivaga* (Dalmas) —Roewer, 1955a: 242.

*Dalmasicosa arenivaga* (Dalmas) —Roewer, 1960: 730.

**Diagnosis.** Distinguished from all other *Anoteropsis* species by the shape of the median apophysis of the male bulb and the external sclerites of the epigyne, especially the wide median septum. *Anoteropsis arenivaga* is morphologically similar to *A. aerescens*, *A. canescens*, *A. urquharti*, and darker specimens of *A. litoralis*. Males are distinguishable by the median apophysis, which tapers towards the tip and points anteriorly. It is difficult to differentiate females but there are subtle differences in the shape of the posterior lip and median septum. *Anoteropsis arenivaga* does not have the white pubescence below the PME found in *A. canescens*, *A. litoralis*, and *A. urquharti*.

**Description.** Colour: carapace brown with white pubescence (Fig. 72); sternum brown; abdomen dark grey with light grey heart stripe and three pairs of light grey blotches, markings fainter and sometimes absent (Fig. 72); legs orange-brown with faint darker annulations.

Chelicerae with three promarginal teeth (distal tooth very reduced) and three retromarginal teeth (proximal tooth reduced in females). Tarsi and metatarsi with scopulae, especially evident on legs I and II. Male bulb (Fig. 11) with an approximate 90° bend in the median apophysis, which is longer after bend than before bend and with anteriorly directed tip. Epigyne with wide median septum (Fig. 45). Internal genitalia with three bends in the copulatory duct.

**Dimensions** (mm). Male MC, Kaitorete Spit (female MC, Kaitorete Spit): total length 7.5 (7.8); carapace 3.6/2.5 (3.6/2.5), height 1.5 (1.2); abdomen 3.9/2.4 (4.4/2.7); sternum 1.7/1.4 (1.6/1.4). Size range: male body length 5.6–7.6, female body length 6.6–9.1.

**Type data.** Syntypes of *Lycosa arenaria* Urquhart: Not seen. Original description (Urquhart 1891) based on an unspecified number of female specimens from an unspecified location in New Zealand. Most of Urquhart’s type material has been lost (Forster 1967, Court & Forster 1988) and what remains of it is in CMNZ. Despite my thorough search of the collection this type was not found and is presumed lost.

**Material examined.** 50 non-type specimens (25 males, 25 females) — see Appendix B for collection details of specimens examined.

**Distribution** (Map 5). Found in the South Island south of 42°S.

– / MB, NC, MC, MK, SC, CO.

**Biology.** *Anoteropsis arenivaga* is found in sandy riverbeds, lake edges, and beaches. In life it is well camouflaged against the grey rocks and sand and is difficult to see when not moving. Adults are more commonly found at night and immatures during the day. Adults have been found throughout the year, but are most common in summer months. A female with an eggsac, which hatched three days after, was found in December.

**DNA.** Two cytochrome c oxidase subunit I and two NADH dehydrogenase subunit I plus tRNA<sup>Leu(CUN)</sup> partial DNA sequences for this species are listed in GenBank (Benson *et al.* 2000) under accession numbers AY059967, AY059968, AY060004, and AY060005 respectively.

**Remarks.** Although the syntypes of *Lycosa arenaria* Urquhart were not found the description is sufficient to identify the species.

### *Anoteropsis blesti* new species

Fig. 12, 46, 73; Map 6

**Diagnosis.** Distinguished from all other *Anoteropsis* species by the weak bend of the median apophysis of the male bulb and the strong lateral sclerites and hoods of the epigyne.

**Description.** Colour: carapace orange-brown with blackish bands extending from fovea, area around fovea clear of any stripes, blackish band around base of carapace and eye area black (Fig. 73); sternum orange-brown; abdomen orange brown with heart stripe and brown and blackish regular blotches (Fig. 73); legs yellow-brown with blackish annulations.

Chelicerae with three promarginal teeth (distal tooth reduced) and three retromarginal teeth. Tarsi and metatarsi with weak scopulae, especially evident on legs I and II. Male bulb (Fig. 12) with weak bend in median apophysis, which is weakly bifurcate. Epigyne (Fig. 46) with lateral sclerites and weak posterior lip. Internal genitalia with two bends in the copulatory duct.

**Dimensions** (mm). Male holotype (female allotype): total length 6.5 (6.8); carapace 3.6/2.6 (3.7/2.9), height 1.4 (1.4); abdomen 3.4/2.1 (3.2/2.5); sternum 1.6/1.4 (1.8/1.5). Size range: male body length 5.0–7.6, female body length 5.9–12.5.

**Type data.** Holotype: male (LUNZ) labelled “NEW ZEALAND, CL, Waitekuri R; 36°45’[S] 175°36’[E]; under stones in riverbed; 26.i.2000 (moulted Oct 2000); C.J. Vink and A.D. Blest [handwritten].”

Allotype: female (LUNZ) labelled “NZ, CL, Waitekuri River, 36°45’[S] 175°36’[E]; under stones in riverbed; 17.ii.2000 C.J. Vink [handwritten].”

Paratypes: 7 males, 5 females: 3♂, 1♀, CL, Waitekuri River, 36°45’S, 175°36’E, 26.i.2000, C.J. Vink & A.D. Blest, LUNZ; 2♀, 16.ii.2000, C.J. Vink, LUNZ; 3♂, 1♀, 17.ii.2000, C.J. Vink, LUNZ; 1♂, 1♀, 17.ii.2000, C.J. Vink, NZAC.

**Material examined.** Type specimens, plus 10 non-type specimens (1 male, 9 females) — see Appendix B for collection details of specimens examined.

**Distribution** (Map 6). Found only in the north of the North Island.

ND, AK, CL, BP / –.

**Biology.** *Anoteropsis blesti* is found in riverbeds under and on stones beside watercourses. Adults and juveniles are active during the day and at night. This species ran on and dived below the water surface when escaping capture. One adult was observed feeding on a juvenile. Adults have been found from December to April and eggsacs in December and January.

**DNA.** Cytochrome c oxidase subunit I and NADH dehydrogenase subunit I plus tRNA<sup>Leu(CUN)</sup> partial DNA sequences for this species are listed in GenBank (Benson *et al.* 2000) under accession numbers AY059969 and AY060006 respectively.

**Etymology.** The specific name is in honour of my friend and colleague David Blest, who collected the holotype specimen of this species with me.

### *Anoteropsis canescens* (Goyen) new combination

Fig. 13, 36a–b, 47, 74; Map 7

*Lycosa canescens* Goyen, 1887: 203–204.

*Pardosa canescens* (Goyen) —Hogg, 1911: 300.

**Diagnosis.** Distinguished from all other *Anoteropsis* species by the dense patch of white pubescence below the PLE, the shape of the median apophysis of the male bulb and the external sclerites of the epigyne. *Anoteropsis canescens* is morphologically similar to *A. aerescens*, *A. arenivaga*, *A. urquharti*, and darker specimens of *A. litoralis*. Males are distinguishable by the shorter median apophysis, which tapers towards the tip and points anteriorly. It is difficult to differentiate females but there are subtle differences in the shape of the posterior lip and median septum.

**Description.** Colour: carapace brown with blackish lines radiating from fovea, orange-brown area at centre, black around eye area, white pubescence all over with a dense patch below the PLE (Fig. 74); sternum orange-brown; abdomen grey with black blotches, faint grey heart stripe, two paired dirty cream to yellow-brown blotches at posterior (Fig. 74); legs yellow-brown to orange-brown with brown annulations.

Chelicerae with three promarginal teeth (distal tooth very reduced) and three retromarginal teeth (proximal tooth reduced in females). Tarsi and metatarsi with weak scopulae, especially evident on legs I and II. Male bulb (Fig. 13) with an approximate 90° bend in the median apophysis, which is slightly longer before bend than after bend with anteriorly directed tip. Epigyne (Fig. 47). Internal genitalia with three bends in the copulatory duct (Fig. 36a–b).

**Dimensions** (mm). Male MC, McLeans Island (female MC, McLeans Island): total length 6.0 (7.1); carapace 3.2/2.3 (3.1/2.1), height 1.2 (1.3); abdomen 2.9/1.9 (3.7/2.6); sternum 1.6/1.2 (1.4/1.1). Size range: male body length 5.6–7.8, female body length 7.1–10.3.

**Type data.** Syntypes of *Lycosa canescens*: 1 male, 1 female (OMNZ) labelled “*Lycosa canescens* [hand written] / Labelled by Goyen; *Lycosa canescens* Goyen; male and female; Goyen Collection” – the typed label was inserted by C.L. Wilton (R.R. Forster, pers. comm.). The handwritten label (presumably written by Goyen) was faded and torn in two. The writing was visible only when the label was dried and viewed under an ultraviolet light source (method suggested by M.S. Harvey pers. comm.). Specimens collected by Goyen from Otago (Goyen 1887).

**Material examined.** Syntypes of *Lycosa canescens* plus 86 non-type specimens (60 males, 26 females) — see Appendix B for collection details of specimens examined.

**Distribution** (Map 7). Found throughout the South Island.

– / NN, NC, MC, MK, OL, CO.

**Biology.** *Anoteropsis canescens* inhabits dry grassland, open scrub, and riverbeds. Adults have been found from August to May.

**DNA.** Cytochrome c oxidase subunit I and NADH dehydrogenase subunit I plus tRNA<sup>Leu(CUN)</sup> partial DNA sequences for this species are listed in GenBank (Benson *et al.* 2000) under accession numbers AY059970 and AY060007 respectively.

### *Anoteropsis cantuaria* new species

Fig. 14, 48, 75a–b; Map 8

**Diagnosis.** Distinguished from all other *Anoteropsis* species by the shape of the median apophysis of the male bulb and the external sclerites of the epigyne, especially the shallow, posteriorly directed hoods. *Anoteropsis cantuaria* is morphologically similar to *A. lacustris*, but is usually lighter in coloration. The bulbs of the two species are very similar but the median apophysis of *A. cantuaria* has a slightly rounder bend than *A. lacustris*. Females of *A. cantuaria* have deep, posteriorly directed hoods.

**Description.** Colour: carapace red-orange-brown (Fig. 75); sternum orange-brown; abdomen black-brown with faint heart stripe (Fig. 75a–b); legs yellow-brown with very faint darker annulations.

Chelicerae with three promarginal (distal tooth very reduced) and three retromarginal (proximal tooth very reduced in female). Tarsi and metatarsi with scopulae, especially evident on legs I and II. Male bulb (Fig. 14) with an approximate 90° bend in the median apophysis, which is subequal in length before and after bend. Epigyne with shallow, posteriorly directed hoods (Fig. 48). Internal genitalia with three bends in the copulatory duct.

**Dimensions** (mm). Male holotype (female allotype): total length 8.2 (9.9); carapace 4.1/3.0 (5.0/3.9), height 1.6 (1.7); abdomen 3.9/2.4 (5.5/3.6); sternum 1.9/1.5 (2.4/1.9). Size range: male body length 6.8–10.0, female body length 8.0–11.6.

**Type data.** Holotype: male (LUNZ) labelled “NEW ZEALAND, MC Banks Peninsula; 29.iv.1994 C.J. Vink; Prices Valley [43°46’S, 172°43’E]; under stones in river-bed.”

Allotype: female (LUNZ) labelled “NEW ZEALAND, MC Banks Pen; Prices Valley [43°46’S, 172°43’E]; under stones in river-bed; 22.xi.1990 C.J. Vink [handwritten].”

Paratypes: 2 males, 8 females: 1♂, 1♀, MC, Prices Valley, 43°46’S, 172°43’E, 30.x.1990, J.W. Early & C.J. Vink, NZAC; 3 ♀, 30.x.1990, J.W. Early & C.J. Vink, LUNZ; 3 ♀, 22.xi.1990, C.J. Vink, LUNZ; 1♂, 1♀, 29.iv.1994, C.J. Vink, LUNZ.

**Material examined.** Type specimens plus 37 non-type specimens (14 males, 23 females) — see Appendix B for collection details of specimens examined.

**Distribution** (Map 8). Found only in Canterbury.

– / NC, MC, SC.

**Biology.** *Anoteropsis cantuaria* inhabits riverbeds and lives among rocks and stones. Adults have been found from September to April. Eggsacs have been found in October and a female carrying spiderlings was found in January.

**DNA.** Cytochrome c oxidase subunit I and NADH dehydrogenase subunit I plus tRNA<sup>Leu(CUN)</sup> partial DNA sequences for this species are listed in GenBank (Benson *et al.* 2000) under accession numbers AY059971 and AY060008 respectively.

**Etymology.** The specific name refers to the Canterbury Province, where the species is found.

### *Anoteropsis flavescens* L. Koch

Fig. 15, 49, 76; Map 9

*Anoteropsis flavescens* L. Koch, 1878: 971–973, plate 85, fig. 1.



**Diagnosis.** Distinguished from all other *Anoteropsis* species by the anteriorly directed long sclerite on the basoembolic apophysis, the shape of the median apophysis of the male bulb, and the external sclerites of the epigyne, especially the long, thick median septum.

**Description.** Colour: carapace orange-brown with two brown longitudinal bands, blackish lines radiating from fovea and a brownish marginal band (Fig. 76); black around eye area; sternum orange-brown with brown u-shape; abdomen dark orange-brown with brown-yellow heart stripe and two blackish, longitudinal bands on the posterior half of dorsal surface; legs orange-brown, femora yellow-brown with olive tinge.

Chelicerae with three promarginal teeth (distal and proximal teeth reduced) and three retromarginal teeth. Tarsi and metatarsi with scopulae, especially evident on legs I and II. Male bulb (Fig. 15) with long, anteriorly directed spur on the basoembolic apophysis; median apophysis with an approximate 90° bend, which is longer after bend than before bend and dorso-ventrally flattened after bend. Epigyne with long, sclerotised median septum (Fig. 49). Internal genitalia with one bend in the copulatory duct.

**Dimensions** (mm). Male DN, Swampy Summit (female DN, Swampy Summit): total length 7.4 (9.4); carapace 4.0/2.9 (4.5/3.2), height 1.3 (1.3); abdomen 3.6/2.5 (5.1/3.1); sternum 1.8/1.4 (1.8/1.5). Size range: male body length 6.5–9.1, female body length 7.4–9.7.

**Type data.** Holotype: Not seen. Original description based on a female specimen from an unspecified locality in New Zealand listed by Koch (1878) as deposited in “k. k. Hofcabinet zu Wien” (NHMW), but could not be found there (J. Gruber, pers. comm.) and is presumed lost.

**Material examined.** 20 non-type specimens (14 males and 6 females) — see Appendix B for collection details of specimens examined.

**Distribution** (Map 9). Found only in the southeast of the South Island.

– / DN, CO, SL.

**Biology.** *Anoteropsis flavescens* appears to be restricted to swamp and marshy grassland although Forster (1979) stated that this species is “one of a group which inhabit the riverbeds of the South Island, New Zealand”. Adults have been found from September to May.

**DNA.** Cytochrome c oxidase subunit I and NADH dehydrogenase subunit I plus tRNA<sup>Leu(CUN)</sup> partial DNA sequences for this species are listed in GenBank (Benson *et al.* 2000) under accession numbers AY059972 and AY060009 respectively.

**Remarks.** Although the type appears to be lost, Koch’s (1878) stylised illustrations of the epigyne and the vari-

able abdominal colour pattern are adequate to identify this species. This is the type-species for *Anoteropsis* (Simon 1898b).

### *Anoteropsis forsteri* new species

Fig. 16, 50, 77; Map 10

**Diagnosis.** Distinguished from all other *Anoteropsis* species by its yellow to yellow-orange dorsal surface with black markings, the shape of the median apophysis of the male bulb and the external sclerites of the epigyne. *Anoteropsis forsteri* has similar coloration to *A. insularis* and *A. litoralis*, but the median apophysis is longer after the bend than *A. insularis* and the tip points posteriorly, unlike *A. litoralis*. In females, the median septum is thicker than *A. insularis* and the posterior lip is thinner than *A. litoralis*.

**Description.** Colour: carapace pale yellow with blackish lines radiating from fovea, two irregular blackish longitudinal bands, blackish splotches around margin and eye area black, patch of white pubescence next to PLE (Fig. 77); sternum orange-brown to brown with blackish blotches; abdomen yellow to yellow-orange with black blotches and heart stripe (Fig. 77); legs whitish with orange tinge (femora off white) with blackish blotchy annulations.

Chelicerae with three promarginal teeth (distal tooth reduced) and three retromarginal teeth. Tarsi and metatarsi with scopulae, especially evident on legs I and II. Male bulb (Fig. 16) with an approximate 90° bend in the median apophysis, which is longer after bend than before bend with slightly posteriorly directed tip. Epigyne (Fig. 50). Internal genitalia with three bends in the copulatory duct.

**Dimensions** (mm). Male holotype (female allotype): total length 5.5 (10.0); carapace 3.1/2.2 (4.5/3.1), height 0.8 (1.9); abdomen 2.7/2.0 (5.5/4.2); sternum 1.4/1.3 (2.0/1.7). Size range: male body length 5.5–8.5, female body length 7.1–10.0.

**Type data.** Holotype: male (LUNZ) labelled “NZ, SL, Oreti Beach, sand dunes at night; 46°26’[S] 168°14’[E]; 21.xi.2000, C.J. Vink [handwritten].”

Allotype: female (LUNZ) labelled “NZ, SL, Oreti Beach 46°26’S 168°14’E; sand dunes at night; 21.xi.2000, C.J. Vink [handwritten].”

Paratypes: 2 males: SL, Oreti Beach, 46°26’S, 168°14’E, 2.ii.2000, C.J. Vink, LUNZ.

**Material examined.** Type specimens, plus 14 non-type specimens (10 males, 4 females) — see Appendix B for collection details of specimens examined.

**Distribution** (Map 10). Found only in the southeast of the South Island and Stewart Island.

– / DN, SL, SI.

**Biology.** *Anoteropsis forsteri* inhabits sand dunes and beaches. The colour and pattern of the dorsum provide good camouflage and make specimens difficult to see against the sand. Juveniles are more commonly found running around during daytime and adults are most common at night. Adults have been found from September to July.

**DNA.** Cytochrome c oxidase subunit I and NADH dehydrogenase subunit I plus tRNA<sup>Leu(CUN)</sup> partial DNA sequences for this species are listed in GenBank (Benson *et al.* 2000) under accession numbers AY059973 and AY060010 respectively.

**Etymology.** The specific name is in honour of my mentor the late Ray Forster, New Zealand's greatest arachnologist.

### *Anoteropsis hallae* new species

Fig. 17, 51, 78; Map 11

**Diagnosis.** Distinguished from all other *Anoteropsis* species by the crescent-shaped tip of the median apophysis of the male bulb and the external sclerites of the epigyne. Morphologically similar to *A. westlandica* but the median apophysis of the bulb tapers slightly towards the tip and the posterior lip of the epigyne is not "V" shaped.

**Description.** Colour: carapace brown with yellow-brown longitudinal and marginal bands, blackish lines radiating from fovea, very dark brown around eye area (Fig. 78); sternum brown; abdomen brown with yellow heart stripe (Fig. 78); legs orange-brown (femora yellow-brown) with dark brown annulations.

Chelicerae with three promarginal teeth (distal tooth very reduced) and three retromarginal teeth. Tarsi and metatarsi with weak scopulae, especially evident on legs I and II. Male bulb (Fig. 17) with a weak bend in the median apophysis, which is bifurcate and crescent-shaped at tip. Epigyne (Fig. 51) with lateral sclerites and strong posterior lip. Internal genitalia with two bends in the copulatory duct.

**Dimensions** (mm). Male holotype (female allotype): total length 5.4 (5.2); carapace 3.0/2.1 (2.9/2.1), height 1.0 (1.1); abdomen 2.6/1.7 (2.4/1.9); sternum 1.4/1.1 (1.3/1.1).

**Type data.** Holotype: male (NZAC) labelled "NEW ZEALAND, NN, Heaphy Track; Heaphy Hut to Lewis Hut [40°58'S, 172°07'E], 7 Nov 1999; G. Hall."

Allotype: female (NZAC) labelled "Capleston [42°05'S, 171°55'E] 4½ km SE Cronadun; N.Z.F.S. Nelson-Westland Scheme; 8 Nov [19]71, J.C. Watt; Litter 71/134 [handwritten]."

**Material examined.** Type specimens — see type data above or Appendix B for collection details of specimens examined.

**Distribution** (Map 11). Known only from the northwest of the South Island.

— / NN, BR.

**Biology.** *Anoteropsis hallae* appears to be restricted to native forest, which is unusual for New Zealand lycosids. The only two known specimens were collected in November.

**DNA.** Cytochrome c oxidase subunit I and NADH dehydrogenase subunit I plus tRNA<sup>Leu(CUN)</sup> partial DNA sequences for this species are listed in GenBank (Benson *et al.* 2000) under accession numbers AY059974 and AY060011 respectively.

**Etymology.** The specific name is in honour my friend and collector extraordinaire Grace Hall, who collected the holotype specimen.

### *Anoteropsis hilaris* (L. Koch) new combination

Fig. 6, 18, 35, 52a–c, 79a–g, 97, 98; Map 12

*Lycosa hilaris* L. Koch, 1877: 920–921, 979–980, plate 79, fig. 6. —Koch, 1878: 979–980, plate 85, fig. 6..

*Lycosa umbrata* L. Koch, 1877: 921–922, plate 79, fig. 7.

**New synonymy.**

*Pardosa vicaria* L. Koch, 1877: 965–966, plate 84, fig. 3.

**New synonymy.**

*Lycosa virgata* Goyen, 1887: 201–203 (primary homonym of *Lycosa virgata* Karsch, 1880).

*Lycosa taylori* Goyen, 1887: 204–205. **New synonymy.**

*Lycosa tremula* Simon, 1899: 429–430. **New synonymy.**

*Lycosa virgatella* Roewer, 1951: 439 (replacement name for *Lycosa virgata* Goyen). **New synonymy.**

*Pardosa taylori* (Goyen) —Roewer, 1955a: 185.

*Pardosa virgatella* (Roewer) —Roewer, 1955a: 185.

*Arctosa tremula* (Simon) —Roewer, 1955a: 230.

*Avicosa umbrata* (L. Koch) —Roewer, 1955a: 236.

*Arctosella tremula* (Simon) —Roewer, 1960: 671.

*Lycosa subantarctica* Forster, 1964: 89–90, figs 99–101.

**New synonymy.**

*Schizocosa umbrata* (L. Koch) —Platnick, 2002.

**Diagnosis.** Distinguished from all other *Anoteropsis* species by the hooked sclerite on the basoembolic apophysis, the shape of the median apophysis of the male bulb, and the external sclerites of the epigyne, especially the triangular median septum. *Anoteropsis hilaris* is morphologically similar to *A. ralphi*. The hooked sclerite on the basoembolic apophysis is longer in *A. hilaris* and the tip of the median apophysis is not directed posteriorly. The epigynes are similar, however, the median septum of *A. hilaris* is generally thicker.

**Description.** Colour: carapace brown with yellow-brown longitudinal stripe and marginal stripes (Fig. 79a–g); ster-

num orange-brown; abdominal colour pattern variable (Fig. 79a–g) but usually brown with yellowish heart stripe (Fig. 79a); leg coxae, trochanters, and femora yellow-brown; other segments orange-brown, legs are annulated with darker bands.

Chelicerae with three promarginal teeth (distal tooth extremely reduced) and three retromarginal teeth (proximal tooth sometimes reduced). Tarsi and metatarsi with weak scopulae, especially evident on legs I and II. Male bulb (Fig. 18) with medium to long, tooth-like spur curved towards cymbium tip on basoembolic apophysis; median apophysis with an approximate 90° bend, which is longer after bend than before bend. Epigyne with triangular median septum (Fig. 52a–c). Internal genitalia with at least five bends in the copulatory duct (Fig. 35).

**Dimensions** (mm). Male MC, Lincoln University (female MC, Christchurch): total length 7.2 (10.8); carapace 4.0/3.0 (4.0/3.2), height 1.5 (1.6); abdomen 3.4/2.2 (6.6/4.4); sternum 1.8/1.4 (1.8/1.5). Size range: male body length 4.9–11.0, female body length 4.9–11.8.

**Type data.** Type(s) of *Lycosa hilaris*: Not seen. Original description based on a male specimen(s) from an unspecified locality in New Zealand listed by Koch (1877) as deposited in “Mr. Bradley’s Sammlung” (Bradley Collection, Macleay Museum, University of Sydney), but could not be found there (M. Humphrey, pers. comm.). It was also not found at the Zoologisches Institut und Zoologisches Museum, Hamburg (Rack 1961, H. Dastych, pers. comm.) where much of Koch’s collection is held.

Holotype of *Lycosa umbrata*: Not seen. Original description based on a female specimen from an unspecified locality in New Zealand listed by Koch (1877) as deposited in “k. k. Hofcabinet zu Wien” (NHMW), but could not be found there (J. Gruber, pers. comm.) and is presumed missing.

Holotype of *Pardosa vicaria*: Not seen. Original description based on a female specimen from an unspecified locality in New Zealand listed by Koch (1877) as deposited in “k. k. Hofcabinet zu Wien” (NHMW), but could not be found there (J. Gruber, pers. comm.) and is presumed missing.

Syntypes of *Lycosa virgatella*: 1 male, 1 female, 1 immature (OMNZ) labelled “*Ly. Virgata* [handwritten] / *Lycosa variegata* [sic] Goyen; Id. By Goyen; Goyen Collection” — label inserted by C.L. Wilton (R.R. Forster, pers. comm.). Specimens collected by Goyen from Otago.

Holotype of *Lycosa taylori*: Not seen. Original description based on a male specimen from Leith Valley (45°50’S, 170°30’E). The bulk of Goyen’s collection has been destroyed (Forster 1967) and what remains of it are in OMNZ. Despite my thorough search of the collection

this type was not found and is presumed lost.

Holotype of *Lycosa tremula*: Not seen. Original description based on a subadult female specimen collected by H.H. Schauinsland in 1896–1897 from either French Pass (40°56’S, 173°50’E), Waikawa (41°16’S, 174°03’E), or Stephens Island (40°38’S, 174°00’E). Schauinsland’s specimens were probably in the Naturhistorische Museum, Lübeck and would have been destroyed during the Second World War (M. Grasshoff, pers. comm.). Lycosid types from the Schauinsland collection have been found at both MNHN and SMF, however, the type of *Lycosa tremula* was not found at either institution (C. Rollard, pers. comm., M. Grasshoff, pers. comm.). The type of *Lycosa tremula* is presumed lost.

Holotype of *Lycosa subantarctica*: Not seen. Original description based on a female specimen from Auckland Island (50°35’S, 166°09’E) listed by Forster (1964) as in MONZ, where it was not found and is presumed missing.

**Material examined.** Syntypes of *Lycosa virgatella* plus, 1204 non-type specimens (573 males, 631 females) — see Appendix B for collection details of specimens examined.

**Distribution** (Map 12). Found throughout New Zealand, including Stewart Island, Three Kings Islands, Snares Islands, and Auckland Islands.

TH / ND, AK, CL, WO, BP, TO, TK, HB, RI, WI, WA, WN / SD, NN, BR, WD, MB, KA, NC, MC, SC, MK, DN, OL, CO, FD, SL, SI / SN, AU.

Simon (1905) recorded *A. hilaris* from the Chatham Islands but was likely to be a misidentification of the very similar *A. ralphi*. Despite thorough searching by me in December 1999 and extensive invertebrate surveys on other occasions (e.g., Emberson *et al.* 1996), *A. hilaris* has not been found on the Chatham Islands. Roewer (1955a) listed *A. hilaris* as occurring in Tasmania, Australia but presented no evidence. I have examined the collection at the Tasmanian Museum and Art Gallery, Hobart, and collected in Tasmania but have found no evidence of the presence of *A. hilaris*. I consider Roewer’s (1955a) listing as an error. Roewer (1955a) also incorrectly recorded *P. vicaria* from New Caledonia, which was most likely a typographical error.

**Biology.** *Anoteropsis hilaris* inhabits grasslands and open scrub from sea level to sub-alpine areas. This species is common in human modified open habitats such as gardens, pasture, and orchards. *Anoteropsis hilaris* is one of the most abundant arthropod predators found in agroecosystems (e.g., Sivasubramaniam *et al.* 1997) and has been investigated as a possible bioindicator species (Hodge & Vink 2000). Adults have been found throughout the year but most commonly in December and January. Eggsacs have been found from September to March and

females carrying spiderlings have been seen in December to March. The eggsac has a pinkish tinge when new and is carried behind the spinnerets. A detailed account of eggsac production is shown in Forster & Forster (1973, 1999).

**DNA.** Four cytochrome c oxidase subunit I and three NADH dehydrogenase subunit I plus tRNA<sup>Leu(CUN)</sup> partial DNA sequences for this species are listed in GenBank (Benson *et al.* 2000) under accession numbers AY059975, AY059976, AY059977, AY059978, AY060012, AY060013, and AY060014 respectively.

**Remarks.** Despite the type of *Lycosa hilaris* not being found, the illustration of the male bulb (Koch, 1877) shows the structures of the median apophysis, apophysis, and tegulum clearly enough for specimens to be identified. The types of *Lycosa umbrata* and *Pardosa vicaria* were also not found, however, Koch's (1877) illustrations of the epigyna are clearly the same as the epigyne of *A. hilaris*. The descriptions by Goyen (1887) of *L. taylori* and Simon (1899) of *L. tremula* are sufficient to confirm a synonymy with *A. hilaris*. Forster's (1964) description and illustration of *L. subantarctica* were also sufficient to identify it as *A. hilaris*. Other non-type specimens examined from the Auckland Islands were *A. hilaris*.

It is not surprising that there are so many junior synonyms of *A. hilaris* as most early spider taxonomists based their descriptions on non-genitalic characters. The large variation in this species' colour pattern (Fig. 79c–e are from the same population) would have led them to believe they were describing a new species. There is also some variation in the appearance of the epigyne (Fig 52a–c) but this is usually a result of the degree to which the abdomen is distended.

### *Anoteropsis insularis* new species

Fig. 19, 53, 80a–b; Map 13

**Diagnosis.** Distinguished from all other *Anoteropsis* species by its pale yellow to yellow dorsal surface with dark brown markings, the shape of the median apophysis of the male bulb, and the external sclerites of the epigyne. *Anoteropsis insularis* has similar coloration to *A. forsteri* and *A. litoralis*, but the median apophysis is shorter after the bend than *A. forsteri* and the tip points posteriorly, unlike *A. litoralis*. In females, the median septum is thinner than *A. insularis* and the posterior lip is thinner than *A. litoralis*.

**Description.** Colour: carapace pale yellow to yellow with faint blackish bands extending from fovea, dark brown around eye area with white pubescence (Fig. 80a); sternum yellow-brown to orange-brown, blackish at margin and

down midline; abdomen pale yellow with dark brown blotches (Fig. 80a) and five white dots on posterior half of dorsal surface; legs pale yellow (femora white) with faint blackish patches. An unusually dark specimen is shown in Fig. 80b.

Chelicerae with three promarginal teeth (distal tooth reduced) and three retromarginal teeth. Tarsi and metatarsi with dense scopulae, especially evident on legs I and II. Male bulb (Fig. 19) with an approximate 90° bend in the median apophysis, which is longer after bend than before bend with posteriorly directed tip. Epigyne (Fig. 53). Internal genitalia with four bends in the copulatory duct.

**Dimensions** (mm). Male holotype (female allotype): total length 8.5 (8.2); carapace 4.2/3.4 (3.9/3.0), height 1.6 (1.6); abdomen 4.2/3.0 (5.0/3.5); sternum 2.0/1.7 (1.7/1.5). Size range: male body length 6.4–8.5, female body length 8.2–9.1.

**Type data.** Holotype: male (LUNZ) labelled “NZ, CH, near Red Bluff 43°55'S 176°32'W; on sand dunes at night; 7.xii.1999, C.J. Vink [handwritten].”

Allotype: female (LUNZ) labelled “NZ, CH, near Red Bluff 43°55'S 176°32'W; on sand dunes at night; 7.xii.1999, C.J. Vink [handwritten].”

Paratypes: 3 males, 1 female: 2♂, 1♀, CH, near Red Bluff, 43°55'S, 176°32'W, 7.xii.1999, C.J. Vink, LUNZ; 1♂, 7.xii.1999, C.J. Vink, NZAC.

**Material examined.** Type specimens plus 11 non-type specimens (9 males, 2 females) — see Appendix B for collection details of specimens examined.

**Distribution** (Map 13). Found only on Chatham Island and Pitt Island.

– / – / CH.

**Biology.** *Anoteropsis insularis* is found in sand dunes. The colour and pattern of the dorsum provide good camouflage and make specimens difficult to see against the sand. Adults are more commonly active at night and immatures during the day. Females construct small burrows in the sand. Adults have been found in November and December.

**DNA.** Cytochrome c oxidase subunit I and NADH dehydrogenase subunit I plus tRNA<sup>Leu(CUN)</sup> partial DNA sequences for this species are listed in GenBank (Benson *et al.* 2000) under accession numbers AY059979 and AY060015 respectively.

**Etymology.** The specific name is derived from *insula* (Latin, an island) and refers to Chatham Island where the species is found.

***Anoteropsis lacustris* new species**

Fig. 20, 54, 81; Map 14

**Diagnosis.** Distinguished from all other *Anoteropsis* species by the shape of the median apophysis of the male bulb and the external sclerites of the epigyne. *Anoteropsis lacustris* is morphologically similar to *A. cantuaria*, but is usually darker in coloration. The bulbs of the two species are very similar but the median apophysis of *A. cantuaria* has a slightly squarer bend than *A. lacustris*. Females of *A. lacustris* have deep hoods, but not posteriorly directed like *A. cantuaria*.

**Description.** Colour: carapace dark orange-brown with black stripes radiating from fovea, black around eye area with some white pubescence (Fig. 81); sternum orange brown; abdomen grey; legs dark yellow-brown with blackish annulations.

Chelicerae with three promarginal teeth (distal tooth very reduced) and three retromarginal teeth (proximal tooth reduced). Tarsi and metatarsi with scopulae, especially evident on legs I and II. Male bulb (Fig. 20) with an approximate 90° bend in the median apophysis, which is subequal in length before and after bend. Epigyne (Fig. 54) with deep hoods. Internal genitalia with three bends in the copulatory duct.

**Dimensions** (mm). Male holotype (female allotype): total length 11.1 (13.3); carapace 5.4/4.1 (6.8/5.2), height 1.3 (2.6); abdomen 5.7/3.2 (6.7/4.0); sternum 2.5/2.0 (3.1/2.6). Size range: male body length 7.0–11.5, female body length 7.2–16.2.

**Type data.** Holotype: male (LUNZ) labelled “NEW ZEALAND, NC, Arthur’s Pass; Bealey River [42°56’S, 171°33’E], under rock in riverbed; 30.iv.1998, Kelly Rennie [handwritten].”

Allotype: female (LUNZ) labelled “NZ, NC, Arthur’s Pass, Bealey River [42°56’S, 171°33’E]; under stones in riverbed; 9.iv.1999, C.J. Vink + M.A. Hudson [handwritten].”

Paratypes: 3 males, 3 females: 2♂, 2♀, NC, Bealey River, 42°56’S, 171°33’E, 9.iv.1999, C.J. Vink & M.A. Hudson, LUNZ; 1♂, 1♀, 9.iv.1999, C.J. Vink & M.A. Hudson, NZAC.

**Material examined.** Type specimens plus 84 non-type specimens (14 males, 70 females) — see Appendix B for collection details of specimens examined.

**Distribution** (Map 14). Found only in the South Island. —/NN, BR, WD, NC, MC, SC, MK, OL, CO, FD, SL.

**Biology.** *Anoteropsis lacustris* is found on stony river banks and lake shores throughout the South Island. Adults are more commonly active at night and immatures during the day. Adults have been found from October to May but

most commonly in January. Eggsacs have been found from October to February and females carrying spiderlings have been seen in January and February.

**DNA.** 12S rRNA, cytochrome c oxidase subunit I and NADH dehydrogenase subunit I plus tRNA<sup>Leu(CUN)</sup> partial DNA sequences for this species are listed in GenBank (Benson *et al.* 2000) under accession numbers AF380489, AY059980, and AY060016 respectively.

**Etymology.** The specific name is derived from *lacustris* (New Latin, pertaining to a lake) and refers to the main habitat of the species. It was originally conceived by Ray Forster.

***Anoteropsis litoralis* new species**

Fig. 21, 55, 82a–c; Map 15

**Diagnosis.** Distinguished from all other *Anoteropsis* species by its light yellow dorsal surface with black markings, the shape of the median apophysis of the male bulb and the external sclerites of the epigyne. *Anoteropsis litoralis* has similar coloration to *A. forsteri* and *A. insularis*, but the median apophysis is straight after the bend and not directed posteriorly. In females, the posterior lip of the epigyne is thicker.

**Description.** Colour: carapace light yellow to light orange-brown with two brownish longitudinal stripes but can vary (see Fig. 82a–c), patch of white pubescence next to PLE; sternum light yellow with grey blotches; abdomen has a light yellow to orange-brown heart stripe dorsal surface is usually mottled black on light yellow background (Fig. 82 a–b) but sometimes all grey (Fig. 82c); legs light yellow (femora cream) with faint annulations.

Chelicerae with three promarginal teeth (distal tooth reduced) and three retromarginal teeth (proximal tooth reduced). Tarsi and metatarsi with scopulae, especially evident on legs I and II. Male bulb (Fig. 21) with an approximate 90° bend in the median apophysis, which is longer after bend than before bend and straight after bend. Epigyne (Fig. 55). Internal genitalia with three bends in the copulatory duct.

**Dimensions** (mm). Male holotype (female allotype): total length 6.2 (9.5); carapace 2.9/2.1 (3.8/2.7), height 1.2 (1.4); abdomen 5.0/1.9 (4.7/3.4); sternum 1.4/1.2 (1.7/1.5).

**Size range.** Male body length 5.2–8.3, female body length 5.9–9.1.

**Type data.** Holotype: male (LUNZ) labelled “NEW ZEALAND, MC, Banks Peninsula; Kaitorete Spit [43°49’S, 172°36’E], yellow pan traps; in *Desmoschoenus spiralis* and debris; in dunes; Feb, 1993, C.J. Vink & A.B. Freeman.”

Allotype: female (LUNZ) labelled "A.B. Freeman; NEW ZEALAND, MC; Banks Peninsula; Kaitorete Spit [43°49'S, 172°36'E]; 16.viii.[19]91 / yellow pan traps; in *Desmoschoenus*; *spiralis* in dunes."

Paratypes: 7 males, 4 females: 1♀, MC, Kaitorete Spit, 43°49'S, 172°36'E, 1.viii.1991, A.B. Freeman, LUNZ; 1♀, 9.viii.1991, A.B. Freeman, NZAC; 5♂, 2♀, ii.1993, C.J. Vink & A.B. Freeman, LUNZ; 2♂, ii.1993, C.J. Vink & A.B. Freeman, NZAC.

**Material examined.** Type specimens plus 35 non-type specimens (25 males, 10 females) — see Appendix B for collection details of specimens examined.

**Distribution** (Map 15). Found on New Zealand coast-lines north of 44°S.

CL, BP, HB, WN, WA / NC, MC.

**Biology.** *Anoteropsis litoralis* inhabits sand dunes and beaches. The colour and pattern of the dorsum provide good camouflage and make specimens difficult to see against the sand. Adults are more commonly active at night and immatures during the day. Adults have been found from October to August.

**DNA.** Two cytochrome c oxidase subunit I and NADH dehydrogenase subunit I plus tRNA<sup>Leu(CUN)</sup> partial DNA sequences for this species are listed in GenBank (Benson *et al.* 2000) under accession numbers AY059981, AY059982, AY060017, and AY060018 respectively.

**Etymology.** The specific name is derived from *litoralis* (Latin, belonging to the sea shore) and refers to the habitat of the species.

### *Anoteropsis montana* new species

Fig. 22, 56, 83; Map 16

**Diagnosis.** Distinguished from all other *Anoteropsis* species by the rounded tip of the median apophysis of the male bulb, and the lateral sclerites of the epigyne and the "U" shaped posterior lip.

**Description.** Colour: carapace brown with blackish stripes radiating from fovea and darker at margin, dark brown eye area with some white pubescence (Fig. 83); sternum orange-brown to dark brown with reddish tinge; abdomen dark grey; legs dark orange-brown with brown annulations.

Chelicerae with three promarginal teeth (distal tooth reduced) and three retromarginal teeth. Tarsi and metatarsi with scopulae, especially evident on legs I and II. Male bulb (Fig. 22) with a weak bend in the median apophysis with rounded tip. Epigyne (Fig. 56) with lateral sclerites. Internal genitalia with two bends in the copulatory duct.

**Dimensions** (mm). Male holotype (female allotype): total length 10.1 (15.9); carapace 5.2/3.8 (7.2/5.7), height 2.2

(2.7); abdomen 5.2/3.1 (8.6/6.1); sternum 2.4/1.9 (3.5/2.6). Size range: male body length 9.1–11.5, female body length 10.3–15.9.

**Type data.** Holotype: male (MONZ) labelled "Seaward Kaikoura Range,; N. Branch Hapuku River, [42°17'S, 173°41'E]; KA, New Zealand,; 29 Apr. 1991–1 May 1991 [handwritten]."

Allotype: female (LUNZ) labelled "NEW ZEALAND, MB, nr Princess Bath; 2.i.1993 G.N. Bawden; alpine grassland."

Paratypes: 2 females: 1♀, MB, Molesworth, 42°09'S, 172°44'E, 11.ii.1988, J. Arund, LUNZ; 1♀, KA, Molesworth, 42°19'S, 173°06'E, 6.xii.1987, J. Arund, LUNZ.

**Material examined.** Type specimens plus 14 non-type specimens (8 males, 6 females) — see Appendix B for collection details of specimens examined.

**Distribution** (Map 16). Found in the northern half of the South Island.

– / NN, BR, MB, KA, NC, MC, MK.

**Biology.** *Anoteropsis montana* is found in scree and riverbeds in mountainous areas. Adults have been found from October to May. An eggsac has been found in January and a female carrying spiderlings in February.

**DNA.** Cytochrome c oxidase subunit I and NADH dehydrogenase subunit I plus tRNA<sup>Leu(CUN)</sup> partial DNA sequences for this species are listed in GenBank (Benson *et al.* 2000) under accession numbers AY059983 and AY060019 respectively.

**Etymology.** The specific name is derived from *montanus* (Latin, of mountains) and refers to the habitat of the species.

### *Anoteropsis okatainae* new species

Fig. 23, 57, 84; Map 17

**Diagnosis.** Distinguished from all other *Anoteropsis* species by the shape of the median apophysis of the male bulb and the external sclerites of the epigyne, especially the raised areas adjacent to the median septum. There are similarities in the morphology of the bulb and the epigyne to the much larger *A. senica*. The median apophysis is shorter and the hoods of the epigyne are not as developed as *A. senica*.

**Description.** Colour: carapace yellow-brown with blackish bands extending from the fovea, blackish band around base of carapace and eye area black (Fig. 84); sternum pale yellow with blackish blotches around edge; abdomen with yellow heart stripe and variable black and red-brown pattern (Fig. 84); legs orange-brown (femora pale yellow) with blackish annulations.

Chelicerae with three promarginal teeth (distal tooth reduced) and three retromarginal teeth (proximal tooth reduced). Tarsi and metatarsi with weak scopulae, especially evident on legs I and II. Male bulb (Fig. 23) with an approximate 90° bend in the median apophysis, which is longer after bend than before bend and wave-like after bend. Epigyne with raised areas adjacent to median septum (Fig. 57). Internal genitalia with three bends in the copulatory duct.

**Dimensions** (mm). Male holotype (female allotype): total length 5.1 (6.6); carapace 2.6/1.9 (2.9/2.1), height 1.0 (1.1); abdomen 2.6/1.6 (3.9/2.6); sternum 1.4/1.1 (1.3/1.1). Size range: male body length 4.2–5.1, female body length 5.1–7.6.

**Type data.** Holotype: male (LUNZ) labelled “NZ, BP, Lake Okataina 38°08’S 176°25’E; lake shore at night; 17.ii.2000 C.J. Vink [handwritten].”

Allotype: female (LUNZ) labelled “NZ, BP, Lake Okataina 38°08’S 176°25’E; lake shore at night; 17.ii.2000 C.J. Vink [handwritten].”

Paratypes: 2 females: BP, Lake Okataina, 38°08’S, 176°25’E, 17.ii.2000, C.J. Vink, LUNZ.

**Material examined.** Type specimens plus 5 non-type specimens (2 males, 3 females) — see Appendix B for collection details of specimens examined.

**Distribution** (Map 17). Known only from the fine gravel shores of Lake Okataina.

BP / –.

**Biology.** *Anoteropsis okatainae* was found at night on the shore of Lake Okataina. Adults have been found in February and October.

**DNA.** Cytochrome c oxidase subunit I and NADH dehydrogenase subunit I plus tRNA<sup>Leu(CUN)</sup> partial DNA sequences for this species are listed in GenBank (Benson *et al.* 2000) under accession numbers AY059984 and AY060020 respectively.

**Etymology.** The specific name refers to the type locality, Lake Okataina.

### *Anoteropsis ralphi* (Simon) new combination

Fig. 24, 58, 85a–c; Map 18

*Lycosa ralphi* Simon, 1905: 421.

*Alopecosa ralphi* (Simon) —Roewer, 1955a: 224.

*Lycosa turbida* Simon, 1905: 422. **New synonymy.**

*Dingosa turbida* (Simon) —Roewer, 1955a: 240.

*Lycosa retiruga* Simon, 1905: 422–423. **New synonymy.**

*Allocosa retiruga* (Simon) —Roewer, 1955a: 206.

*Lycosa algida* Simon, 1905: 423–424. **New synonymy.**

**Diagnosis.** Distinguished from all other *Anoteropsis* spe-

cies by the shape of the median apophysis of the male bulb and the external sclerites of the epigyne. *Anoteropsis ralphi* is morphologically similar to *A. hilaris*, however, the basoembolic apophysis has a short spur and the tip of the median apophysis is directed posteriorly. The median septum of the female epigyne is usually thinner than *A. hilaris*.

**Description.** Colour: carapace orange-brown with yellow longitudinal band, blackish lines radiating from fovea, dark brown at carapace margin and yellow-brown longitudinal bands above margin, black around eye area (Fig. 85); sternum orange-brown with faint brown markings, abdomen brown with a yellow-brown heart stripe but does vary (see Fig. 85a–c); legs orange brown (femora yellow-brown) with blackish annulations.

Chelicerae with three promarginal teeth (distal tooth reduced) and three retromarginal teeth (proximal tooth reduced). Tarsi and metatarsi with weak scopulae, especially evident on legs I and II. Male bulb (Fig. 24) with short to medium, tooth-like spur on basoembolic apophysis; median apophysis with an approximate 90° bend, which is longer after bend than before bend with posteriorly directed tip. Female epigyne (Fig. 58). Internal genitalia with at least five bends in the copulatory duct.

**Dimensions** (mm). Male CH, Mairangi (female CH, Mairangi): total length 7.6 (7.7); carapace 4.1/2.8 (3.9/2.7), height 1.3 (1.1); abdomen 3.6/3.0 (4.0/2.6); sternum 2.0/1.5 (1.7/1.4). Size range: male body length 5.5–7.6, female body length 6.1–9.8.

**Type data.** Syntypes of *Lycosa ralphi*: Not seen. Original description based on male and female specimens collected by H.H. Schauinsland in 1896–1897 from the Chatham Islands. Schauinsland’s specimens were probably in the Naturhistorische Museum, Lübeck and would have been destroyed during the Second World War (M. Grasshoff, pers. comm.). Lycosid types from the Schauinsland collection have been found at both MNHN and SMF, however, the types of *Lycosa ralphi* were not found at either institution (C. Rollard, pers. comm., M. Grasshoff, pers. comm.). The types of *Lycosa ralphi* are presumed lost.

Holotype of *Lycosa turbida*: Not seen. Original description based on a female specimen collected by H.H. Schauinsland in 1896–1897 from the Chatham Islands and is considered lost (see note above).

Holotype of *Lycosa retiruga*: Not seen. Original description based on a female specimen collected by H.H. Schauinsland in 1896–1897 from the Chatham Islands and is considered lost (see note above).

Holotype of *Lycosa algida*: female (SMF RII/4968) labelled “Arachn. Coll. Roewer ~ Lfd.No. 4968; Araneae: Lycosidae No. 269; *Lycosa algida* Sim[on].; 1♀, Chatham-

Inseln, ex coll. Schauinsland; Typ.-Simon, det. 1905. [handwritten on a pre-printed Roewer Collection label].”

**Material examined.** Holotype of *Lycosa algida* plus 100 non-type specimens (42 males, 58 females) — see Appendix B for collection details of specimens examined.

**Distribution** (Map 18). Known only from the Chatham Islands (CH). Roewer (1955a) listed *A. ralphi* as occurring on Hawaii but presented no evidence to support this. *Anoteropsis ralphi* has not been found on Hawaii and Roewer’s (1955a) listing is considered an error (Nishida 1992).

**Biology.** *Anoteropsis ralphi* is found in grassland and open scrub throughout the Chatham Islands. Adults have been found from September to April. Eggsacs have been found from November to March and a female carrying spiderlings was found in December.

**DNA.** Cytochrome c oxidase subunit I and NADH dehydrogenase subunit I plus tRNA<sup>Leu(CUN)</sup> partial DNA sequences for this species are listed in GenBank (Benson *et al.* 2000) under accession numbers AY059985 and AY060021 respectively.

**Remarks.** Despite the types of *Lycosa ralphi*, *L. turbida*, and *L. retiruga* not being found, the descriptions (Simon 1905) are adequate enough to identify them as the same species. It is not surprising that there are so many junior synonyms of *A. ralphi* as Simon (1905) based his descriptions on non-genitalic characters and the large variation in this species colour pattern (see Fig. 85a–c) would have led him to believe he was describing different species. *Anoteropsis ralphi* is similar in genitalic and non-genitalic appearance to *A. hilaris* and this may explain why Simon (1905) mistakenly identified a specimen from the Chatham Islands as *A. hilaris*.

### ***Anoteropsis senica* (L. Koch) new combination**

Fig. 25, 59, 86a–b; Map 19

*Lycosa senica* L. Koch, 1877: 915, plate 79, fig. 3.

*Hogna senica* (L. Koch) —Roewer, 1955a: 253.

*Lycosa uliginosa* Goyen, 1887: 136 (primary homonym of *Lycosa uliginosa* Westering, 1862).

*Lycosa goyeni* Roewer, 1951: 439 (replacement name for *Lycosa uliginosa* Goyen). **New synonymy.**

*Pardosa goyeni* (Roewer) —Roewer, 1955a: 185.

**Diagnosis.** Distinguished from all other *Anoteropsis* species by the shape of the median apophysis of the male bulb and the external sclerites of the epigyne, especially the raised areas adjacent to the median septum. There are similarities in the morphology of the bulb and the epigyne to the much smaller *A. okatainae*. The median apophysis is

longer and the hoods of the epigyne are deeper than *A. okatainae*.

**Description.** Colour: carapace orange-brown with blackish markings extending from fovea (Fig. 86a–b); sternum orange-brown; abdomen dark grey with two light yellow blotches towards the posterior and numerous small light yellow blotches (Fig. 86a–b), male with yellow-orange heart stripe, which is duller in female; legs orange-brown (femora yellow-brown) with faint darker annulations.

Chelicerae with three promarginal teeth (distal tooth very reduced) and three retromarginal teeth. Tarsi and metatarsi with scopulae, especially evident on legs I and II. Male bulb (Fig. 25) with an approximate 90° bend in the median apophysis, which is longer after bend than before bend and wave-like after bend. Epigyne with raised areas adjacent to median septum (Fig. 59). Internal genitalia with two bends in the copulatory duct.

**Dimensions** (mm). Male WD, Fox Glacier (female WD, Fox Glacier): total length 11.0 (11.0); carapace 6.0/4.5 (5.6/4.2), height 2.0 (2.2); abdomen 5.2/3.6 (5.3/3.9); sternum 2.9/2.1 (2.7/2.1). Size range: male body length 7.4–11.7, female body length 8.2–15.8.

**Type data.** Type(s) of *Lycosa senica*: Not seen. Original description based on a female specimen(s) from an unspecified locality in New Zealand listed by Koch (1877) as deposited in “Mr. Bradley’s Sammlung” (Bradley Collection, Macleay Museum, University of Sydney), but could not be found there (M. Humphrey, pers. comm.). It was also not found at the Zoologisches Institut und Zoologisches Museum, Hamburg (Rack 1961, H. Dastyh, pers. comm.) where much of Koch’s collection is held.

Syntypes of *Lycosa uliginosa* Goyen: 2 females and 14 spiderlings (OMNZ) labelled “No data: Goyen Collection” — label inserted by C.L. Wilton (R.R. Forster, pers. comm.).

**Material examined.** Syntypes of *Lycosa uliginosa* plus 241 non-type specimens (67 males, 174 females) — see Appendix B for collection details of specimens examined.

**Distribution** (Map 19). Found throughout New Zealand south of 37°S and Stewart Island.

GB, TO, TK, RI, WA, WN / SD, NN, BR, WD, KA, NC, MC, SC, OL, CO, DN, FD, SL, SI.

**Biology.** *Anoteropsis senica* inhabits alluvial river beds and is well camouflaged against the surrounding rocks and gravel. This species is a nocturnal hunter. Adults are found throughout the year but most commonly in December and January. Females have been found from September to January in scooped-out depressions under stones in riverbeds with their eggsacs (Forster & Forster 1973, 1999, pers. obs.). Females with spiderlings have been seen in December and January.



**DNA.** 12S rRNA, two cytochrome c oxidase subunit I, and two NADH dehydrogenase subunit I plus tRNA<sup>Leu(CUN)</sup> partial DNA sequences for this species are listed in GenBank (Benson *et al.* 2000) under accession numbers AF380490, AY059986, AY059987, AY060022, and AY060023 respectively.

**Remarks.** The type of *Lycosa senica* could not be located, however, the illustration of the female genitalia and the description (Koch, 1877) are sufficient to confirm its identity. *Lycosa uliginosa* was described by Goyen (1887) from an unspecified number of female and male specimens collected on the shores of Lake Wanaka (44°42'S, 169°07'E). Forster (1967) stated that most of Goyen's material has been lost, however, two female specimens were found in what remains of the Goyen Collection at OMNZ. The male type specimen[s] was not located and is presumed lost.

### *Anoteropsis urquharti* (Simon) new combination

Fig. 26, 60, 87; Map 20

*Lycosa urquharti* Simon, 1898a: 28–29.

*Hogna urquharti* (Simon) —Roewer, 1955a: 253.

**Diagnosis.** Distinguished from all other *Anoteropsis* species by the dense patch of white pubescence below the PLE, the shape of the median apophysis of the male bulb and the external sclerites of the epigyne. *Anoteropsis urquharti* is morphologically similar to *A. aerescens*, *A. arenivaga*, *A. canescens*, and darker specimens of *A. litoralis*. Males are distinguishable by the median apophysis, which tapers towards the tip and points anteriorly. It is difficult to differentiate females but there are subtle differences in the shape of the posterior lip and median septum.

**Description.** Colour: carapace brown to black with blackish lines radiating from fovea, orange-brown area at centre, black around eye area, patch of white pubescence next to PLE (Fig. 87); sternum dark yellow-brown with faint blackish markings; abdomen grey with black blotches, faint yellow-grey heart stripe, two paired yellow-brown blotches at posterior (Fig. 87); legs yellow-brown with blackish annulations.

Chelicerae with three promarginal teeth (distal tooth reduced) and three retromarginal teeth (proximal tooth reduced). Tarsi and metatarsi with scopulae, especially evident on legs I and II. Male bulb (Fig. 26) with an approximate 90° bend in the median apophysis, which is longer after bend than before bend and wave-like after bend. Epigyne (Fig. 60). Internal genitalia with three bends in the copulatory duct.

**Dimensions** (mm). Male OL, near Rees Valley (female CO, Rock and Pillar Range): total length 7.0 (7.7); carapace

4.0/2.7 (4.4/3.0), height 1.3 (1.9); abdomen 2.9/2.2 (3.5/2.6); sternum 1.7/1.6 (2.0/1.7). Size range: male body length 5.8–8.4, female body length 6.9–9.5.

**Type data.** Type(s) of *Lycosa urquharti*: Not seen. Original description based on a female specimen(s) from an unspecified locality in montane New Zealand (Simon, 1898a). Most of Simon's existing types are housed in MNHN but the type of *L. urquharti* was not located there (C. Rollard, pers. comm.) and is presumed lost.

**Material examined.** 19 non-type specimens (12 males, 7 females) — see Appendix B for collection details of specimens examined.

**Distribution** (Map 20). Found in mountainous regions of the South Island south of 43°S.

– / MC, OL, CO.

**Biology.** *Anoteropsis urquharti* inhabits mountain scree and stony ground. Adults have been found from September to April.

**DNA.** Three cytochrome c oxidase subunit I and NADH dehydrogenase subunit I plus tRNA<sup>Leu(CUN)</sup> partial DNA sequences for this species are listed in GenBank (Benson *et al.* 2000) under accession numbers AY059988, AY059989, AY059990, AY060024, AY060025, and AY060026 respectively.

**Remarks.** Although the type(s) could not be found, Simon's (1898a) description, including habitat, are sufficient to confirm its identity.

### *Anoteropsis westlandica* new species

Fig. 27, 61, 88; Map 21

**Diagnosis.** Distinguished from all other *Anoteropsis* species by the crescent-shaped tip of the median apophysis of the male bulb and the external sclerites of the epigyne, especially the posterior lip. Morphologically similar to *A. hallae* but the median apophysis is wider at the tip and the posterior lip of the epigyne is "V" shaped.

**Description.** Colour: carapace brown with faint yellow-brown longitudinal stripes near margins and a wide yellow longitudinal stripe (Fig. 88); sternum orange-brown; abdomen dark brown with light yellow heart stripe; legs yellow-brown (femora with olive tinge) with orange-brown annulations.

Chelicerae with three promarginal teeth (distal tooth reduced) and three retromarginal teeth. Tarsi and metatarsi with weak scopulae, especially evident on legs I and II. Male bulb (Fig. 27) with a weak bend in the median apophysis, which is bifurcate and crescent-shaped at tip. Epigyne (Fig. 61) with lateral sclerites and raised posterior

lip. Internal genitalia with two bends in the copulatory duct.

**Dimensions** (mm). Male holotype (female allotype): total length 6.3 (7.2); carapace 3.3/2.5 (4.0/3.0), height 1.4 (1.8); abdomen 2.7/1.8 (3.7/2.9); sternum 1.5/1.3 (1.7/1.5). Size range: male body length 4.4–7.3, female body length 6.0–8.1.

**Type data.** Holotype: male (LUNZ) labelled “NEW ZEALAND, WD, Franz Josef Glacier [43°24’S, 170°11’E]; nr glacier car park; running on streambed; 15.xi.1995 C.J. Vink [handwritten].”

Allotype: female (OMNZ) labelled “NEW ZEALAND, WD, Lake Paringa [43°43’S, 169°24’E]; 6-9.xii.1960; J.I. Townsend & P.R. Kettle [handwritten].”

Paratypes: 5 males, 2 females: 1♀, WD, Lake Paringa, 43°43’S, 169°24’E, 6-9.xii.1960, J.I. Townsend & P.R. Kettle, OMNZ; 5♂, 1♀, 11-14.xii.1994, C.J. Vink, LUNZ.

**Material examined.** Type specimens plus 15 non-type specimens (2 males, 13 females) — see Appendix B for collection details of specimens examined.

**Distribution** (Map 21). Found only in the West of the South Island. One specimen was collected east of the Southern Alps near the headwaters of Havelock River (SC) but may have accidentally ballooned over the mountains.

– / NN, WD, FD.

**Biology.** *Anoteropsis westlandica* inhabits forest and damp forest margins. Adults have been found from November to March and June. Eggsacs have been found in December and January.

**DNA.** Cytochrome c oxidase subunit I and NADH dehydrogenase subunit I plus tRNA<sup>Leu(CUN)</sup> partial DNA sequences for this species are listed in GenBank (Benson *et al.* 2000) under accession numbers AY059991 and AY060027 respectively.

**Etymology.** The specific name is a noun in apposition taken from the Westland region of New Zealand, where the species is found.

### Genus *Artoria* Thorell

*Artoria* Thorell, 1877: 531. —Barrion & Litsinger, 1995: 364. Framenau, 2002: 210–211. Type species: *Artoria parvula* Thorell, 1877, by monotypy.

*Artoriella* Roewer, 1960: 563. —Framenau, 2002: 210.

*Trabaola* Roewer, 1960: 582. —Framenau, 2002: 210.

**Description.** (Based on Framenau 2002) Body length 2.6–9.5 mm. Carapace orange-brown to black (always orange-brown in New Zealand species). Anterior eyes procurved (strongly in *A. hospita* and *A. separata*, see Fig.

4) and, in all New Zealand species, the distance between anterior lateral eyes and anterior median eyes is greater than the width of two anterior lateral eyes. New Zealand species with yellow-brown to orange-brown abdomen, often with faint heart stripe. Legs in descending order of length usually 4123 (male and female), in all New Zealand species the fourth leg is longest. Male: varying amounts of macrosetae at cymbium tip; pedipalp tibial length shorter than cymbium length; median apophysis either spoon shaped or (as in all New Zealand species) bifurcate; basoembolic apophysis broad and bent ventrally; embolus varies in shape (slim to thick); terminal apophysis functions as a conductor, sometimes forming a groove in which the embolus rests; subtegulum at posterior lateral margin of tegulum. Female: epigyne variable; all New Zealand species with a developed median septum (very much so in *A. hospita* and *A. separata*); internal genitalia simple, consisting of a slightly curved copulatory duct leading to a rounded spermatheca.

**Remarks.** Framenau (2002) has redefined *Artoria* and has described seven new species and redescribed seven others. *Artoria* shares the ventrally bent basoembolic apophysis with *Anoteropsis* and *Notocosa*, but it is much broader in *Artoria*. The bulk of *Artoria* species are found in Australia, where there are more than 50 species (pers. obs., V.W. Framenau, pers. comm.). Australia is the centre of *Artoria* diversity and all three New Zealand species are restricted to the warmer, northern half of the North Island. It seems likely that *Artoria* species arrived in New Zealand after the *Anoteropsis* radiation.

*Artoria* does not fit any of the current lycosid subfamilies defined by Dondale (1986), Alderweireldt & Jocqué (1993) or Zyuzin (1985, 1993). The lobe of the tegulum forming part of the conductor is similar to some genera in the subfamily Lycosinae (*sensu* Dondale 1986). However, the enlarged and longitudinally oriented median apophysis and the terminal apophysis functioning as a conductor are characters that Dondale (1986) listed as found in Venoniinae. The groove in the terminal apophysis in which the embolus rests, is known only from *Artoria* spp. and *Anoteropsis* spp. (C.D. Dondale, pers. comm.). The terminal apophysis forming part of the conductor, the partially divided tegulum, and the ventrally bent basoembolic apophysis are shared with *Anoteropsis* and *Notocosa* gen. nov. Molecular data also support this relationship and places these genera basally in the Lycosidae (Text-fig. 1 Vink *et al.* 2002). Further revisions of Australasian lycosids may result in a separate subfamily at least for *Anoteropsis*, *Artoria*, and *Notocosa*.

***Artoria hospita* new species**

Fig. 28, 62, 89; Map 22

**Diagnosis.** Distinguished from all other New Zealand *Artoria* species by the male bulb and female epigyne. Morphologically similar to *A. separata* but the mesially directed hook-like spur is nearer to the middle of the median apophysis and the median septum of the epigyne is shorter.

**Description.** Colour: carapace orange-brown with faint blackish stripes radiating from fovea, black around eye area (Fig. 89); sternum yellow-brown with faint blackish longitudinal band; abdomen orange-brown with brown blotches and faint heart stripe (Fig. 89); legs yellow-brown with faint blackish annulations.

Chelicerae with three promarginal teeth (distal tooth reduced) and three retromarginal teeth. Male bulb (Fig. 28) with mesially directed hook-like spur near the base of the median apophysis. Epigyne (Fig. 62) with a large, spatulate median septum. Internal genitalia bulbous.

**Dimensions** (mm). Male holotype (female allotype): total length 5.1 (6.6); carapace 2.9/2.1 (2.9/2.1), height 1.2 (1.0); abdomen 2.1/1.7 (3.5/2.5); sternum 1.2/1.1 (1.2/1.1). Size range: male body length 5.1–6.2, female body length 4.3–8.0.

**Type data.** Holotype: male (MONZ) labelled “Mt Ngongotaha [38°05’S, 176°13’E], Rotorua, BP; New Zealand. Ex leaf mould.; Coll: R.G. Ordish.; 13 May 1971.”

Allotype: female (NZAC) labelled “NEW ZEALAND, BP Rotorua; L. Okataina [38°08’S, 176°25’E], Western Walkway 400m; 11 Mar 1995 M.C. Larivière Litter 95/2.”

Paratypes: 1 male, 1 female: 1♂, BP, Mt Ngongotaha, 38°05’S, 176°13’E, 13.v.1971, R.G. Ordish, MONZ; 1♀, 1962, C.W. O’Brien, OMNZ (Honolulu Collection).

Material examined. Type specimens plus 15 non-type specimens (7 males, 8 females) — see Appendix B for collection details of specimens examined.

**Distribution** (Map 22). Found in the northern half of the North Island.

AK, CL, BP, TO / –.

**Biology.** *Artoria hospita* is found in or near forests (usually in leaf litter). Adults have been found throughout the year and a female carrying spiderlings was found in January.

**Etymology.** The specific name is derived from *hospitus* (Latin, a visitor), as this species is likely to be a comparatively recent arrival from Australia.

***Artoria segregata* new species**

Fig. 29, 63, 90; Map 23

**Diagnosis.** Distinguished from all other New Zealand *Artoria* species by its small size, the weak spur near the base of the median apophysis of male bulb, and the relatively undeveloped median septum of the female epigyne.

**Description.** Colour: carapace orange-brown with weak blackish lines radiating from fovea, blackish margin, black around eye area (Fig. 90); sternum orange-brown with weak blackish blotch in centre; abdomen yellow-brown covered with brownish blotches (Fig. 90); legs orange-brown (femora yellow-brown) with weak blackish annulations.

Chelicerae with three promarginal teeth (distal and proximal teeth very reduced) and three retromarginal teeth. Male bulb (Fig. 29) with weak spur near the base of the median apophysis. Epigyne (Fig. 63) with a raised median septum. Internal genitalia bulbous.

**Dimensions** (mm). Male holotype (female allotype): total length 4.3 (4.4); carapace 2.4/1.5 (2.4/1.6), height 0.7 (1.3); abdomen 1.7/1.2 (2.0/1.3); sternum 1.0/0.8 (1.1/0.9). Size range: female body length 4.4–5.3.

**Type data.** Holotype: male (NZAC) labelled “NEW ZEALAND ND, Poor Knights; Is, Tawhiti Rahi [35°27’S, 174°43’E] 100 m; 7–12 Sep 1980. J.C. Watt; pit trap 80/81 / *Lycosa* sp. ?; Det. D.J. Court; 195 [circled] [handwritten].”

Allotype: female (NZAC) labelled “NEW ZEALAND ND, Poor Knights; Tawhiti Rahi [35°27’S, 174°43’E], 5 Dec 1980; G. Kuschel. Sifted decayed wood; & litter on plateau 80/136 / *Lycosid* imm.; unidet. imm. 37 [circled]; Det. D.J. Court [handwritten].”

Paratype: 1 female: ND, Tawhiti Rahi, 35°27’S, 174°43’E, 3–10.xii.1980, J.C. Watt, NZAC.

**Material examined.** Type specimens — see Appendix B for collection details of specimens examined.

**Distribution** (Map 23). Found only on Tawhiti Rahi, Poor Knights Islands.

ND / –.

**Biology.** *Artoria segregata* appears to be litter dwelling. Adults have been found in September and December.

**Etymology.** The specific name is derived from *segregus* (Latin, separated) as this species is separated from the vast majority of its congeners, which are found in Australia.

***Artoria separata* new species**

Fig. 4, 30, 37, 64, 91; Map 24

**Diagnosis.** Distinguished from all other New Zealand *Artoria* species by the male bulb and female epigyne. Morphologically similar to *A. hospita* but the mesially directed hook-like spur is nearer to the base of the median apophysis and the median septum of the epigyne is longer.

**Description.** Colour: carapace orange-brown with blackish stripes radiating from fovea, black around eye area (Fig. 91); sternum pale yellow to light orange-brown; abdomen orange-brown with brown blotches and faint heart stripe (Fig. 91); legs yellow-brown to orange-brown with faint darker annulations.

Chelicerae with three promarginal teeth (distal tooth reduced) and three retromarginal teeth. Male bulb (Fig. 30) with mesially directed hook-like spur near the base of the median apophysis. Epigyne (Fig. 64) with a large, spatulate median septum. Internal genitalia (Fig. 37).

**Dimensions** (mm). Male holotype (female allotype): total length 5.8 (7.3); carapace 3.6/2.6 (3.2/2.3), height 1.3 (1.1); abdomen 2.3/2.0 (3.8/2.7); sternum 1.4/1.3 (1.3/1.2). Size range: male body length 4.6–6.0, female body length 5.8–7.3.

**Type data.** Holotype: male (MONZ) labelled “New Zealand: North Is.; Taranaki: Kaitake Ra.; West. [39°10’S, 173°58’E]; 27.vii.1996; Coll. J. Clark [handwritten].”

Allotype: female (MONZ) labelled “New Zealand: North Is.; Taranaki, Tarata [39°09’S, 174°22’E]; ex forest floor; 24.vii.1996; coll. J. Clark [handwritten].”

Paratypes: 1 male, 1 female: TK, Kaitake Range, 39°10’S, 173°58’E, 27.vii.1996, J. Clark, MONZ.

**Material examined.** Type specimens plus 26 non-type specimens (11 males, 15 females) — see Appendix B for collection details of specimens examined.

**Distribution** (Map 24). Found in the northwest of the North Island.

ND, WO, TK / –.

**Biology.** *Artoria separata* inhabits forest and forest litter. Adults have been found throughout the year. Eggsacs have been found in December.

**DNA.** Cytochrome c oxidase subunit I and NADH dehydrogenase subunit I plus tRNA<sup>Leu(CUN)</sup> partial DNA sequences for this species are listed in GenBank (Benson *et al.* 2000) under accession numbers AY059993 and AY060029 respectively.

**Etymology.** The specific name is derived from *separatus* (Latin, separated) as this species is separated from the vast majority of its congeners, which are found in Australia.

**Genus *Geolycosa* Montgomery**

*Geolycosa* Montgomery, 1904: 292–293. —Wallace, 1942: 2, 5. Kaston, 1948: 316–318. Roewer, 1960: 701. Dondale & Redner, 1990: 26–27. Zyuzin & Logunov, 2000: 308–309. Type species: *Geolycosa latifrons* Montgomery, 1904 by original designation.  
*Scaptocosa* Banks, 1904: 113. —Dondale & Redner, 1990: 30.

**Description.** (Based on Dondale & Redner 1990) Body length 8.5–18.0 mm. Carapace elevated anterior to fovea (not so in *G. tongatabuensis*). Anterior row of eyes straight or slightly procurved. Chelicerae with three promarginal teeth and three retromarginal teeth. Legs in descending order of length 4123 (male and female). Found in deep, vertical burrows. Male: without macrosetae at cymbium tip (not so in *G. tongatabuensis*); pedipalp tibial length shorter than cymbium length; bulb with sickle-shaped terminal apophysis; embolus long, slender, curved and parallel to terminal apophysis; median apophysis triangular with mesially directed spur; subtegulum at posterior lateral margin of tegulum. Female: epigyne with hoods, median septum large and shaped like inverted “T”; internal genitalia with large, bulbous spermathecae, often with nodules.

**Remarks.** *Geolycosa* has been a convenient genus in which to dump many new burrowing wolf spider species. Dondale & Redner (1990) have redefined the genus and believed that *Geolycosa* was restricted to North America, however, Zyuzin & Logunov (2000) have shown that two Palaearctic species belong in *Geolycosa*.

***Geolycosa tongatabuensis* (Strand)**

Fig. 31, 38, 65, 92; Map 25

*Tarentula tongatabuensis* Strand, 1911: 207. —Strand, 1915: 258, plate 14, fig 21, plate 19, fig 99.

*Tarentula tanna* Strand, 1913: 121–122. —Strand, 1915: 260, plate 19, fig. 96a–b.

*Lycosa tanna* (Strand) —Berland, 1938: 182–183, figs 147–149. —Ledoux & Hallé, 1995: 7.

*Scaptocosa tongatabuensis* (Strand) —Roewer, 1955a: 291. *Varacosa tanna* (Strand) —Roewer, 1955a: 305. —Chrysanthus, 1967: 424, figs 73, 78–79.

“*Lycosa*” *tongatabuensis* (Strand). —Ledoux & Hallé, 1995: 7, figs 5A–C.

*Geolycosa tongatabuensis* (Strand). —Platnick, 1997: 554.

**Diagnosis.** Distinguished from all other New Zealand lycosid species by the elongated cymbium, the sickle-shaped terminal apophysis of the male bulb, and the inverted “T”-shaped median septum of the female epigyne.

**Description.** Colour: carapace orange-brown with yellow-orange medial band, yellow-orange with blackish blotches at carapace edge, black around eyes and blackish

stripes radiating from fovea (Fig. 92); sternum yellow-brown; abdomen pale yellow with grey blotches (Fig. 92); legs orange-brown, femora yellow-brown.

Chelicerae with three promarginal teeth and three retromarginal teeth. Tarsi and metatarsi with scopulae, especially evident on legs I and II. Male pedipalp (Fig. 31) with four macrosetae at cymbium tip; elongate cymbium; sickle-shaped terminal apophysis; embolus long, slender, curved and parallel to terminal apophysis. Epigyne (Fig. 65) with large median septum shaped like an inverted "T". Internal genitalia (Fig. 38) bulbous with nodules.

**Dimensions** (mm). Male KE, Curtis Island (female KE, Raoul Island): total length 10.2 (16.5); carapace 6.1/4.7 (7.8/5.8), height 2.2 (3.7); abdomen 4.7/3.4 (8.6/4.7); sternum 2.6/2.1 (3.4/2.4). Size range: male body length 8.5–10.2, female body length 10.1–16.5.

**Type data.** Lectotype of *Tarentula tongatabuensis* (here designated): female (SMF 2199) labelled "*Tarentūla tongatabūensis* Strand; 2♀ Typūs; Nūkū alafa aūf Tongatabū [Nuku'alofa, Tongatapu, Tonga 21°07'S, 175°12'W]; E. Wolf [4 June] 1909 [handwritten]."

Paralectotype of *Tarentula tongatabuensis* (here designated): juvenile (SMF 2199) labelled "*Tarentūla tongatabūensis* Strand; 2♀ Typūs; Nūkū alafa aūf Tongatabū [Nuku'alofa, Tongatapu, Tonga 21°07'S, 175°12'W]; E. Wolf [4 June] 1909 [handwritten]." The adult syntype is designated here as a lectotype in order to fix this taxonomic concept of *Tarentula tongatabuensis*; the immature syntype lacked many characters necessary for the identification and confirmation of this species concept.

Holotype of *Tarentula tanna*: female (SMF 2167) labelled "*Tarentūla tannae* [sic] Strand; 1♀ Typūs; Tanna: Neū Hebriden [Tanna, Vanuatu, 19°30'S, 169°20'E]; E. Wolf S. [23 May] 1909 [handwritten]."

**Material examined.** Lectotype and paralectotype of *Tarentula tongatabuensis* and holotype of *Tarentula tanna* plus 11 non-type specimens (3 males, 8 females) — see Appendix B for collection details of specimens examined.

**Distribution** (Map 25). Found on the Kermadec Islands, Northland, and Coromandel.

KE / ND, CL / –.

Also found in Tonga, Vanuatu, French Polynesia, Papua New Guinea, and Samoa.

**Biology.** *Geolycosa tongatabuensis* inhabits beaches and sand dunes. Adults have been found from September to April. A female with an eggsac was found in December.

**DNA.** 12S rRNA and NADH dehydrogenase subunit I plus tRNA<sup>Leu(CUN)</sup> partial DNA sequences for this species are listed in GenBank (Benson *et al.* 2000) under accession numbers AY059959 and AY059994 respectively.

**Remarks.** The pedipalpal and epigynal morphology of *G. tongatabuensis* conform to Dondale & Redner's (1990) definition of *Geolycosa*. However, the macrosetae at the tip of the cymbium and the uniform height of the carapace do not fit their definition but are listed as characteristics of *Hogna* Simon, 1885 (Dondale & Redner 1990). *Geolycosa* was chosen over *Hogna* because genitalic structure seems to be more important than somatic characters in lycosid classification. Genitalic morphology indicates that *G. tongatabuensis* is closely related to *Trochosa papakula* (Strand, 1911), *Hogna galapagoensis* (Banks, 1902), and *Lycosa howarthi* Gertsch, 1973. These species may be part of an undescribed Pacific genus that requires the examination of more material before it can be established.

### Genus *Notocosa* new genus

Type species: *Lycosa bellicosa* Goyen, 1888, here designated.

**Description.** Body length 8.9–11.5 mm. Cephalothorax orange-brown. Abdomen blackish with cream heart stripe; female with four cream coloured patches around the heart stripe. Legs in descending order of length 4123 (male and female). Chelicerae with three promarginal teeth and three retromarginal teeth. Male: eight or more macrosetae at cymbium tip; pedipalp tibial length shorter than cymbium length; bulb (Fig. 32) with a large median apophysis with shiny, spherical tip, which is the synapomorphy for the genus; embolus short, thin and curved; embolus and terminal apophysis at tip of bulb; small basoembolic apophysis, bent ventrally; subtegulum at posterior lateral margin of tegulum. Female: epigyne (Fig. 66) simple with a large, wide median septum; internal genitalia simple consisting of a short, wide copulatory duct ending in bulbous spermatheca (Fig. 39).

**Remarks.** *Notocosa* is a monotypic genus. No other species have been found in New Zealand and Australia despite extensive collecting and examination of collections in both countries.

The small embolus and terminal apophysis at the tip of the male bulb, the enlarged median apophysis, and the terminal apophysis functioning as a conductor conforms with Dondale's (1986) definition of Venoniinae. The partially divided tegulum and the ventrally bent basoembolic apophysis are shared with *Anoteropsis* and *Artoria*. Molecular data also support this relationship and place these genera basally in the Lycosidae (Vink *et al.* 2002).

**Etymology.** The generic name is derived from *noto* (Greek, the south quarter) and *-cosa* (New Latin, a genus of Lycosidae), and refers to the distribution of the monotypic species, *Notocosa bellicosa*, in New Zealand. It is considered feminine gender.

***Notocosa bellicosa* (Goyen) new combination**

Fig. 32, 39, 66, 93, 96; Map 26

*Lycosa bellicosa* Goyen, 1888: 138–139.

*Pardosa bellicosa* (Goyen) —Roewer, 1955a: 185.

**Diagnosis.** Distinguished from all other New Zealand lycosid species by the large, spherically tipped median apophysis of the male bulb and the simple female epigyne with a large median septum.

**Description.** Colour: carapace orange-brown (Fig. 93); sternum orange-brown; abdomen blackish with cream heart stripe, female has four cream coloured patches around the heart stripe; legs orange-brown with faint, darker annulations.

Chelicerae with three promarginal teeth and three retromarginal teeth. Tarsi and metatarsi with dense scopulae, especially evident on legs I and II. Male bulb (Fig. 32) with a large, spherically tipped median apophysis. Epigyne (Fig. 66) simple with large median septum. Internal genitalia (Fig. 39) simple with one bend in copulatory duct.

**Dimensions** (mm). Male MC, Birdlings Flat (female MC, Birdlings Flat): total length 9.8 (9.5); carapace 4.7/3.5 (4.4/3.1), height 1.9 (1.7); abdomen 4.8/3.0 (5.0/3.0); sternum 2.1/1.7 (1.9/1.4). Size range: male body length 8.9–9.6, female body length 9.5–11.5.

**Type data.** Type(s): Not seen. Original description based on a female specimen(s) from Clutha Valley (46°06'S, 169°31'E). The bulk of Goyen's collection was destroyed (Forster 1967) and what remains of it is in OMNZ. Despite my thorough search of the collection this type was not found and is presumed lost.

**Material examined.** 105 non-type specimens (77 males, 28 females) — see Appendix B for collection details of specimens examined.

**Distribution** (Map 26). Found south of 43°S in the South Island.

— / MC, SC, DN, MK, CO.

**Biology.** *Notocosa bellicosa* inhabits grassland and open scrub. It builds a vertical burrow approximately 10 cm deep and extends the opening with a rim of silk into which it incorporates a few pieces of debris (Goyen 1888, Forster & Forster 1973, 1999). The spider remains in the burrow and attacks passing prey, which it feeds on in the burrow. The female remains in the tunnel once she has produced an eggsac and warms it on sunny days by facing head down so that the eggsac, held by her spinnerets, protrudes from the burrow into the sun (Forster & Forster 1973, 1999). Adults are found from September to May. The higher proportion of males caught suggests that females are more sedentary. Females with spiderlings have been found in January and March. Fig. 96 shows a male and female copulating.

**DNA.** 12S rRNA, cytochrome c oxidase subunit I, and NADH dehydrogenase subunit I plus tRNA<sup>Leu(CUN)</sup> partial DNA sequences for this species are listed in GenBank (Benson *et al.* 2000) under accession numbers AF380493, AY059960, and AY059995 respectively.

**Remarks.** Although the type appears to be lost, Goyen's (1888) description (especially of the burrowing behaviour) is adequate to identify this species.

**Genus *Venatrix* Roewer**

*Venatrix* Roewer, 1960: 745 (listed but not described in Roewer 1955a: 307). —Framenau & Vink, 2001: 928–929. Type species: *Venator fusca* Hogg, 1900 (= *Lycosa funesta* C.L. Koch, 1847), by original designation.

**Description.** (Based on Framenau & Vink, 2001) Body length 5.2–21.0 mm. Carapace brown to dark brown, with a light median band. Two predominant abdominal patterns: a) brown, with a wide, light median band and two pairs of black sickle-shaped markings in posterior half of abdomen; b) uniformly brown with faint heart mark in anterior half and pairs of light spots in posterior half. Chelicerae with three promarginal teeth and three (rarely two) retromarginal teeth. Male with tubercle on the outer curve of fangs (Fig. 5). Legs in descending order of length 4123 (male and female), except *V. fontis* (4132). Male: large claw-like macrosetae at the tip of the cymbium; pedipalp tibial length shorter than cymbium length; long and slender embolus originating on prolateral side of the palea; terminal apophysis either sickle-shaped (originating at the base of the embolus or proximally on palea) or modified (wave-like or bifurcate tip, originating retrolaterally on palea); subtegulum at posterior lateral margin of tegulum. Female: epigyne anchor- or inverted "T"-shaped, most species with distinct median transverse part; internal genitalia consisting of a copulatory duct with one or more bends before the spermatheca.

**Remarks.** This genus was revised by Framenau & Vink (2001) and all known species but one are found only in Australia, with the exception found also in New Zealand.

*Venatrix* belongs in the subfamily Lycosinae as defined by Dondale (1986): "median apophysis transverse, with a ventrally directed spur" and "median apophysis with sinuous channel on dorsal surface". *Venatrix* shares a similar male pedipalpal morphology with *Alopecosa* Simon, 1885 and there is support from molecular data that *Venatrix* is close to *Alopecosa* (Vink *et al.* 2002). The claw-like macrosetae at the tip of the cymbium is also found in *Alopecosa fabrilis* (Clerck, 1757), but not in any other central European *Alopecosa*.

***Venatrix goyderi* (Hickman)**

Fig. 5, 33, 40, 67, 94; Map 27

*Lycosa goyderi* Hickman, 1944: 33–34, plate 2, Fig. 21.

*Mustelicoso goyderi* (Hickman) —Roewer, 1955a: 280.

*Piratoso goyderi* (Hickman) —Roewer, 1960: 915.

*Arctosa goyderi* (Hickman) —McKay, 1973: 380.

*Lycosa howensis* McKay, 1979a: 237–238, figure 1a–e. —Framenau & Vink, 2001: 963.

*Venatrix goyderi* (Hickman) —Framenau & Vink, 2001: 963–965, Fig. 44.

**Diagnosis.** Distinguished from all other New Zealand species of this family by the male bulb, the triangular opening of the female epigyne, claw-like macrosetae at the tip of the male cymbium, and the tubercle on the outer fang of adult males.

**Description.** Colour: carapace dark orange-brown with orange-brown medial band, dark brown at carapace edge, black around eyes and blackish stripes radiating from fovea (Fig. 94); sternum orange-brown with blackish “v” shape; abdomen yellow-brown with grey pattern (Fig. 94); legs orange-brown (femora yellow-brown) with blackish annulations.

Chelicerae with two promarginal teeth (three in female with distal tooth extremely reduced) and two retromarginal teeth. Tarsi and metatarsi with scopulae, especially evident on legs I and II. Male fang with tubercle on outer curve. Male with claw-like macrosetae at cymbium tip (Fig. 33). Epigyne (Fig. 67) with triangular opening. Internal genitalia (Fig. 40) with one bend in copulatory duct.

**Dimensions** (mm). Male ND, Matarau (female ND, Matarau): total length 5.7 (8.1); carapace 3.3/2.4 (4.2/3.0), height 1.2 (1.6); abdomen 2.4/1.6 (4.1/2.8); sternum 1.5/1.2 (1.7/1.5). Size range: male body length 5.3–7.0, female body length 6.3–10.5 (Framenau & Vink 2001).

**Type data.** Holotype: Not seen. Original description based on a female specimen from Goyders Lagoon Bore, South Australia (27°01'S, 138°54'E) Simpson Desert Expedition 1939 (Australian Museum, KS49705) (V.W. Framenau pers. comm.).

**Material examined.** 5 non-type specimens (3 males, 2 females) — see Appendix B for collection details of specimens examined.

**Distribution** (Map 27). In New Zealand, this species has been found only near Matarau.

ND / –.

Found also in Australia (South Australia, Victoria, New South Wales including Lord Howe Island, Queensland, and the Northern Territory).

**Biology.** *Venatrix goyderi* appears to prefer shaded, open areas close to water. The only New Zealand records of this species are in or near grass fields near Matarau (ND). In

South Australia, it was found in a salt lake lagoon (Hickman 1944) and the population on Lord Howe Island inhabited grass-covered ground in disturbed rainforest near the beachfront (McKay 1979a). *Venatrix goyderi* was collected on riparian gravel banks in Victoria, but only in very low numbers (Framenau & Vink 2001). *Venatrix goyderi* appears to tolerate a wide climatic range, as it can be found in arid central Australia, temperate Victorian Alps, and on Lord Howe Island, an isolated, subtropical oceanic island. All recent records of adult spiders are limited to January and February.

**DNA.** The 12S rRNA partial DNA sequence for this species is listed in GenBank (Benson *et al.* 2000) under accession number AF380496.

**Remarks.** This is the only species in the genus *Venatrix* found in New Zealand. All other *Venatrix* species are found in Australia, where the genus is presumed to have originated. The widespread distribution of this species across Australia and on Lord Howe Island (Framenau & Vink 2001) and absence of other congeners in New Zealand points to *V. goyderi* being a relatively recent introduction (either natural or human) from Australia.

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**APPENDIX A: Glossary of technical terms**

**ALE** — anterior lateral eyes or eye; located at the end of the front row.

**AME** — anterior median eyes or eye; middle pair of the front row.

**annulations** — rings of different colours.

**abdomen** — posterior division of the spider body; sometimes referred to as the opistosoma.

**apophysis** — sclerotised cuticular process arising from the segments of the pedipalp or legs.

**basoembolic apophysis** — apophysis located at the base of the embolus.

**bulb** — refers to the male pedipalpal organ as a whole.

**carapace** — the hard dorsal covering of the cephalothorax.

**cephalothorax** — anterior division of the spider body; sometimes referred to as the prosoma.

**chelicerae** — first pair of appendages of the cephalothorax, consisting of two segments (the distal segment is called the fang).

**coxa** — first or basal segment of the legs.

**cymbium** — tarsus of the adult male pedipalp.

**distal** — near the apex.

**dorsal** — upper (surface).

**epigyne** — sclerotised area around the gonopores of the female genital area.

**embolus** — the intromittent part of the bulb containing the terminal portion of the ejaculatory duct.

**femur** — third segment of the legs and pedipalps.

**fovea** — depression on the thoracic region of the carapace where muscles of sucking stomach are attached internally; longitudinal in *Lycosidae*.

**genital bulb** — male pedipalpal organ.

**hood** — pocket-like structure at the anterior end of the epigyne.

**labium** — median sclerite on the ventral surface of the cephalothorax between the maxillae and anterior to the sternum to which it may be attached.

**lateral eyes** — eyes at the end of each row.

**macrosetae** — setae conspicuously larger than adjacent setae.

**maxilla** — paired mouthparts lateral to the labium; formed by the coxa of the pedipalp.

**median apophysis** — sclerotised cuticular appendage of the tegulum arising from the middle of the bulb.

**median eyes** — the two middle eyes of each row.

**median septum** — a longitudinal sclerite along the midline of the epigyne.

**mesially** — at or toward the middle.

**metatarsus** — sixth segment of the legs; absent in the pedipalps.

**pedipalp** — six-segmented second appendage of the cephalothorax, anterior to legs I.

**patella** — fourth segment of the legs and pedipalp.

**PLE** — posterior lateral eyes or eye; in *Lycosidae* the posterior pair of eyes in the second row.

**PME** — posterior median eyes or eye; in *Lycosidae* the anterior pair of eyes in the second row.

**posterior lip** — posterior sclerite of the epigyne.

**procurved** — when a line is drawn through the centres of the four eyes in a row produces an arc in which the arms point forwards (i.e., the lateral eyes are in front of the median eyes).

**promarginal** — anterior margin.

**proximal** — near the base.

**recurved** — when a line is drawn through the centres of the four eyes in a row produces an arc in which the arms point backwards (i.e., the lateral eyes are behind the median eyes).

**retrolateral** — on the outer side i.e., the surface nearer to the posterior end of the body.

**retromarginal** — posterior margin.

**sclerotised** — hardened by sclerotin or other substances in the cuticle.

**scopula** — brush of hairs.

**seta** (plural **setae**) — a sclerotised hair-like projection arising from the cuticle.

**spermathecae** — the seminal receptacles in the epigynum.

**spinnerets** — abdominal appendages at the posterior end of the abdomen.

**sternum** — plate on the ventral surface of the cephalothorax between the coxae of the legs.

**subtegulum** — a rounded sclerite at the base of the bulb.

**tarsus** — last segment of the legs and pedipalp.

**tegulum** — sclerite forming the wall on the exposed ventral surface of the bulb.

**terminal apophysis** — sclerotised cuticular process arising from the distal portion of the bulb.

**tibia** — fifth segment of legs and pedipalp.

**trochanter** — second segment of the leg and pedipalp.

**ventral** — lower (surface).

## APPENDIX B: Collection details of specimens examined

Localities (including co-ordinates in decimal degrees) and dates collected, collectors, and institutions of specimens examined. CJV = C.J. Vink; RRF = R.R. Forster; ADB = A.D. Blest; CLW = C.L. Wilton.

### *Allotrochosina schauinslandi*

ND. 2 ♀, Mangamuka, -35.2167, 173.5500, 19.viii.1953, B.J. Marples, OMNZ; 2 ♀, Kohukohu, -35.3667, 173.5333, 28.viii.1953, B.J. Marples, OMNZ; 1 ♂, Mimiwhangata, -35.4324, 174.4040, 10-17.xii.1970, J. Darby, OMNZ; 1 ♂, Awapokanui Stream, -35.5000, 173.4167, 5.ii.1994, CJV, LUNZ; 1 ♀, Waiarohia Stream, -35.5167, 173.3833, 4.ii.1994, ADB, LUNZ; 1 ♀, imm, Matarau, -35.6324, 174.1986, 20.xi.1998, CJV, LUNZ. CL. 1 ♂, 1 ♀, Cuvier Island, -36.4333, 175.7667, 15.xii.1996, B.M. Fitzgerald, MONZ; 1 ♀, Whangapoua, -36.7167, 175.6167, 25.i.2000, CJV & ADB, LUNZ; 1 ♀, 25.i.2000, CJV, LUNZ; 1 ♀, Dam Stream, -37.1500, 175.7500, 1.vi.1952, J.S.Dugdale, OMNZ. AK. 1 ♀, Waitakere, -36.8522, 174.5351, 14.vi.1943, RRF, OMNZ; 2 ♂, Waitakere Ranges, -36.9833, 174.5333, 25.i.1997, CJV & G. Hall, LUNZ; 1 ♂, 1 ♀, Cornwallis, -37.0167, 174.6000, 22.i.1997, CJV & ADB, LUNZ. BP. 1 ♂, Te Aroha, -37.5333, 175.7000, 27.v.1996, CJV & ADB, LUNZ; 1 ♀, Papatea Bay, -37.6500, 177.8500, 5.ii.1993, J.S.Dugdale, NZAC; 1 ♂, Pukeamaru, -37.6833, 178.2667, 29.x.1992, J.S.Dugdale, NZAC; 1 ♀, Lake Rotoehu, -38.0393, 176.5235, 4.x.1969, CLW, OMNZ. GB. 1 ♀, Karakatuwhero Valley, -37.6167, 178.3333, 1.v.1993, G. Hall, NZAC. TO. 1 ♂, Kuratua Dam, -38.8696, 175.7122, 20.v.1966, R.W. Huttan, OMNZ; 1 ♀, Waitetoko, -38.9066, 175.9295, 25.i.1966, R.W. Huttan, OMNZ; 1 ♀, 8-11.v.1968, R.W. Huttan, OMNZ; 1 ♀, Stump Bay, -38.9500, 175.8167, 9.xi.1994, CJV & ADB, LUNZ; 1 ♀, Hinemihii's Track, -39.0167, 175.7333, 25.v.1996, CJV, LUNZ. TK. 1 ♀, New Plymouth, -39.0530, 174.0694, 1923, H. Bellringer, OMNZ; 1 imm, Lucys Gully, -39.1502, 173.9406, 1.xii.2000, ADB & CJV, LUNZ; 1 ♂, 1 ♀, Opuake, -39.4500, 173.8500, ix.1954, L. Simpson, OMNZ. HB. 1 ♀, Taradale, -39.5416, 176.8445, 12.ix.1965, R.W. Huttan, OMNZ; 1 ♀, R.W. Huttan, OMNZ; 1 ♂, Hastings, -39.6377, 176.8279, 6.x.1946, RRF, OMNZ; 2 ♂, Waipatiki, -40.3747, 176.2831, R.W. Huttan, OMNZ. RI. 1 ♀, Hynish, -39.7333, 176.4500, i.1954, J.S.Dugdale, OMNZ. WI. 1 ♀, Waitapu, -40.0610, 175.6428, 1.ix.1966, R.W. Huttan, OMNZ; 1 ♂, Feilding, -40.2201, 175.5462, 2.x.1959, RRF, OMNZ; 2 ♂, 1.x.1942, RRF, OMNZ; 1 ♂, 3.x.1942, RRF, OMNZ; 1 ♀, 4.x.1942, RRF, OMNZ; 5 ♂, 10 ♀, 6.x.1942, RRF, OMNZ; 1 ♂, 6.xii.1942, RRF, OMNZ; 1 ♀, 15.xii.1942, RRF, OMNZ; 1 ♂, 1 ♀, 23.xii.1942, RRF, OMNZ. WA. 1 ♀, Dannevirke, -40.2000, 176.1000, 11.vii.1942, RRF, OMNZ; 2 ♀, 12.vi.1943, RRF, OMNZ; 1 ♂, Mt Bruce, -40.7532, 175.5962, 1-8.x.1969, CLW, OMNZ; 1 ♀, upper Waingawa, -40.7667, 175.4500, 16-31.viii.1972, CLW, MONZ; 1 ♂, Mangareia Stream, -40.7996, 175.8294, 14.xii.1946, CLW, OMNZ; 1 ♀, Mangareia, -40.7996, 175.8294, 3.xi.1946, CLW, OMNZ; 1 ♂, 1 ♀, x.1957, CLW, OMNZ; 1 ♀, Gladstone, -41.0833, 175.6333, 20.v.1953, B.J. Marples, OMNZ; 1 ♀, 15.ix.1967, CLW, OMNZ. WN. 1 ♀, Levin, -40.6167, 175.2833, 5.i.1943, RRF, OMNZ; 1 ♂, 4 ♀, Stokes Valley, -41.1848, 174.9872, 30.xi.1947, R.K. Dell, OMNZ; 1 ♂, Somes Island, -41.2599, 174.8520, 19.x.1954, R.K. Dell, MONZ; 1 ♀, Karori, -41.2833, 174.7333, 16.vi.1942, RRF, OMNZ; 1 ♀, 12.vii.1942, RRF, OMNZ; 1 ♂, 1 ♀, Karori, -41.2833, 174.7333, 3.iv.1948, D. Hurley, OMNZ; 1 ♀, 25.i.1997, P.J. Sirvid, MONZ; 1 ♀, Orongorongo Valley, -41.3667, 174.9000, 16.v.1996, ADB, LUNZ. SD. syntype ♂, syntype ♀, French Pass, -40.9333, 173.8333, xii.1896-i.1897, H.H. Schauinsland, MNHN 21415. NN. 4 ♀, Riwaka River, -41.0500, 172.9167, 2.xii.1994, ADB, LUNZ; 1 ♂, 2.xii.1994, CJV, LUNZ; 1 ♀, 14.ii.1998, ADB, LUNZ; 2 ♀, Motueka River Mouth, -41.0833, 173.0167, 4.xii.1994, CJV & ADB, LUNZ; 1 ♂, Karamea, -41.2474, 172.1034, 28.ix.1966, RRF & CLW, OMNZ; 3 ♀, Karamea, -41.2500, 172.1167, i.1950, RRF, OMNZ; 1 ♂, 1 ♀, Maitai, -41.2912, 173.318, 29.xii.1949, J.G. Dawber, OMNZ; 1 ♀, Sherry Valley, -41.4128, 172.7266, 18.xii.1949, J.G. Dawber, OMNZ; 2 ♀, Motupiko River, -41.5023, 172.7959, 18.xii.1961, B.J. Marples, OMNZ; 1 ♂, Boulder Creek, -41.6833, 172.6167, 5.xii.1994, ADB, LUNZ; 1 ♂, 1 ♀, Birchfield, -41.6833, 171.8, 28.xii.1949, R.J. Scarlett, OMNZ. BR. 1 ♂, Lake Rotorua, -41.8000, 172.5833, 9.iii.1965, G. Kuschel & J.I. Townsend, NZAC; 1 ♂, 1 ♀,

8.ii.1997, CJV, LUNZ; 1 ♂, 2 ♀, Lake Rotoiti, -41.8167, 172.85, 19.vi.1965, CLW, OMNZ; 1 ♂, 8.ii.1997, CJV, LUNZ; 1 ♂, Woodpecker Bay, -42.0167, 171.3833, 19.i.1950, RRF, OMNZ; 1 ♀, 22.i.1950, RRF, OMNZ; 1 ♂, Perpendicular Point, -42.0855, 171.3280, i.1957, L.R. Jackson, OMNZ; 2 ♂, Punakaiki, -42.1092, 171.3278, 27.ix.1966, RRF & CLW, OMNZ; 1 ♀, Punakaiki, -42.1167, 171.3333, 30.x.1970, Entomology Department, LUNZ; 1 ♂, Greymouth, -42.4500, 171.2.000, 5.viii.1973, S. Lauder, OMNZ; 1 ♂, Greymouth, -42.4500, 171.2000, 10.v.1956, L.R. Jackson, CMNZ; 4 ♂, 4 ♀, Moana, -42.5833, 171.4833, 10.iii.1950, RRF, OMNZ; 2 ♀, Grey River (east), -43.1667, 172.4833, 17.i.1921, G. Archey, OMNZ. KA. 1 ♀, Puhī Puhī Valley, -42.2904, 173.7232, 12.x.1966, A.K. Walker, NZAC; 1 ♂, 13.x.1966, A.K. Walker, NZAC; 2 ♂, 3 ♀, Kowhai Bush, -42.3589, 173.5667, 4.i.1996, ADB, LUNZ; 1 ♀, Mt Fyffe Forest, -42.3589, 173.5934, 3.xii.1995, CJV, ADB, S.J. Crampton, LUNZ; 1 ♀, 14.ii.2000, ADB, LUNZ; 3 ♂, 1 ♀, Conway River Mouth, -42.6167, 173.4667, 12.v.1955, RRF, OMNZ. MB. 1 ♀, Hanmer, -42.5439, 172.7853, i.1966, T. Poppelwell, OMNZ. NC. 1 ♀, Lake Taylor, -42.7667, 172.2333, 14.iv.1952, RRF, OMNZ; 3 ♀, Cheviot, -42.8167, 173.2667, 2.vi.1952, J.S.Dugdale, OMNZ; 2 ♀, Ashley Gorge, -43.2320, 172.2224, 29.xii.1957, R.L.C. Pilgrim, OMNZ; 6 ♂, 8 ♀, 3 imm, Coopers Creek, -43.3000, 172.1667, 15.x.1953, RRF, OMNZ; 1 ♀, 21.v.1955, RRF, OMNZ; 1 ♀, Woodend, -43.3201, 172.6582, 25.x.1948, W. Dukes, OMNZ. WD. 1 ♀, Lake Kanieri, -42.8327, 171.1457, i.1950, J.H. Sorensen, OMNZ; 1 ♂, 2.ix.2001, S.M. Pawson, LUNZ; 1 ♀, Otira, -42.8333, 171.5667, iii.1945, T.P. Harris, OMNZ; 1 ♀, Otira Valley, -42.8982, 171.5439, 28.v.1954, J.S. Dugdale, OMNZ; 7 ♂, 7 ♀, 1 imm, Pukekura, -43.0167, 170.6667, viii.1952, M. Warren, OMNZ; 1 ♂, 6 ♀, Okarito, -43.2167, 170.1667, 7.xii.1949, RRF, OMNZ; 3 ♂, 1 ♀, 1 imm, Whataroa, -43.2667, 170.3667, viii.1952, M. Warren, OMNZ; 1 ♂, Canavans Knob, -43.3833, 170.1667, 12.ix.1982, A.B. Miller, MONZ; 2 ♀, Franz Josef, -43.4000, 170.1833, 6.xii.1955, B.J. Marples, OMNZ; 4 ♀, 11.xii.1994, CJV & ADB, LUNZ; 3 ♂, 2 ♀, 15.xi.1995, CJV & ADB, LUNZ; 1 ♂, 1 imm, 11.iv.1999, CJV & M.A. Hudson, LUNZ; 1 ♀, Fox Gacier, -43.4667, 170.0167, viii.1950, M. Warren, OMNZ; 2 ♂, 1 ♀, 1.ix.1951, M. Warren, OMNZ; 2 ♂, 16.xi.1995, CJV & ADB, LUNZ; 1 ♂, 4 ♀, Copland Track start, -43.5833, 169.8167, 13.xii.1994, CJV, LUNZ; 3 ♂, 4 ♀, Bruce Bay, -43.6090, 169.5913, iv.1946, W.A.B. Keay?, OMNZ; 2 ♂, 2 ♀, Lake Moeraki, -43.7333, 169.2833, 12.xii.1994, CJV & ADB, LUNZ; 4 ♂, 4 ♀, Paringa River, -43.7407, 169.5032, 27.ix.1966, RRF & CLW, OMNZ; 1 ♂, Taumaka Island, -43.8596, 168.8710, 31.xii.1971, M.E. Miller, OMNZ; 2 ♀, Jackson Bay, -44.0000, 168.6500, 22.i.1960, R.E. Leech, OMNZ; 2 ♀, Pyke River (Lower), -44.5000, 168.1833, i.1956, H. Walker, OMNZ; 1 ♀, Head of Lake McKerrow, -44.5167, 168.0667, 6.ii.1959, RRF, OMNZ. MC. 1 ♀, Cass, -43.0333, 171.7500, 27.vi.1949, L. Wolf, OMNZ; 1 ♂, Bealey, -43.0333, 171.6333, 19.x.1959, B.A. Holloway, OMNZ; 1 ♀, Mt Algidus, -43.2333, 171.3500, 14.ii.1946, RRF, OMNZ; 2 ♀, Springfield, -43.3333, 171.9333, 17.v.1998, A.E. Singleton, LUNZ; 1 ♀, Harewood, -43.4811, 172.5461, 30.i.1960, R.E. Leech, OMNZ (Honolulu Collection); 2 ♀, 6.ii.1960, R.E. Leech, OMNZ (Honolulu Collection); 3 ♀, Christchurch Airport, -43.4876, 172.5339, 22.x.1958, P.Young, OMNZ (Honolulu Collection); 1 ♀, 22.x.1959, R.E. Leech, OMNZ (Honolulu Collection); 2 ♀, 6.ii.1960, R.E. Leech, OMNZ (Honolulu Collection); 1 ♀, Travis Marsh, -43.5000, 172.7000, 27.xii.1995, R.P. Macfarlane, LUNZ; 2 ♂, 2 ♀, Rakaia Gorge, -43.5167, 171.65, 30.iv.1950, RRF, OMNZ; 4 ♀, Deans Bush, -43.5333, 172.5833, 19.xii.1949, J.S.Dugdale, OMNZ; 1 ♂, 2 ♀, 20.xii.1949, J.S.Dugdale, OMNZ; 1 ♀, Riccarton Bush, -43.5333, 172.5833, 18.xii.1994, ADB, LUNZ; 1 ♀, 31.xii.1994, ADB, LUNZ; 1 ♂, 5 ♀, 1 imm, 1.i.1995, ADB, LUNZ; 1 ♀, 10.i.1999, ADB, LUNZ; 1 ♀, Christchurch, -43.5333, 172.6333, 27.ii.1944, A.W. Parrott, OMNZ; 1 ♂, 8 ♀, 7 imm, A.W. Parrott, OMNZ; 1 ♂, Governors Bay, -43.6333, 172.6500, 2.i.1948, I.D.R. Cresswell, OMNZ; 1 ♂, 12.i.1949, I.D.R. Cresswell, CMNZ; 1 ♀, 22.i.1949, I.D.R. Cresswell, OMNZ; 1 ♂, Lincoln University, -43.6432, 172.4581, 30.x.1991, A.M. Henoud, LUNZ; 1 ♀, 20.ix.1994, CJV, LUNZ; 1 ♀, 17.vii.1996, CJV, LUNZ; 1 ♂, 1 ♀, Taitapu, -43.6667, 172.55, iii.1933, A.W. Parrott, OMNZ; 4 ♂, 2 ♀, Kaituna Valley, -43.7167, 172.7167, 11.ix.1944, RRF, OMNZ; 1 ♂, 3 ♀, 28.ix.1952, RRF, OMNZ; 1 ♀, Lake Ellesmere, -43.7167, 172.4500, 20.viii.1992, CJV, LUNZ; 2 ♀, Kaituna Valley, -43.7364, 172.6952, 16.i.1960, C.W. O'Brien, OMNZ (Honolulu Collection); 1 ♂, 1 ♀, 13.iv.1967, RRF & CLW, OMNZ; 1 ♂, 24.v.1975, RRF, OMNZ; 1 ♂, 4 ♀, Okuti Valley, -43.7833, 172.8167, 22.xi.1975, RRF, OMNZ; 1 ♀, Prices Valley, -43.8000, 172.6833, 13.iv.1967, CLW, OMNZ; 5 ♂, 1 ♀, 12.vi.1999, CJV & J.W. Griffiths, LUNZ; 1 ♀, Harts Creek, -43.8016, 172.3232, 10.xii.43,

A.W. Parrott, OMNZ; 1 ♀, Hinewai, -43.8333, 173.0667, 7.ii.1995, CJV, LUNZ; 1 ♀, 27.viii.1996, CJV, LUNZ; 8 ♂, 4 ♀, 1 imm, 21.xi.1997, J.B. Ward, LUNZ. **CH**. 2 ♀, Manganui, -43.7667, -176.7667, 15.xii.1923, G.Archev, MNHN; 1 ♀, Taiko Camp, -44.0667, -176.6333, 18.xi.1997, A. Tennyson, MONZ; 1 subadult ♂, South East Island, -44.3500, -176.1667, 14.xii.1979, A. Wright, OMNZ. **SC**. 1 ♀, 6 imm, Peel Forest, -43.9167, 171.2667, 30.ix.1966, CLW, OMNZ; 1 ♂, 3 ♀, 2.ii.1997, CJV, LUNZ; 6 ♂, 9 ♀, Waihi, -44.0220, 171.1751, 7.xii.1939, A.W.Parrott, OMNZ; 1 ♀, 10.xii.1939, A.W.Parrott, OMNZ; 6 ♀, 1 imm, 12.xii.1939, A.W.Parrott, OMNZ; 1 imm, Opuha River, -44.0994, 170.9822, 25.i.1987, RRF, OMNZ; 1 ♀, Geraldine, -44.1000, 171.2333, 8.xi.1975, A.C. Harris, OMNZ; 1 ♀, Waimate Creek, -44.7000, 170.9667, 29.iv.1952, J.S.Dugdale, OMNZ. **FD**. 2 ♀, 1 imm, Martins Bay, -44.3667, 168.0000, 31.i.1955, RRF & J.S.Dugdale, OMNZ; 3 ♀, 2 imm, 1.ii.1955, RRF & J.S.Dugdale, OMNZ; 1 ♀, Hollyford Track, -44.6167, 168.1167, 14.iv.1960, J. Winter, OMNZ; 1 ♀, 22.i.1998, G. Hall & D.M. Gleeson, NZAC; 1 ♀, Hidden Falls, -44.6321, 168.1226, 21.i.1955, RRF & J.S.Dugdale, CMNZ; 1 ♀, 1 imm, 21.i.1955, RRF & J.S.Dugdale, OMNZ; 1 ♀, Cascade Creek, -44.8976, 168.0844, 12.i.1971, R.R. Fortser, OMNZ; 3 ♂, 3 ♀, Eglington Valley, -45.1000, 167.9667, 30.v.1963, OMNZ; 2 ♀, Rowallan, -46.0616, 167.5976, 25.xi.1970, RRF & CLW, OMNZ. **DN**. 1 ♀, Duntroon, -44.8667, 170.6833, 18.v.1948, B.J. Marples, OMNZ; 1 ♀, Sutton, -45.5688, 170.1240, 17.x.1965, CLW, OMNZ; 3 ♂, 2 ♀, Waitaiti, -45.7500, 170.5833, 26.ix.1995, L.J. Boutin, MONZ; 1 ♀, Pipikaretu, -45.8028, 170.7431, 11.i.1962, B.J. Marples, OMNZ; 1 ♂, Sulivans Dam, -45.8079, 170.5244, 11.xi.1966, RRF, OMNZ; 1 ♂, 29.xi.1966, RRF, OMNZ; 1 ♂, 19.xii.1966, RRF, OMNZ; 1 ♀, 1.xi.1966, RRF, OMNZ; 1 ♀, Whare Flat, -45.8149, 170.4271, 4.i.1966, CLW, OMNZ; 1 ♀, Leith Saddle, -45.8333, 170.5167, 20.iii.1967, RRF, OMNZ; 1 ♂, 25.vi.1967, RRF, OMNZ; 1 ♂, 22.vii.1967, RRF, OMNZ; 1 ♀, Flagstaff, -45.8561, 170.5299, 11-29.iv.1971, CLW, OMNZ; 1 ♀, 10.xii.1975, RRF, OMNZ; 1 ♂, 1 ♀, 2.iii.1977, RRF, OMNZ; 1 ♂, 1 ♀, 26.i.1978, RRF, OMNZ; 1 ♀, 1.i.1979, RRF, OMNZ; 7 ♀, 27.xii.1979, RRF, OMNZ; 1 ♂, Opoho Bush, -45.8561, 170.5299, i.1946, T. Smith, OMNZ; 2 ♂, 4 ♀, 21.iii.1971, CLW, OMNZ; 2 ♀, 3.iv.1971, CLW, OMNZ; 4 ♂, 2 ♀, 11-29.iv.1971, CLW, OMNZ; 2 ♀, 17.v.1971, CLW, OMNZ; 1 ♀, Mt Charles, -45.8667, 170.7000, 14.x.1952, B.J. Marples, OMNZ; 1 ♀, Dunedin, -45.8833, 170.5000, 10.x.1958, RRF, OMNZ; 1 ♀, iii.1960, RRF, OMNZ; 1 ♂, 4 ♀, v.1961, W.T. Poppelwell, OMNZ; 1 ♀, xii.1966, RRF, OMNZ; 1 ♀, Allans Beach, -45.8833, 170.6833, 8.x.1953, B.J. Marples, OMNZ; 1 ♀, 8.ix.1966, RRF, OMNZ; 1 ♀, Saint Clair, -45.9136, 170.4840, 11.iv.1966, RRF, OMNZ; 1 ♂, 1 ♀, Henley, -45.9832, 170.1656, 20.iv.1975, RRF, OMNZ; 1 ♂, Lake Tuakitoto, -46.2255, 169.8236, 14.ix.1967, RRF, OMNZ; 2 ♀, Balclutha, -46.2333, 169.7333, 20.xi.1958, RRF, OMNZ. **CO**. 1 ♂, Shag Valley, -45.3206, 170.5407, 13.ix.1966, RRF, OMNZ; 1 ♀, Tawhiti, -45.3833, 169.2833, 29.x.1958, RRF, OMNZ; 1 ♀, near Middlemarch, -45.4867, 170.0833, 10.ii-7.iii.1999, C. Rufaut, LUNZ; 2 ♀, Middlemarch, -45.5099, 170.1252, 10.iv.1971, B. Beaton, OMNZ; 1 ♂, Craig Flat, -45.7333, 169.4833, 21.xii.1985, B.I.P. Barratt, NZAC. **SL**. 1 ♂, 2 ♀, Tuatapere, -46.1299, 167.6902, 1.vi.1963, OMNZ; 3 ♂, 6 ♀, 1 imm, Orepuki, -46.2833, 167.7500, 9.v.1949, RRF, OMNZ; 1 ♀, 11.x.1949, J.H. Sorensen, OMNZ; 4 ♀, 26.xi.1970, RRF & CLW, OMNZ; 1 ♂, 20 ♀, Colac Bay, -46.3606, 167.8769, 24.x.1970, RRF & CLW, OMNZ; 1 ♀, Otataru Scenic Reserve, -46.4333, 168.3000, 3.ii.2000, CJV, LUNZ (100%OH); 1 imm, Awarua Plains, -46.5167, 168.5000, 1.ii.2000, CJV & ADB, LUNZ. **SI**. 1 ♂, Stewart Island, -46.8416, 167.8760, 25.iv.1962, W.T. Poppelwell, OMNZ. **Unknown locality**. 2 ♂, 1 ♀, Wrights Farm, 25.v.1968, R.W. Huttan, OMNZ.

### *Anoteropsis adumbrata*

**ND**. 1 ♂, 1 ♀, Waipoua Forest, -35.6164, 173.5515, 8.vi.1966, J.I. Townsend, NZAC; 1 ♀, Pukenui Forest, -35.7180, 174.2658, 14.ix.1998, G. Hall, NZAC. **AK** holotype ♀, Te Karaka, -37.1041, 174.8727, A.T. Urquhart, CMNZ. **WO**. 1 ♂, Torehape, -37.3420, 175.4102, 14.xii.1999, C. Watts, NZAC; **BP**. 1 ♂, 3 ♀, Te Aroha 900m, -37.5333, 175.7000, 17.ix.1994, CJV & S.J. Crampton, LUNZ; 1 ♂, Motu River, -37.8846, 177.6526, 27.ix.1995, P.J. Sirvid, NZAC; 1 ♂, Lake Okataina, -38.1141, 176.4203, 18.ii.1999, CJV, LUNZ; 1 ♀, Mt Ngongotaha, -38.1201, 176.1976, 18.xii.1995, ADB, LUNZ. **WO**. 1 ♂, Pirongia Mountain, -37.9929, 175.0891, 28.x.1968, H. Oliver, OMNZ. **GB**. 1 ♀, Aniwanuiwa, -38.7465, 177.1657, 13.xii.1944, RRF, OMNZ; 1 ♀, Waikaremoana, -38.7584, 177.1548, 4.i.1969, R.W. Huttan, OMNZ; 1 ♂, Maranui Bay, -38.7711, 177.0763, 19-26.xi.1996, L.J. Boutin, MONZ; 1 ♀,

Lake Waikaremoana, -38.7711, 177.0763, 26.xi.1996, L.J. Boutin, MONZ. **TO**. 1 ♀, Hatepe, -38.8557, 176.0058, 11.i.1969, R.W. Huttan, OMNZ; 1 ♂, Hinemihis Track, -39.0102, 175.7445, 9.xi.1994, CJV & ADB, LUNZ; 1 ♂, 1 ♀, 1 imm, 25.v.1996, CJV, LUNZ. **TK**. 1 ♂, 1 ♀, Mount Messenger, -38.8957, 174.5942, 21.ii.1966, A.K. Walker, NZAC; 1 ♂, Kaitake Saddle, -39.1958, 173.9868, 13.xi.1994, CJV & ADB, LUNZ; 1 ♂, 1 ♀, near Waiwhakaimo River, -39.2374, 174.1009, 24.v.1996, CJV & ADB, LUNZ; 1 ♂, Ahukawakawa Swamp, -39.2524, 174.0504, 27.xi.1975, J.S. Dugdale, NZAC; 1 ♀, Mt Taranaki, ski field, -39.2833, 174.0833, 12.xi.1994, CJV, LUNZ. **HB**. 1 ♀, Tutira, -39.2095, 176.8813, 30.xii.1953, B.J. Marples, OMNZ; 1 ♀, Hukamui, -39.2500, 176.5500, 24.iii.1996, A. Tennyson, MONZ; 1 ♀, Taradale, -39.5416, 176.8445, 3.iv.1969, R.W. Huttan, OMNZ. **WA**. 1 ♀, Dannevirke, -40.2000, 176.1000, 12.iv.1943, RRF, OMNZ; 1 ♂, 1 ♀, Eketahuna, -40.6508, 175.7118, 1-8.x.1969, CLW, OMNZ; 5 ♂, 4 ♀, Mt Bruce, -40.7532, 175.5962, 1-8.x.1969, CLW, OMNZ; 1 ♂, 1 ♀, Atiwhakatu Valley, -40.8727, 175.4534, 1-16.xi.1972, CLW, MONZ; 2 ♂, 2 ♀, 16-31.x.1972, CLW, OMNZ; 7 ♂, Mt Holdsworth, -40.8751, 175.4167, 16.xi.1972, CLW, OMNZ; 4 ♂, 1 ♀, Opaki, -40.8943, 175.6620, 1-8.x.1969, CLW, OMNZ; 2 ♂, 1 ♀, Masterton, -40.9543, 175.6670, 25.v.1968, R.W. Huttan, OMNZ; 2 ♂, 2 ♀, Taratahi, -40.9833, 175.5833, 15.30.ix.1972, CLW, MONZ; 1 ♂, 15.x.1972, CLW, OMNZ; 1 ♂, 1 ♀, 1-16.xi.1972, CLW, MONZ; 1 ♂, 1 ♀, Wainuioru River, -41.1333, 175.7667, 1.iv.1968, CLW, OMNZ. **RI**. 1 ♀, near Woodville, -40.3441, 175.8732, 1-8.x.1969, CLW, OMNZ. **WN**. 1 ♂, 1 ♀, Mangatoinaka, -40.4190, 175.8462, 1-8.x.1969, CLW, OMNZ; 1 ♀, Akatarawa Valley, Campbell's Mill, -41.0490, 175.1162, 26.x.1941, RRF, MONZ; 3 ♂, Akatarawa Valley, -41.0490, 175.1162, iv.1996, R. Pederson, OMNZ; 1 ♂, 2 ♀, Tauherenikau Valley, -41.0670, 175.3010, 26.iv.1947, M. Laird, MONZ; 1 ♀, Stokes Valley, -41.1848, 174.9872, 30.xi.1947, R.K. Dell, OMNZ; 1 ♂, 2 ♀, Orongorongo Valley, -41.3667, 174.9000, 16.viii.1995, B.M. Fitzgerald, MONZ; 1 ♂, 15.v.1996, ADB, LUNZ. **NN**. 1 ♀, Heaphy Track, -40.8771, 172.2761, v.1974, D.R. Penman, LUNZ; 1 ♀, 6.xi.1999, G. Hall & R. Leschen, NAZC; 1 ♀, 7.xi.1999, G. Hall & R. Leschen, NAZC; 1 ♀, 9.xi.1999, G. Hall & R. Leschen, NAZC; 1 ♀, Pages Saddle, -40.9405, 172.8979, 3.xii.1994, CJV, LUNZ; 1 ♂, Takaka Hill, -41.0333, 172.9166, 17.iii.1960, C.W. O'Brien, OMNZ (Honolulu Collection); 1 ♂, Riwaka River, -41.0500, 172.9167, 14.ii.1998, ADB, LUNZ; 1 ♀, Mt Domett 1250m, -41.0646, 172.3112, 25.xi.1971, T. McBurney, NZAC; 1 ♀, 30.xi.1971, G. Kuschel, NZAC; 2 ♀, Salisbury Rock Shelter, -41.1833, 172.6667, 4.i.1998, A. Tennyson, MONZ; 1 ♀, Flora Hut, -41.1854, 172.7304, 24.xi.1971, J.S. Dugdale, NZAC; 1 ♂, 1 ♀, Shery Valley, -41.4128, 172.7266, 18.xii.1949, J.G. Dawber, OMNZ; 4 ♂, 1 ♀, Pretty Bridge Valley, -41.4237, 172.9178, 3.xi.1965, G. Hitchings, NZAC; 1 ♀, 2.ii.1966, G. Hitchings, NZAC; 1 ♀, 6.iv.1966, G. Hitchings, NZAC; 1 ♀, 8.vi.1966, G. Hitchings, NZAC; 1 ♂, 7.xii.1966, G. Hitchings, NZAC; 1 ♀, Lee Valley, -41.4348, 173.1498, 9.viii.1966, J.I. Townsend, NZAC; 1 ♀, Head of Falls Creek, -41.5000, 172.0500, 8.ii.1972, K. Mason, OMNZ; 1 ♀, 1 imm, NW Nelson, -41.6000, 172.3167, 7.i.1996, A. Tennyson, MONZ; 2 ♂, 1 ♀, Glenhope, -41.6502, 172.6428, 12.ii.1969, CLW, OMNZ; 1 ♀, Mt Augustus, 800m, -41.6779, 171.8570, 8.x.1969, J.S. Dugdale, NZAC; 1 ♀, Denniston, -41.7384, 171.7872, 7.x.1969, J.S. Dugdale, NZAC. **MB**. 1 ♂, Pelorus Bridge, -41.2986, 173.5629, 10.x.1964, G. Kuschel, NZAC; 1 ♀, Hanmer, -42.5439, 172.7853, i.1966, T. Poppelwell, OMNZ. **BR**. 1 ♀, any imm, Mangles River, -41.7833, 172.3667, 12.ii.1969, CLW, OMNZ; 2 ♂, 1 ♀, St Arnaud, -41.7999, 172.8467, 9.ii.1997, CJV & ADB, LUNZ; 1 ♂, Murchison, -41.8062, 172.3284, 10.ii.1969, CLW, OMNZ; 6 ♀, Okari River, -41.8210, 171.4970, 29.x.1970, Entomology Department, LUNZ; 1 ♂, Mt Robert, -41.8341, 172.8111, 5.viii.1964, J.I. Townsend, NZAC; 1 ♀, 8.vi.1965, J.I. Townsend & L.P.M., NZAC; 1 ♀, Braeburn Track, -41.8753, 172.5981, 9.iii.1965, G. Kuschel & J.I. Townsend, NZAC; 1 ♀, Woodpecker Bay, -42.0167, 171.3833, 22.i.1950, RRF, OMNZ; 1 ♂, 1 ♀, Reefton, -42.1167, 171.8667, x-xi.1992, M.J. Meads, MONZ; 1 ♀, Lewis Pass, -42.3810, 172.4030, 11.iii.1960, C.W. O'Brien, OMNZ; 1 ♂, Lewis Pass, -42.3810, 172.4030, 12.xi.1964, G. Kuschel, NZAC; 2 ♀, Greymouth, -42.4500, 171.2000, vi.1956-i.1957, L.R. Jackson, OMNZ; 1 ♀, 5.viii.1973, S. Lauder, OMNZ; 1 ♀, 28.viii.1973, S. Lauder, OMNZ; 1 ♂, 1 ♀, Moana, -42.5833, 171.4833, 10.iii.1950, RRF, OMNZ. **KA**. 1 ♂, 3 ♀, Mt Fyffe Forest, -42.3589, 173.5934, 3.xii.1995, CJV, ADB, S.J. Crampton, LUNZ. **WD**. 1 ♀, Kumara, -42.6324, 171.1879, xi.1929, W. Campbell, OMNZ; 1 ♀, 1.1957, L.R. Jackson, OMNZ; 1 ♀, Hokitika, -42.7153, 170.9508, 4.xii.1955, B.J. Marples, OMNZ; 1 ♀, Arahura Valley, -42.7356, 171.1175,

7.xii.1972, Entomology Department, Lincoln College, LUNZ; 1 ♀, 17 km S of Hokitika, -42.8667, 170.8667, 26.ii.1976, L.L. Deitz, NZAC; 1 ♀, Otira, -42.8982, 171.5439, 1945, P.P. Harris, OMNZ; 1 ♂, 1 ♀, Otira Valley, -42.8982, 171.5439, 28.v.1954, J.S. Dugdale, OMNZ; 1 ♂, Arthur's Pass, -42.9077, 171.5493, 14.xii.1994, CJV, LUNZ; 9 ♂, 4 ♀, 2 imm, Ross Creek, -42.9236, 170.8168, 22.xi.1955, B.J. Marples, OMNZ; 1 ♂, Pukekura, -43.0167, 170.6667, viii.1952, M. Warren, OMNZ; 1 ♀, Whataroa, -43.2667, 170.3667, viii.1952, M. Warren, OMNZ; 8 ♀, Franz Josef, -43.4000, 170.1833, 20.i.1971, RRF, OMNZ; 2 ♀, 24.i.1971, RRF, OMNZ; 2 ♀, 15.xi.1995, CJV, LUNZ; 1 ♂, 3 ♀, 16.xi.1995, CJV, LUNZ; 2 ♂, 11.iv.1999, CJV & M.A. Hudson, LUNZ; 1 ♀, Fox Glacier, -43.4667, 170.0167, 1.ix.1951, M. Warren, OMNZ; 2 ♀, 20.i.1971, RRF, OMNZ; 1 ♀, 16.xi.1995, CJV, LUNZ; 1 ♂, Karangarua, -43.5370, 169.8276, 27.ix.1966, RRF, OMNZ; 1 ♂, Copland Track start, -43.5833, 169.8167, 13.xii.1994, ADB, LUNZ; 1 ♀, 13.xii.1994, CJV, LUNZ; 1 ♀, Bruce Bay, -43.6090, 169.5913, iv.1946, W.A.B. Keay?, OMNZ; 1 ♂, 1 ♀, Lake Paringa, -43.7167, 169.4000, 11-14.xii.1994, CJV, LUNZ; 1 ♀, Lake Moeraki, -43.7333, 169.2833, 26.ix.1966, RRF & CLW, OMNZ; 2 ♀, 12.xii.1994, CJV & ADB, LUNZ; 1 ♂, 1 ♀, Paringa River, -43.7407, 169.5032, 3.vi.1954, J.M. Moreland, OMNZ; 1 ♀, Thomas River, -43.8853, 169.2232, 18.iii.1966, RRF, OMNZ; 1 ♀, Hapuka Estuary, -43.9075, 168.8985, 17.xi.1995, CJV, LUNZ; 2 ♀, Jackson Bay, -44.0000, 168.6500, 22.i.1960, R.E. Leech, OMNZ (Honolulu Collection); 1 ♀, Wills Valley, -44.0404, 169.4400, 3.vii.1971, K. Mason, OMNZ; 1 ♀, Woodhen Creek, -44.1807, 168.4878, MONZ; 1 ♂, Olivine Range, -44.2331, 168.5526, 10.i.1972, K. Mason, OMNZ; 2 ♀, Makarora, -44.2378, 169.2330, 12.xii.1977, RRF, OMNZ; 1 ♀, Lake Alabaster, -44.5303, 168.1498, 11.i.1967, A.K. Walker, NZAC. **NC.** 2 ♂, 1 ♀, Klondike Corner, -43.0000, 171.5833, 19.xii.1994, ADB, LUNZ; 2 ♀, 19.xi.1995, CJV, LUNZ; 2 ♂, Chalk Hill, -43.2667, 172.1667, 3.v.1952, RRF, OMNZ. **MC.** 1 ♀, Bealey, -43.0333, 171.6333, 19.x.1959, B.A. Holloway, OMNZ; 1 ♀, Mt Torlesse, -43.2572, 171.8217, 5.ii.1950, RRF, OMNZ; 2 ♂, Canterbury, 1939, OMNZ. **MK.** 1 ♂, 1 ♀, near Hooker River, -43.7073, 170.1003, 6.i.2001, CJV & M.A. Hudson, LUNZ; 7 ♂, 1 ♀, Unwin Hut, -43.7500, 170.1167, 14.xii.1992, CJV, LUNZ; 3 ♀, 14-17.xii.1992, CJV, LUNZ. **OL.** 1 ♀, Gillespie Pass, 1500m, -44.1589, 169.0752, 8.i.1972, S.R. Forster, OMNZ; 1 ♂, Albert Burn, -44.3426, 169.0215, iv.1974, K. Mason, OMNZ; 1 ♂, 3 ♀, Niger Peak, -44.5249, 168.8450, 18.iii.1996, G. Hall, NZAC; 1 ♀, Lake Hawea, -44.6141, 169.2660, 20.viii.1957, B.J. Marples, OMNZ; 1 ♀, Aitum Creek, -44.7915, 168.6365, S.R. Forster, OMNZ; 1 ♂, Parawa, -45.5429, 168.5304, 5.ix.1948, OMNZ. **FD.** 2 ♀, Martins Bay, -44.3667, 168.0000, 1.ii.1955, RRF & J.S. Dugdale, OMNZ; 1 ♀, Southside Tutoko Bench, -44.6000, 168.0000, 4.i.1977, J.S. Dugdale, NZAC; 3 ♀, Hidden Falls, -44.6321, 168.1226, 21.i.1955, RRF, OMNZ; 1 ♀, Bowen Falls, -44.6670, 167.9266, 11.i.1971, RRF, OMNZ; 1 ♀, Hollyford Valley, -44.7500, 168.1333, 6.ii.1981, OMNZ; 1 ♀, Homer Tunnel, -44.7664, 167.9766, 12.i.1971, RRF, OMNZ; 1 ♀, Lake Howden, -44.8213, 168.1365, 14.xii.1966, A.K. Walker & K.Z. Wilson, NZAC; 1 ♀, Lake Hankinson, -45.0622, 167.5719, ii.1980, RRF, OMNZ; 1 ♀, Eglinton Valley, -45.1000, 167.9667, 30.v.1963, OMNZ; 2 ♀, Secretary Island, -45.2313, 166.9283, 24.xi.1981, A.C. Harris, OMNZ; 1 ♀, 26.xi.1981, A.C. Harris, OMNZ; 2 ♀, Tunnel Burn Valley, -45.2968, 167.7098, xii.1949, B. Wisely, OMNZ; 1 ♀, Hall Arm, -45.4598, 167.1148, Otago University Biological Society, OMNZ; 1 ♂, 2 ♀, 1 imm, Disappointment Cove, -45.6068, 166.6693, 10.i.1998, G. Hall & D.M. Gleeson, NZAC; 1 ♂, Green Lake, -45.7972, 167.3964, 15.xi.1975, A.C. Harris, OMNZ; 1 ♀, Lake Haurouko, -45.9470, 167.3022, 25.xi.1970, RRF & CLW, OMNZ; 1 ♂, 1 ♀, Rowallan, -46.0616, 167.5976, 25.xi.1970, RRF & CLW, OMNZ. **DN.** 2 ♂, Duntroon, -44.8667, 170.6833, viii.1948, B.J. Marples, OMNZ; 1 ♂, Evansdale Glen, -45.7217, 170.5728, 10.x.1978, RRF, OMNZ; 1 ♂, Double Hill, Waitati, -45.7522, 170.5272, xi.1961, W. Poppelwell, OMNZ; 9 ♂, Sullivans Dam, -45.8079, 170.5244, 12.x.1966, RRF, OMNZ; 10 ♂, 2 ♀, 1.xi.1966, RRF, OMNZ; 3 ♂, 1 ♀, 11.xi.1966, RRF, OMNZ; 2 ♂, 19.xii.1966, RRF, OMNZ; 5 ♂, 1 ♀, Leith Saddle, -45.8333, 170.5167, 20.iii.1977, RRF, OMNZ; 2 ♀, 2.iv.1967, RRF, OMNZ; 1 ♂, 2 ♀, 8.iv.1967, RRF, OMNZ; 2 ♀, 22.iv.1967, RRF, OMNZ; 1 ♀, 25.vi.1967, RRF, OMNZ; 1 ♀, 5.viii.1967, RRF, OMNZ; 2 ♂, 20.iv.1968, RRF, OMNZ; 1 ♀, 18.v.1968, RRF, OMNZ; 1 ♀, 18.v.1968, RRF, OMNZ; 1 ♂, Flagstaff, -45.8336, 170.4613, 24.ix-29.x.2000, S.M. Pawson, LUNZ; 1 ♀, Lake Mahinerangi, 430m, -45.8352, 169.8866, 15.i.1965, G. Kuschel & J.I. Townsend, NZAC; 1 ♀, Opoho Bush, -45.8561, 170.5299, i.1946, T. Smith, OMNZ; 1 ♂, Flagstaff, -45.8561, 170.5299, 10.iii.1962, W.T. Poppelwell,

OMNZ; 1 ♂, 1 ♀, 9.xii.1970, CLW, OMNZ; 1 ♂, 1 ♀, 21.iii.1971, CLW, OMNZ; 1 ♀, 7.x.1975, A.C. Harris, OMNZ; 1 ♀, 10.xii.1975, RRF, OMNZ; 1 ♀, Allans Beach, Rabbit Meadow, -45.8824, 170.6870, 16-30.iv.1953, B.J. Marples, OMNZ; 1 ♀, 24.xi.1953, B.J. Marples, OMNZ; 1 ♀, Dunedin, -45.8828, 170.5137, 10.ii.1959, RRF, OMNZ; 2 ♀, xi.1959, RRF, OMNZ; 1 ♂, 11.iii.1973, S.R. Forster, OMNZ; 1 ♀, Lawrence, -45.9160, 169.6913, 2.i.1970, CLW, OMNZ; 1 ♂, Tuapeka West, -45.9372, 169.8450, 21.xii.1985-18.i.1986, B.I.P. Barratt, NZAC; 1 ♀, Henley, -45.9832, 170.1656, 20.iv.1975, RRF, OMNZ; 1 ♀, Taieri Mouth, -46.0562, 170.1933, 19.x.1999, S. Clifford, OMNZ; 2 ♂, Bull Creek, -46.1833, 170.1333, 14.v.1967, R.W. Huttan & CLW, OMNZ. **CO.** 2 ♀, Cardrona River, -44.9167, 168.9833, 11.i.1999, CJV, LUNZ; 1 ♀, 2.ii.1999, CJV, LUNZ; 1 ♀, near Middlemarch, -45.4867, 170.0833, 10.ii-7.iii.1999, C. Rufaut, LUNZ; 1 ♂, 1 ♀, Titan Rocks Track, -45.5292, 169.0032, 9.xii.1998, G. Hall, B. Brown & E. Edwards, LUNZ; 1 ♀, Station Ridge, 860m, above Waikoia Valley, -45.5571, 168.9622, 28.iii.1976, K.D. Mason, OMNZ; 1 ♀, 1 imm, Waikaia, -45.7235, 168.8492, 4.ii.1998, G. Hall & D.M. Gleeson, NZAC; 4 ♂, 5 ♀, Craig Flat, -45.7382, 169.4937, 16.xi-21.xii.1985, B.I.P. Barratt, NZAC; 1 ♂, 2 ♀, Waipori, -45.8268, 169.8820, 10-24.x.1978, B.I.P. Barratt, OMNZ; 1 ♀, Waitahuna Bridge, -45.8533, 169.8166, 2.i.1970, CLW, OMNZ. **SL.** 2 ♂, 8 ♀, Island Block, -45.7218, 169.4559, 18.i-9.iii.1986, B.I.P. Barratt, NZAC; 3 ♀, Dean Forest, -45.8774, 167.6010, 26.i.1998, G. Hall & D.M. Gleeson, NZAC; 2 ♂, 3 ♀, Kelso, -45.9076, 169.2317, 23.xi-7.xii.1969, CLW, OMNZ; 9 ♂, 1 ♀, near Kelso, -45.9076, 169.2317, 23.xi-7.xii.1969, CLW, OMNZ; 1 ♀, Tapanui, -45.9471, 169.2682, vi.1961, W.T. Poppelwell, OMNZ; 6 ♂, 1 ♀, Pomahaka, -46.0104, 169.2376, 23.xi-7.xii.1969, CLW, OMNZ; 1 ♀, Balclutha, -46.2316, 169.7337, 10.xi.1958, RRF, OMNZ; 10 ♀, 20.xi.1958, RRF, OMNZ; 5 ♂, 1 ♀, Orepuki, -46.2833, 167.7500, 9.v.1949, J.H. Sorensen & RRF, OMNZ; 2 ♂, 3 ♀, 11.viii.1949, J.H. Sorensen, OMNZ; 1 ♂, Longwood River, West Side, -46.3451, 167.9558, 1.ix.1948, J.H. Sorensen, OMNZ; 2 ♀, Colac Bay, -46.3606, 167.8769, 24.xi.1970, RRF & CLW, OMNZ; 1 ♀, 19.iii.1975, A.C. Harris, OMNZ; 1 ♀, Owaka Valley, -46.4296, 169.5820, 3.i.1966, CLW, OMNZ; 1 ♀, Tautuku, -46.5848, 169.4211, 14.ii.1979, RRF, OMNZ. **SI.** 1 ♂, Lee Bay, -46.8621, 168.1230, 25.xii.1975, A.C. Harris, OMNZ; 1 ♀, Halfmoon Bay, -46.8924, 168.1527, i.1939, B.J. Marples, OMNZ; 1 ♂, 22.xi.1946, OMNZ; 1 ♂, 10.iii.1948, O. Allan, OMNZ; 1 ♀, 14.iii.1949, O. Allan, OMNZ; 1 ♂, vi.1950, O. Allan, OMNZ; 1 ♀, Oban, -46.8924, 168.1527, i.1956, I. Manner, OMNZ; 1 ♂, 29.iii.1975, A.C. Harris, OMNZ; 1 ♂, 2 ♀, Golden Bay, -46.9054, 168.1224, 13-21.xi.1958, M.N. Watts, OMNZ; 1 ♂, 1 ♀, i.1959, M.N. Watts, OMNZ; 1 ♂, Big South Cape Island, -47.2398, 167.4006, 11.ii.1969, A.C. Eyles, NZAC; 1 ♂, Stewart Island, 25.xi.1965, T. Bruce, OMNZ; 1 ♀, i.1956, M.N. Watt, OMNZ. **Unknown locality.** 1 ♂, Panikiri Track, 11.xii.1946, OMNZ; 1 ♀, T.K. Lomas, OMNZ; 1 ♀, OMNZ.

#### *Anoteropsis aerecens*

**TO.** 1 ♂, Waipakihi Riverbed, -39.1634, 175.9005, 26.i.1982, D.J. Court, OMNZ; 1 ♀, Lower Tama Lake, 1280m, -39.2000, 175.6000, 16.i.1967, I.R. Harding, AMNZ; 1 ♀, Ruapehu, 1300m, -39.2805, 175.5669, 13.i.1969, R.W. Huttan, OMNZ. **TK.** 1 ♂, Mt Egmont, 2130m, -39.2977, 174.0636, 2.i.1976, A.K. Walker, NZAC; 2 ♀, i.1978, OMNZ; 3 ♂, 2 ♀, Mt Egmont, -39.3050, 174.0833, 2.xii.2000, CJV, LUNZ; 1 ♂, East Egmont, 1700m, -39.3063, 174.1230, 29.i.1973, K.J. Fox, OMNZ; 1 ♀, Fanthams Peak, 2000m, -39.3124, 174.0660, 16.i.1955, G.W. Ramsay, OMNZ; 1 ♂, Dawson Falls, -39.3233, 174.1049, 14-21.i.1955, J.T. Salmon, OMNZ. **RI.** 1 ♂, Mangaweka, -39.8172, 175.7860, 1.xii.1978, A.C. Harris, OMNZ. **WI.** 1 ♂, Feilding, -40.2333, 175.5667, 18.i.1959, RRF, OMNZ. **WN.** 2 ♀, Orongorongo Valley, -41.3667, 174.9000, 16.viii.1995, B.M. Fitzgerald, MONZ; 2 ♀, 12-13.xii.1998, A. Tennyson, MONZ; 1 ♀, 5 imm, 31.i.1995, B.M. Fitzgerald, MONZ; 4 ♀, Orongorongo River, -41.4167, 174.9000, 3.xii.2000, CJV & P.J. Sivid, LUNZ. **WA.** 1 ♀, Palliser Bay, -41.4195, 175.0534, v.1969, E.G. Turbott, OMNZ. **MK.** 1 ♀, Hooker Glacier, -43.6886, 170.1005, 6.i.2001, M.A. Hudson & CJV, LUNZ. **SC.** 5 ♀, Orari River, -44.0500, 171.2500, 30.ix.1966, RRF & CLW, OMNZ. **WD.** 1 ♂, Fantail Falls, -44.0802, 169.3872, 18.xi.1995, CJV, LUNZ. **OL.** 1 ♂, OL, Albert Burn, -44.3426, 169.0215, iv.1974, K. Mason, OMNZ; 1 ♂, 2 ♀, Kidds Bush, -44.4440, 169.2680, 9.iv.1979, RRF, OMNZ; 1 ♀, Hawea, -44.6141, 169.2660, 30.i.1975, RRF, OMNZ; 6 ♂, 6 ♀, 10.iv.1979, RRF, OMNZ; 9 ♂, 3 ♀, Wanaka, -44.7080, 169.1238, 7.x.1959, RRF, OMNZ. **CO.** 1 ♀,

Clutha River, near Lowburn, -44.9167, 169.2833, 22.xi.1974, J.S. Dugdale, NZAC; 8 ♂, 4 ♀, Arrowtown, -44.9448, 168.8175, 20.v.1972, RRF, OMNZ; 1 ♂, 2 ♀, Ophir Riverbed, -45.1112, 169.6090, 2.viii.1961, RRF, OMNZ; 1 ♀, Mt Dasher, -45.1499, 170.4849, 17.v.1980, R.A. Savill, CMNZ. **SL**. 1 ♂, Te Anau, -45.4170, 167.6990, 4.iv.1958, R. Marples, OMNZ. **FD**. 1 ♀, near Monowai, -45.6000, 167.7000, 14.i.1971, RRF, OMNZ; 2 ♀, Lake Monk, -46.0193, 166.9592, 9.v.1954, J.S. Dugdale, OMNZ.

#### *Anoteropsis alpina*

**BR**. 1 ♀, Mount Hopeless, 2150m, -41.9496, 172.7393, 8.i.1964, L.J. Strang, OMNZ. **MC**. 1 ♂, Mount Cloudsley, 1950m, -43.2078, 171.6423, 27.xii.2000, M.H. Bowie, LUNZ; 1 ♂, Colin Campbell Glacier, 1270m, -43.3321, 170.7392, 20.i.1975, K. Mason, OMNZ; 1 ♀, Tent Peak, 2423m, -43.3440, 171.0206, 20.xi.1953, A.C. Clough, OMNZ; 1 ♀, Amazon Peak, 2500m, -43.3558, 170.8420, 17.iv.1963, B. Fineran, OMNZ. **MK**. 1 ♂, Haast Ridge, 2000m, -43.5821, 170.1939, 31.xii.1964, B. Fineran, OMNZ. **CO**. 2 ♂, allotype ♀, 1 ♀ paratype, Hawkdun Range, 2000m, -44.7007, 169.9491, 12.xii.1971, OMNZ; holotype ♂, Mt St Bathans, 2000m, -44.7357, 169.7627, 27.xi.1971, D.R. Forster & S. Forster, OMNZ; 3 ♂ paratypes, Michael Peak, 2000m, -44.7500, 169.7666, 27.xi.1971, S. Forster, OMNZ.

#### *Anoteropsis arenivaga*

**MB**. 1 ♂, near Lake Tennesson, -42.2083, 172.7500, 24.iii.1988, J. Arund, LUNZ. **NC**. 1 ♀, Hawdon Riverbed, -42.9363, 171.7436, 9.xii.1953, R.L.C. Pilgrim, OMNZ; 1 ♀, Rough Creek, -42.9522, 171.5502, 19.i.2000, M.P. Anstey, LUNZ; 1 ♂, 1 ♀, Chalk Hill, -43.2667, 172.1667, v.1952, RRF, OMNZ; 1 ♂, 1 ♀, Coopers Creek, -43.3000, 172.1667, 1.xii.1948, RRF, OMNZ. **MC**. 1 ♂, Waimakariri River, near Bealey, -43.0333, 171.6333, 29.ix.1966, RRF & CLW, OMNZ; 1 ♂, Cass River, -43.0667, 171.7333, 26.viii.1928, G.A.H. Helson, OMNZ; 2 ♂, 1 ♀, Porter River, -43.2167, 171.7333, 1.xii.2000, M.P. Anstey, LUNZ; 2 ♂, Lake Lyndon, -43.3037, 171.7004, 26.iv.1945, RRF, OMNZ; 1 ♂, Kaitorete Spit, -43.8170, 172.5999, 12.v.1954, J.S. Dugdale, OMNZ; 1 ♂, 1 ♀, 1.v.1960, OMNZ; 2 ♂, 1.viii.1991, A.B. Freeman, LUNZ; 1 ♀, 1.xi.1991, CJV, LUNZ; 1 ♂, ii.1993, CJV & A.B. Freeman, LUNZ; 1 ♂, 16.vii.1996, CJV, LUNZ; 2 ♂, 1 ♀, 16.vii.1996, CJV & D. Nicholls, LUNZ; 1 ♀, 16.vii.1996, CJV, LUNZ; 4 ♂, 6 ♀, 11.vi.1999, CJV & J.W. Griffiths, LUNZ; 2 ♂, 1 ♀, Birdlings Flat, -43.8256, 172.6955, 14.iv.1967, RRF & CLW, OMNZ; 1 ♀, 11.i.2000, M.P. Anstey & M. Zabka, LUNZ; 2 ♀, MC, Hinds Stream, -44.0338, 171.6161, 12.ix.1954, RRF, OMNZ. **MK**. 1 ♀, near Ball Shelter, -43.6282, 170.1922, 15.xii.1992, CJV, LUNZ; 1 ♀, Hooker Gacier, -43.6636, 170.1258, 14.iv.2001, C.B. Phillips, LUNZ; 2 ♀, near Dunstan Downs, -44.5019, 169.7577, 26.vii.1967, RRF, OMNZ. **SC**. 2 ♀, Orari River, -44.0500, 171.2500, 30.ix.1966, RRF & CLW, OMNZ. **CO**. 1 ♂, Luggate, -44.7477, 169.2690, 4.xi.1958, RRF, OMNZ. **Unknown locality**. 1 ♂, J.R.J., OMNZ.

#### *Anoteropsis blesti*

**ND**. 4 ♀, Mangamuka, -25.2167, 173.5500, 31.i.1981, RRF, OMNZ; 2 ♀, 1 subadult ♂, Moehau, -35.4397, 173.6088, 30.xii.1946, OMNZ. **CL**. 2 ♀, Waitekauri River, -37.3838, 175.7774, 1997, K. Collier, LUNZ; holotype ♂, Waitekauri River, -36.7586, 175.5656, 26.i.2000 (moulted Oct 2000), CJV & ADB, LUNZ; 3 ♂ paratypes, 1 ♀ paratype, 1 imm, 26.i.2000, CJV & ADB, LUNZ; 2 ♀ paratypes, 16.ii.2000, CJV, LUNZ; 1 ♂ paratype, 1 ♀ paratype, 17.ii.2000, CJV, NZAC; allotype ♀, 3 ♂ paratypes, 17.ii.2000, CJV, LUNZ. **AK**. 1 ♀, Huia, -37.0003, 174.5628, 25.i.1956, G Chamberlain, OMNZ. **BP**. 1 ♂, 2 imm, Wairere Stream, -37.7458, 175.8694, 17.iv.2000, K. Collier, LUNZ.

#### *Anoteropsis canescens*

**NN**. 1 ♂, Westport, -41.7518, 171.5825, 12.i.1944, A.W. Parrott, OMNZ. **NC**. 1 ♀, Lake Taylor, -42.7685, 172.2309, 14.iv.1952, RRF, OMNZ; 1 ♂, Waipara Gorge, -43.0667, 172.7333, 1.v.1959, OMNZ; 1 ♂, lower Waipara River, -43.1333, 172.7750, 14.xii.1955, RRF, CMNZ. **MC**. 1 ♀, Mistake Creek, -43.2056, 171.2214, 15.v.1955, J.S. Dugdale, CMNZ; 1 ♀, Hydra Island, -43.2703, 171.3517, 14.v.1955, J.S. Dugdale, CMNZ; 10 ♂, 1 ♀, McLeans Island, -43.4667, 172.4748, 21-31.i.1997, R.P. Macfarlane, LUNZ; 1 ♀, 20-29.i.1997, R.P. Macfarlane, LUNZ; 9 ♂, Christchurch Airport, -43.4876, 172.5339, viii.1968,

A. Moeed, OMNZ; 10 ♂, 4 ♀, ix.1968, A. Moeed, OMNZ; 9 ♂, x.1968, A. Moeed, OMNZ; 5 ♂, 1 ♀, xii.1968, A. Moeed, OMNZ; 3 ♀, iv.1969, A. Moeed, OMNZ; 3 ♀, v.1969, A. Moeed, OMNZ; 1 ♀, MC, Dunsandel, -43.6633, 172.1974, xii.1998, P.M. Denholm, LUNZ; 3 ♂, 2 ♀, xii.1999, P.M. Denholm, LUNZ; 1 ♀, iii.2000, P.M. Denholm, LUNZ. **OL**. 1 ♀, Toi Toi Flat, Landsborough, -43.8833, 169.7000, 20.iv.1971, K. Mason, OMNZ. **MK**. 1 ♀, Snowy Gorge, -44.3072, 169.6768, 15.ii.1984, J. Hunt, OMNZ. **CO**. 1 ♂, Luggate, -44.7477, 169.2690, 17.viii.1961, RRF, OMNZ; 1 ♀, Danseys Pass, -44.9761, 170.4880, 17.xi.1979, A.C. Harris, OMNZ; 3 ♂, Kawarau Gorge, -45.0239, 169.0957, viii.1952, B.J. Marples, OMNZ; 3 ♂, 2 ♀, near Cromwell, -45.0455, 169.1865, 16.viii.1961, RRF, OMNZ; 1 ♂, Alexandra, -45.2557, 169.3755, 20.viii.1957, B.J. Marples, OMNZ; 1 ♂, 3.viii.1961, RRF, OMNZ; 1 ♀, near Butchers Dam, -45.2969, 169.3422, 3-6.ix.1959, V.E.D., OMNZ; 2 ♂, near Shingle Creek, -45.4227, 169.2813, 14.viii.1961, RRF, OMNZ.

#### *Anoteropsis cantuarua*

**NC**. 1 ♂, Waipara Gorge, -43.0667, 172.6000, 2.i.2000, CJV, LUNZ; 1 ♀, 2.i.2000, CJV & M.A. Hudson, LUNZ; 1 ♀, 2.i.2000, CJV, M.A. Hudson & S.J. Crampton, LUNZ. **MC**. 1 ♂, Kowai River, -43.3333, 171.8666, 4.xii.1955, B.J. Marples, OMNZ; 1 ♂, Menzies Bay, -43.6410, 172.9663, 1.ix.1959, Dept of Zoology, C.U.C., OMNZ; 1 ♂, Purau Stream, -43.6620, 172.7542, 16.ix.1962, R.S. Bigelow, OMNZ; 3 ♀ paratypes, Prices Valley, -43.7694, 172.7105, 30.x.1990, J.W. Early & CJV, LUNZ; 1 ♂ paratype, 1 ♀ paratype, 30.x.1990, J.W. Early & CJV, NZAC; allotype ♀, 3 ♀ paratypes, 22.xi.1990, CJV, LUNZ; holotype ♂, 1 ♂ paratype, 1 ♀ paratype, 29.iv.1994, CJV, LUNZ; 1 ♂, 20.x.1999, CJV, LUNZ; 1 ♂, 3 ♀, 20.x.1999, CJV, LUNZ; 2 ♂, 2 ♀, 20.x.1999, CJV & H. Ranson, LUNZ. **SC**. 1 ♀, Waihi Gorge, -44.0016, 171.1408, 23.i.1982, RRF, OMNZ; 3 ♂, 1 ♀, Waihi, -44.0220, 171.1751, 10.xii.1939, A.W. Parrott, OMNZ; 2 ♀, Opihi River, Fairlie, -44.1000, 170.8333, 19.i.1982, RRF, OMNZ; 1 ♂, 6 ♀, Waihai River, -44.7892, 171.0092, 30.ix.1966, OMNZ. **Unknown locality**. 2 ♂, 6 ♀, Ar 1/78, OMNZ.

#### *Anoteropsis flavescens*

**DN**. 1 ♀, Swampy Summit, -45.7907, 170.4731, 24.ix.2000, S.M. Pawson, LUNZ; 2 ♂, 26.ix-29.x.2000, S.M. Pawson, LUNZ; 2 ♂, 2 ♀, 30.x.2000, S.M. Pawson, LUNZ; 3 ♂, Mt Cargill, -45.8146, 170.5546, 23.ix-29.x.2000, S.M. Pawson, LUNZ; 1 ♀, Leith Saddle, -45.8333, 170.5167, 6.v.1967, RRF, OMNZ; 1 ♂, Flagstaff, -45.8336, 170.4613, 24.ix-29.x.2000, S.M. Pawson, LUNZ; 3 ♂, 1 subadult ♂, Allans Beach, -45.8824, 170.6870, 11.i.1956, B.J. Marples, OMNZ. **CO**. 2 ♂, Blue Moutains (N), 900 m, -45.9088, 169.3675, 5-27.i.1985, B.I.P. Barratt, OMNZ; 1 ♂, Blue Moutains (N), 1000m, 5-27.i.1985, B.I.P. Barratt, OMNZ. **SL**. 2 ♀ (genitalia missing in one), Orepuke, -46.2833, 167.7500, 9.v.1949, RRF, OMNZ.

#### *Anoteropsis forsteri*

**DN**. 1 ♂, Island in Blueskin Bay, -45.7282, 170.5757, 1.x.1950, B.J. Marples, OMNZ; 2 ♂, Allans Beach, -45.8824, 170.6870, 16.ix.1951, B.J. Marples, OMNZ; 1 ♂, 29.ix.1951, B.J. Marples, OMNZ; 1 ♂, 21.viii.1966, RRF, OMNZ; 1 ♂, Chrystalls Beach, -46.2077, 170.0726, 6.v.1967, CLW, OMNZ; 1 ♂, Toko Mouth, -46.2257, 170.0447, 30.xi.1968, D. Forster, OMNZ; 1 ♀, Dunedin, OMNZ; 1 ♂, A08.211, OMNZ. **SL**. 2 ♂ paratypes, Oreti Beach, -46.4333, 168.2333, 2.ii.2000, CJV, LUNZ; holotype ♂, allotype ♀, 21.xi.2000, CJV, LUNZ; ; 1 ♂, Cannibal Bay, -46.4736, 169.7569, 9.vi.1974, G Lockere, OMNZ; 1 ♂, Long Beach, -46.6301, 169.2645, 10.ix.1947, OMNZ. **SI**. 1 ♀, Maori Beach, -46.8418, 168.0822, 23.xii.1975, A.C. Harris, OMNZ; 1 ♀, Mason Bay, -46.9530, 167.7041, 20.xii.1970, D.S. Homing, NZAC; 1 ♂, Stewart Island, -46.9530, 167.7041, 16.iv.1971, J. Child, OMNZ; 1 ♀, Golden Bay, -46.9054, 168.1224, i.1959, M.N. Watt, OMNZ.

#### *Anoteropsis hallae*

**NN**. holotype ♂, between Heaphy and Lewis Huts, -40.9667, 172.1333, 7.xi.1999, G Hall, NZAC. **BR**. allotype ♀, Caplestone, -42.0694, 171.9159, 8.xi.1971, J.C. Watt, NZAC.



*Anoteropsis hilaris*

**TH.** 1 ♀, Bayliss Stream, -34.1667, 172.1333, 14.iv.1999, A.M. Booth, NZAC; 1 ♀, Tasman Valley, -34.1667, 172.1333, 25.xi.1970, G.W. Ramsay, NZAC; 1 ♂, 1 ♀, Castaway Valley, -34.1667, 172.1333, 6.xii.1996, G.L.F. Carlin, NZAC; 1 ♀, Castaway Camp, -34.1667, 172.1333, 29.xi.1970, G.W. Ramsay, OMNZ; 1 ♀, 3 imm, 29.xi.1970, G.W. Ramsay, OMNZ.

**ND.** 1 ♀, Houhora, -34.7966, 173.1030, 24.viii.1953, B.J. Marples, OMNZ; 5 ♂, Motukawanui Island, -35.0027, 173.9193, 1-7.i.1979, L. Roberts, OMNZ; 1 ♂, Kaitaia, -35.1093, 173.2485, 30.i.1981, RRF, OMNZ; 1 ♂, Kerikeri Basin Reserve, -35.21666, 173.9500, 14.vi.2000, G.Hall, LUNZ; 1 ♀, Kohukohu, -35.3635, 173.5418, 19.viii.1953, B.J. Marples, OMNZ; 1 ♀, 22.viii.1953, B.J. Marples, OMNZ; 4 ♂, 2 ♀, Mimiwhangata, -35.4324, 174.4040, 10-17.xii.1970, J. Darby, OMNZ; 3 ♂, 1 ♀, Tawhiti Rahi Island, -35.4563, 174.7182, 6-12.ii.1980, J.C. Watt, NZAC; 3 ♂, 3 ♀, 1 imm, 2-10.xii.1980, J.C. Watt, NZAC; 1 ♂, 1 ♀, Aorangi Island, -35.4802, 174.7262, 11-17.xi.1981, J.C. Watt, NZAC; 1 ♂, Waiarohia Stream, -35.5215, 173.4011, 4.ii.1994, ADB, LUNZ; 1 ♀, Waipoua Forest, -35.6164, 173.5405, 29.x.1980, G. Kuschel, NZAC; 1 ♀, near Matarau, -35.6335, 174.1909, 21.iii.1995, C.A. Stewart, LUNZ; 1 ♀, Whangarei, -35.7215, 174.2981, 6.ii.1981, RRF, OMNZ; 1 ♀, Onehāhi, -35.7676, 174.3597, 16.ii.2000, R. Leschen, G.Hall & R.J.B. Hoare, LUNZ; 1 ♂, Ocean Beach, -35.8396, 174.5626, 5.vi.1970, D.J. Court, OMNZ; 25 ♂, Ruakaka, -35.9122, 174.4536, 6.ii.1976, C. Butcher, NZAC; 2 ♂, Redhill, -36.0675, 173.8786, 4.ii.1976, C. Butcher, NZAC; 8 ♂, 18.ii.1976, C. Butcher, NZAC. **CL.** 1 ♀, Motairehe, -36.1206, 175.3752, xi.1964, J. Hall, MONZ; 1 ♀, House at Barrier Island, -36.1206, 175.3752, 7.x.1945, E.G. Turbott, MONZ; 1 ♀, Motairehe, -36.1206, 175.3752, 12.xi.1963, R.G. Ordish, OMNZ; 2 ♀, Motairehe, -36.1206, 175.3752, 18.xi.1963, R.G. Ordish, OMNZ; 1 ♂, Little Barrier Island, -36.1984, 175.1129, 20.xi.1947, E.G. Turbott, OMNZ; 1 ♀, 23.xi.1954, G. Ramsay, OMNZ; 1 ♂, 26.xi.1954, G. Ramsay, OMNZ; 1 ♂, 2 ♀, Whangaparapara, -36.2435, 175.3993, 21.viii.1972, D.J. Court, OMNZ; 2 ♂, 3 ♀, Cuvier Island, -36.4367, 175.7386, 25.ii-2.iii.1982, G.Hall, NZAC; 1 ♀, Cuvier Island, -36.4322, 175.7745, 28.iii.1994, B.M. Fitzgerald, MONZ; 1 ♀, Whangapoua, -36.7167, 175.6167, 16.ii.2000, CJV, LUNZ; 1 ♂, Kuaotunu, -36.7228, 175.7231, 26.i.2000, CJV, LUNZ; 1 ♀, Matarangi, -36.7333, 175.6667, 17.vi.2000, J.W. Griffiths & C.N.L. Chambers, LUNZ; 1 ♀, Oputere, -37.1000, 175.8833, 15.vi.2000, J.W. Griffiths & C.N.L. Chambers, LUNZ; 1 ♀, near Thames, -37.1428, 175.5330, 26.i.1993, CJV, LUNZ. **AK.** 1 ♂, Dome Valley, -36.3735, 174.6197, 25.iv.1946, E.G. Turbott, OMNZ; 1 ♀, Motuora Island, -36.5115, 174.7938, 5.iv.1996, A. Tennyson, MONZ; 1 ♀, Tiritiri Matangi Island, -36.6016, 174.9014, 23.xi.1961, A. Wright, OMNZ; 1 ♀, Motuhotopapa Island, -36.6911, 174.9665, 17.i-16.ii.1978, L.L. Deitz & J.S. Dugdale, NZAC; 2 ♂, 23.x-17.xii.1978, D.W. Helmore & J.M. Cleary, NZAC; 1 ♂, 26.x-9.xii.1979, M. Tocker, B. Bradshaw, C. Butcher & J. Watt, NZAC; 1 ♂, Otata Island, -36.6977, 174.9780, 22.x-18.xii.1978, D.W. Helmore & J.M. Cleary, NZAC; 1 ♂, 3 ♀, 1 imm, 18.xii.1978-25.ii.1979, D.W. Helmore, J.M. Cleary & M. Tocker, NZAC; 1 ♀, Waiheke Island, -36.7822, 174.9656, xii.1943, G. Chamberlain, MONZ; 1 ♀, 24.i.1997, CJV, LUNZ; 1 ♂, Birkenhead, -36.8186, 174.7284, ix.1943, J.A. Marsden, MONZ; 1 ♀, x.1943, J.A. Marsden, MONZ; 1 ♂, 2 ♀, Auckland, -36.8396, 174.7624, M.P. Büchler, OMNZ; 1 ♂, 1 ♀, winter, M.P. Büchler, OMNZ; 2 ♂, ix.1941, D. Spiller, OMNZ; 1 ♀, 11.vi.1957, M. Lane, OMNZ; 1 ♀, Parnell, -36.8586, 174.7822, 8.vi.1947, E.G. Turbott, OMNZ; 1 ♂, Matupu Reserve, -36.8652, 174.4628, 25.i.1997, CJV, LUNZ; 3 ♀, Remuera, -36.8781, 174.7992, 30.viii.1946, S.A. Rumsey, OMNZ; 2 ♀, Oakley Creek Reserve, Waterview, -36.8802, 174.6948, 16.ii.1999, CJV & G.Hall, LUNZ; 1 ♀, Mt Albert, -36.8931, 174.7201, 28.iv.1948, F. Dell, OMNZ; 1 ♂, Ihumoa Island, -36.8947, 174.4293, 5.vii.1995, A. Tennyson, MONZ; 10 ♂, 2 ♀, Bethells, -36.8980, 174.4354, 19.ix-21.x.1983, M.F. Tocker & B.G. Bennett, NZAC; 9 ♂, 1 ♀, 11.vi-18.vii.1984, M.F. Tocker, NZAC; 1 ♀, Avondale, -36.8988, 174.6940, 19.i.1993, G. Hall, LUNZ; 1 ♀, nr Waitakere Reservation, -36.9070, 174.5277, 24.i.1993, CJV, LUNZ; 6 ♂, 4 ♀, Three Kings, -36.9079, 174.7553, 18-27.i.1993, CJV, LUNZ; 1 ♀, Waikowhai Reserve, -36.9301, 174.7386, 16.ii.1999, G.Hall & CJV, LUNZ; 1 ♂, 1 ♀, Cutty Grass Track, -36.9333, 174.5333, 17.ii.1999, CJV, LUNZ; 1 ♀, Titirangi, -36.9402, 174.6567, 22.x.1969, F.A. Alack, NZAC; 2 ♂, 2 ♀, 22.iv.1972, N.A. Martin, NZAC; 1 ♀, Mangere, -36.9768, 174.7971, 15.xii.1975, N.A. Martin, NZAC; 5 ♀, Papatoetoe, -36.9794, 174.8421, 16.viii.1978, D.W. Helmore, NZAC; 1 ♀, near Clevedon, -36.9875, 175.0489, 24.i.2001, CJV, LUNZ; 1 ♀, Totara Park, -37.0000, 174.9500, 18.vi.2000, R.J.B. Hoare, LUNZ; 7 ♀,

Olive Davis Reserve, -37.0000, 174.9500, 30.x.1999, G.Hall, NZAC; 1 ♂, 3 ♀, Miranda, -37.1889, 175.3182, 29.xi.1953, B.J. Marples, OMNZ; 1 ♀, Pukekohe, -37.2086, 174.8978, 19.ii-19.iv.1977, N.A. Martin, NZAC; 2 ♂, 21.ii-21.iii.1977, N.A. Martin, NZAC; 11 ♂, 4 ♀, 17.iv-17.v.1977, N.A. Martin, NZAC; 7 ♂, 6 ♀, 4.x.1977, N.A. Martin, NZAC; **WO.** 2 ♂, 4 ♀, Torehāpe, -37.3420, 175.4102, 14.xii.1999, C. Watts, NZAC; 1 ♂, near Hamilton, -37.7826, 175.2727, 19.vii.1965, M.L., OMNZ; 3 ♂, 3 ♀, Matamata, -37.8079, 175.7787, 10.ix.1984, D.J. Court, OMNZ; 1 ♂, Pirongia Mountain, -37.9929, 175.0891, 28.x.1968, H. Oliver, OMNZ; **BP.** 3 ♀, Otaketake, -37.5327, 177.1869, 19-22.xi.1964, C.J. Robertson, AMNZ; 4 ♂, Te Aroha, -37.5382, 175.7154, 27.v.1996, CJV, LUNZ; 1 ♂, 4 ♀, Whangaparaoa Beach, -37.5741, 177.9672, 25.xi-29.i.1993, R.C. Henderson, NZAC; 5 ♂, 2 ♀, Whangaparaoa, -37.5741, 177.9672, 29.i-12.iii.1993, J.S. Dugdale, NZAC; 1 ♂, Tokata, -37.6248, 178.3321, 2-4.ii.1993, R.C. Henderson, NZAC; 1 ♀, 1 imm, Mt Otanewainuku, -37.9053, 176.2039, 30.i.1996, A. Tennyson, MONZ; 4 ♂, 5 ♀, Whakatane, -37.9693, 176.9924, 2-6.x.1969, CLW, OMNZ; 3 ♂, 2 ♀, Kawerau, -38.0796, 176.7004, 14.v.1973, RRF, OMNZ; 1 ♀, Mt Ngongotaha, -38.0833, 176.2166, 19.xii.1995, ADB, LUNZ; 1 ♂, Lake Okataina Scenic Reserve, -38.1136, 176.3901, 26.v.1996, CJV, LUNZ; 1 ♀, Lake Okataina, -38.1141, 176.4203, 19.xii.1995, ADB, LUNZ; 1 ♀, 19.ii.1999, CJV, LUNZ; 5 ♂, Ngongotaha, -38.1201, 176.1976, 26.v.1996, CJV & ADB, LUNZ. **TO.** 1 ♂, 1 ♀, Rangitoto Station, -38.3532, 175.4800, 10.xi.1996, G.Hall, NZAC; 1 ♂, Mt Pureora, -38.5528, 175.6285, 14.x.1982, G. Kuschel, NZAC; 2 ♂, Waitetoko, -38.9066, 175.9295, 12.xii.1965, R.W. Hutton, OMNZ; 1 ♀, R.W. Hutton, OMNZ; 1 ♂, 6 ♀, Stump Bay, -38.9500, 175.8167, 9.xi.1994, CJV & ADB, LUNZ; 1 ♂, Tokaanu, -38.9666, 175.7539, R.W. Hutton, OMNZ; 1 ♂, Hinemihi's Track, -39.0167, 175.7333, 9.xi.1994, CJV & ADB, LUNZ; 1 ♂, Ruapehu, -39.2805, 175.5669, 12.iv.1968, R.W. Hutton, OMNZ; 1 ♂, 1 ♀, Desert Road, -39.3179, 175.6688, 5.i.1967, RRF, OMNZ. **TK.** 1 ♂, Fitzroy, -39.0500, 174.1000, 30.xi.2000, CJV, LUNZ; 1 ♂, 3 ♀, Oakura, -39.1167, 173.9500, 1.xii.2000, CJV, LUNZ; 1 ♀, 2 ♀, Lucys Gully, -39.1502, 173.9406, 1.xii.2000, CJV, LUNZ; 1 ♀, Pouakai, 1371 m, 29.2394, 174.0135, 3.xii.1975, J.S. Dugdale, NZAC; 1 ♀, Mt Egmont skifield, -39.3083, 174.1000, 2.xii.2000, CJV, LUNZ; 1 ♀, Dawson Falls, -39.3233, 174.1049, 12.xi.1994, CJV & ADB, LUNZ; 1 ♀, Stratford, -39.3456, 174.2672, 22.ii.1967, CLW, OMNZ. **HB.** 1 ♀, White Pine Bush, -39.2895, 176.8803, R.W. Hutton, OMNZ; 2 ♀, Taradale, -39.5416, 176.8445, 12.iv.1968, R.W. Hutton, OMNZ; 1 ♀, 13.v.1968, R.W. Hutton, OMNZ; 1 ♀, 4.ix.1969, R.W. Hutton, OMNZ; 1 ♀, 30.xii.1968, R.W. Hutton, OMNZ; 1 ♀, R.W. Hutton, OMNZ; 1 ♂, R.W. Hutton, OMNZ; 1 ♂, Te Awanga, -39.6353, 176.9913, 24.iv.1942, RRF, OMNZ; 1 ♀, Hastings, -39.6377, 176.8279, 25.xii.1946, RRF, OMNZ; 2 ♂, 1 ♀, Waipatiki, -40.3747, 176.2831, 8-11.v.1968, R.W. Hutton, OMNZ; 1 ♀, R.W. Hutton, OMNZ. **RI.** 3 ♀, Dochroyle, 640 m, -39.6647, 175.8469, x.1982, M. Scott, NZAC; 5 ♀, Hikurangi, -39.7952, 176.0879, 28.i.1952, C. McCunn, OMNZ; 5 ♂, 1 ♀, near Woodville, -40.3441, 175.8732, 1-8.x.1969, CLW, OMNZ. **WI.** 1 ♂, Wanganui, -39.9341, 175.0282, viii.1981, M.A. Ordish, MONZ; 1 ♂, Turakina, -40.0459, 175.2133, vii.1992, A. Styche, MONZ; 1 ♂, Feilding, -40.2201, 175.5462, 6.xii.1942, RRF, OMNZ; 1 ♂, 1 ♀, 19.xi.1949, RRF, OMNZ; 2 ♀, i.1959, RRF, OMNZ; 1 ♀, 2.i.1967, RRF, OMNZ; 1 ♂, Palmerston North, -40.3493, 175.5513, 20.viii.1976, J.M. Esson, NZAC. **WA.** 1 ♀, Dannevirke, -40.2137, 176.0948, 11.vii.1942, RRF, OMNZ; 1 ♂, x.1978, H.M. Anderson, MONZ; 7 ♂, 3 ♀, Hamua, -40.5615, 175.7424, 1-8.x.1969, CLW, OMNZ; 10 ♂, 4 ♀, Newman, -40.6179, 175.7139, 1-8.x.1969, CLW, OMNZ; 1 ♂, near Eketahuna, -40.6454, 175.7092, 1-8.x.1969, CLW, OMNZ; 5 ♂, Kaiparoro, -40.7052, 175.6527, 1-8.x.1969, CLW, OMNZ; 1 ♀, Mangareia, -40.7996, 175.8294, 28.xii.1957, OMNZ; 1 ♂, 1 ♀, x.1958, CLW, OMNZ; 1 ♂, 3 ♀, 10.i.1960, CLW, OMNZ; 1 ♂, CLW, OMNZ; 3 ♂, Bideford, -40.8688, 175.8676, 9.ix.1967, S. Willis, OMNZ; 5 ♀, 23.xi.1967, S. Willis, OMNZ; 1 ♂, 2 ♀, Opaki, -40.8943, 175.6620, 1-8.x.1969, CLW, OMNZ; 1 ♀, 3 imm, Castle Point, -40.9138, 176.2211, OMNZ; 4 ♂, 5 ♀, Te Whiti, -41.0089, 175.6739, 5-13.ix.1970, CLW, OMNZ; 3 ♂, Kourarau, -41.0942, 175.6969, 5-13.ix.1970, CLW, OMNZ; 1 ♀, Pahoa River mouth, -41.2252, 175.8326, 4.iv.1968, CLW, OMNZ. **WN.** 1 ♂, 4 ♀, Manawatu Gorge, -40.3295, 175.8112, 1-8.x.1969, CLW, OMNZ; 1 ♀, Kapiti Island, -40.8503, 174.8765, v.1947, RRF, OMNZ; 1 ♀, Akatarawa, -40.9512, 175.1086, 2.i.1943, RRF, OMNZ; 1 ♂, Wallacerville, -41.1357, 175.0611, 9.viii.1995, B.M. Fitzgerald, MONZ; 1 ♀, Stokes Valley, -41.1848, 174.9872, viii.1948, P. Watts, OMNZ; 1 ♂, 19.vi.1994, B.M. Fitzgerald, MONZ; 1 ♂, v.1994, B.M. Fitzgerald,

- MONZ; 1 ♀, 19.vi.1995, B.M. Fitzgerald, MONZ; 1 ♀, Makara, -41.2202, 174.7032, 22.xii.1980-22.i.1981, N. Elvidge & C.W. Homabrook, MONZ; 1 ♂, Wellington, -41.2824, 174.7946, 18.v.1943, RRF, OMNZ; 1 ♂, 1945, J.L. Madero, MONZ; 2 ♀, 13.i.1969, R.W. Huttan, OMNZ; 1 ♀, Brooklyn, -41.3105, 174.7570, 17.x.1995, A. Tennyson, MONZ; 15 ♂, 5 ♀, 5 imm, Moa Point, -41.3464, 174.8021, viii.1992, MONZ; 2 ♀, Red Rocks, -41.3605, 174.7263, 15.xii.1980-21.i.1981, N. Elvidge & C.W. Homabrook, MONZ; 4 ♀, 15.xii.1980-22.i.1981, N. Elvidge & C.W. Homabrook, MONZ; 1 ♂, 1 ♀, Orongorongo Valley, -41.3667, 174.9000, 15.iii.1993, B.M. Fitzgerald, MONZ; 3 ♂, 19.iv.1993, B.M. Fitzgerald, MONZ; 1 ♀, 16.ii.1994, B.M. Fitzgerald, MONZ; 1 ♀, Turakirae Head, -41.4422, 174.9044, 22.i.1981, N. Elvidge & C.W. Homabrook, MONZ. **SD.** 1 ♂, 1 ♀, Stephens Island, -40.6662, 174.0026, 7.i.1975, G.Y. Walls, NZAC; 1 ♂, 1 ♀, 1.v.1996, A. Tennyson, MONZ; 1 ♂, Mt Woore, -40.8170, 173.8431, 23.viii.1960, I. Mannering, OMNZ; 1 ♂, 1 ♀, Greville Harbour, -40.8327, 173.7946, 28.viii.1960, M. Williams, OMNZ; 2 ♀, near French Pass, -40.9278, 173.8497, 27.viii.1965, J.I. Townsend & L.P. Marchant, NZAC; 1 ♂, 2 ♀, North Brother Island, -41.1136, 174.4441, 7-10.ii.1993, J.W.M. Marris, LUNZ; 1 ♀, The Brothers, -41.1136, 174.4441, 14.ix.1948, R.K. Dell, OMNZ; 3 ♀, 16.v.1958, P. Dwyer, OMNZ. **NN.** 1 ♀, Kahurangi Homestead, -40.8066, 172.2335, viii.1970, F. Alack, NZAC; 1 ♂, 1 ♀, Totaranui Beach, -40.8267, 173.0056, 8.ii.2000, CJV, LUNZ; 1 ♀, Heaphy Track, -40.8771, 172.2761, 6.xi.1999, G. Hall & R. Leschen, LUNZ; 1 ♂, Portia Creek, -40.8993, 172.5868, 22.iv.1962, R.G. Ordish, OMNZ; 1 ♀, near Heaphy Hut, -40.9897, 172.1095, 11.xi.1998, G. Hall, NZAC; 1 ♀, Heaphy Beach, -41.0017, 172.0958, 12.xi.1998, G. Hall, NZAC; 1 ♀, Takaka Hill, -41.0229, 172.9266, 21.vi.1965, CLW, OMNZ; 1 ♀, Riwaka River, -41.0500, 172.9167, 1.ii.1969, CLW, OMNZ; 3 ♀, Riwaka River, -41.0500, 172.9167, 2.xii.1994, ADB, LUNZ; 1 ♀, Motueka River Mouth, -41.0833, 173.0167, 4.xii.1994, CJV & ADB, LUNZ; 1 ♂, Lake Sylvester, -41.1087, 172.6285, 31.iii.1968, J.S. Dugdale, NZAC; 2 ♂, Whangamoa, -41.1627, 173.5271, NZAC; 1 ♂, Whangamoa Saddle, -41.2212, 173.4369, 26.vi.1965, J.I. Townsend & A.K. Walker, NZAC; 5 ♀, 2 imm, Ruby Bay, -41.2381, 173.0895, 11.ii.1969, CLW, OMNZ; 3 ♀, West Haven Inlet, -41.2443, 173.2985, 28.x.1968, J.I. Townsend, NZAC; 1 ♂, Tahurangi, -41.2878, 173.2386, vi.1965, CLW, OMNZ; 1 ♀, Sherry Valley, -41.3869, 172.7327, 18.xii.1949, J.G. Dawber, OMNZ; 1 ♂, Pretty Bridge Valley, -41.4237, 172.9178, 26.x.1966, G. Hitchings, NZAC; 1 ♀, Parkes Farm, -41.4750, 173.0000, 6.iv.1971, N.A. Martin, OMNZ; 1 ♂, 8.v.1971, N.A. Martin, OMNZ; 1 ♀, 18.v.1971, N.A. Martin, OMNZ; 2 ♂, 25.viii.1970, N.A. Martin, OMNZ; 1 ♂, Lee Valley, -41.4946, 173.1752, 9.viii.1966, J.I. Townsend, OMNZ; 1 ♂, 1 ♀, Matiri Range, -41.6000, 172.3250, 5.i.1996, A. Tennyson, MONZ; 1 ♀, Gordons Knob, -41.6057, 172.9371, 16.v.1963, J.I. Townsend, NZAC; 1 ♂, 2 imm, Glenhope, -41.6502, 172.6428, 12.ii.1969, CLW, OMNZ. **MB.** 1 ♀, Johnson Peak, -41.3740, 173.5638, 13.iii.1969, J.S. Dugdale, OMNZ; 1 ♂, 1 ♀, Mount Fell, -41.4496, 173.4092, 13.viii.1969, A.C. Eyles, NZAC; 1 ♀, 6 imm, near Spring Creek, -41.4638, 173.9633, 16-25.iii.1969, RRF & CLW, OMNZ; 2 ♀, 2 imm, Dashwood, -41.6468, 174.0653, 16-25.iii.1969, RRF & CLW, OMNZ; 2 ♂, 2 ♀, Molesworth, 1000 m, -42.0868, 173.2526, 19-22.iii.1968, J.C. Watt, NZAC; 1 ♀, Hamner, -42.5439, 172.7853, i.1966, T. Poppelwell, OMNZ. **KA.** 5 ♂, 2 ♀, 9 imm, Blind River, -41.6873, 174.1304, 16-25.iii.1969, RRF & CLW, OMNZ; 1 ♂, 1 ♀, 2 imm, near Clarence River, -42.1580, 173.9293, 16-23.iii.1969, RRF & CLW, OMNZ; 1 ♀, Molesworth, -42.2083, 172.8250, 27.i.1988, J. Arund, LUNZ; 1 ♀, Irongate Stream, -42.2680, 173.7763, 16.iii.1969, RRF & CLW, OMNZ; 1 ♀, Kowhai Riverbed, -42.2891, 173.5946, 3.xii.1995, CJV & S.J. Crampton, LUNZ; 1 ♀, Puhī Puhī Reserve, -42.2904, 173.7232, 12.x.1966, A.K. Walker, NZAC; 1 ♂, Mt Fyffe, 1200 m, -42.3127, 173.6118, 27.viii.1995, B. Brown, LUNZ; 1 ♂, 1 imm, Hapuku, -42.3208, 173.7385, 16-25.iii.1969, RRF & CLW, OMNZ; 5 ♂, 1 ♀, 7 imm, Middle Creek, -42.3684, 173.6387, 16-25.iii.1969, RRF & CLW, OMNZ; 1 ♂, 3 imm, Kaikoura, -42.4040, 173.6855, i.1961, Poppelwell, OMNZ; 1 ♂, 1 ♀, 26.viii.1962, R.S. Bigelow, OMNZ; 1 ♂, 2 ♀, 5 imm, 30.viii.1962, R.S. Bigelow, OMNZ; 1 ♂, Goose Bay, -42.4789, 173.5233, 27.vii.1966, CLW, OMNZ; 2 ♂, 2 ♀, 5 imm, near Oaro, -42.5164, 173.5080, 15-25.iii.1969, RRF & CLW, OMNZ; 1 ♀, Conway River Mouth, -42.6098, 173.4641, 12.v.1955, RRF, OMNZ; 1 ♀, 15 imm, Glen Colwyn Stream, -42.6233, 173.3775, 15-23.iii.1969, RRF & CLW, OMNZ. **BR.** 1 ♀, near Cupola Basin, -41.9747, 172.7264, 21.i.1962, J.T. Salmon, MONZ; 1 ♀, Mt Dewar, 1400 m, -42.0842, 171.5453, 3.xii.1968, J.C. Watt, NZAC; 1 ♂, Lewis Pass, above 1500m, -42.3810, 172.4030, xii.1961, RRF, OMNZ; 1 ♂, Greymouth, -42.4524, 171.1776, 10.v.1956, L.R. Jackson, OMNZ. **NC.** 1 ♂, 3 ♀, Glen Wye Creek, -42.6333, 172.7666, 26.x.1960, R.E. Leech, OMNZ (Honolulu Collection); 1 ♀, Lake Sumner, -42.7096, 172.1412, 10.iv.1950, L. Wolfe, OMNZ; 2 ♂, 7 ♀, Lake Taylor, -42.7845, 172.2690, 14.iv.1952, Field Club, OMNZ; 6 ♂, 2 ♂, 6 imm, Cheviot, -42.8176, 173.2652, 15-25.iii.1969, RRF & CLW, OMNZ; 1 ♂, 1 ♀, Hurunui River, -42.9029, 173.1349, 15-25.iii.1969, RRF & CLW, OMNZ; 1 ♀, Temple Basin, -42.9087, 171.5793, 2.iii.1968, P.C. Mason, OMNZ; 1 ♀, 17.iii.1968, P.C. Mason, OMNZ; 1 ♀, 10.xii.1968, P.C. Mason, OMNZ; 1 ♂, Hawdon Valley, -42.9363, 171.7436, 29.viii.1929, G.A.H. Helson, OMNZ; 1 ♂, 1 ♀, Waipara Gorge, -43.0667, 172.6000, 1.v.1949, RRF, OMNZ; 1 ♂, Woodend Beach, -43.3368, 172.7098, 25.x.1992, CJV, LUNZ. **WD.** 1 ♀, E of Hokitika, -42.7333, 171.0000, 9.i.2000, S. Pearson, LUNZ; 1 ♂, 1 ♀, 1 imm, Bruce Bay, -43.6090, 169.5913, x.1946, A.W. Parrott, OMNZ; 1 ♂, Taumaka Island, -43.8596, 168.8710, 20.viii.1970, D.S. Horing, OMNZ; 7 ♂, 1 ♀, 5.i.1971, M.E. Miller, OMNZ; 1 ♂, 9.i.1971, M.E. Miller, OMNZ; 1 ♂, 19.i.1971, M.E. Miller, OMNZ; 3 ♂, 1 ♀, 28.i.1971, M.E. Miller, OMNZ; 2 ♂, 2 ♀, 31.xii.1971, M.E. Miller, OMNZ; 1 ♀, Wilson Pass, 1700 m, -43.9963, 169.5890, 10.i.1975, K. Mason, OMNZ. **MC.** 1 ♂, Cass, -43.0382, 171.7507, 28-29.x.1992, CJV, LUNZ; 2 ♀, 29.x.1992, CJV, LUNZ; 1 ♀, 25-26.xi.1993, CJV, LUNZ; 1 ♂, 25-26.xi.1993, CJV, LUNZ; 1 ♂, Nervous Knob, 1524 m, -43.1226, 171.6807, 24.ii.1976, K.H. Milligan, NZAC; 1 ♀, Harper River, -43.1637, 171.6012, 8.v.1954, J.S. Dugdale, OMNZ; 1 ♀, Craigeburn, -43.1667, 171.7333, 1.xii.2000, M.P. Anstey, LUNZ; 1 ♀, Broken River, -43.2022, 171.7520, 29.ix.1966, CLW, OMNZ; 3 ♂, 3 ♀, 1 imm, McLeans Island, -43.4667, 172.4748, 21-31.i.1997, R.P. MacFarlane, LUNZ; 2 ♀, Christchurch Airport, -43.4876, 172.5339, 22.x.1959, R.E. Leech, OMNZ (Honolulu Collection); 1 ♂, 2 ♀, ix.1968, A. Moeed, OMNZ; 5 ♀, xii.1968, A. Moeed, OMNZ; 1 ♀, iii.1969, A. Moeed, OMNZ; 2 ♂, 1 ♀, v.1969, A. Moeed, OMNZ; 2 ♀, Travis Swamp, -43.5000, 172.7000, 21.xii.1995, R.P. MacFarlane, LUNZ; 1 ♂, New Brighton Beach, -43.5113, 172.7302, 14.viii.1995, CJV, LUNZ; 1 ♀, New Brighton, -43.5278, 172.7341, 12.xi.1995, ADB, LUNZ; 1 ♀, Christchurch, -43.5503, 172.6118, v.1948, E.W. Dawson, OMNZ; 1 ♀, 6.v.1949, W.H. Dukes, OMNZ; 1 ♀, xi.1957, R.L.C. Pilgrim, LUNZ; 1 ♀, 20.ii.1992, S.P. Worner, LUNZ; 2 ♂, 20.xi.1994, L.E. Hussey, LUNZ; 1 ♀, Spreydon, -43.5579, 172.6054, 7.i.1995, CJV, LUNZ; 1 ♀, Beckenham, -43.5628, 172.6404, 8.vii.1996, CJV, LUNZ; 1 ♀, Cashmere, -43.5737, 172.6265, 2.x.1993, CJV, LUNZ; 1 ♂, Victoria Park, -43.5935, 172.6451, 30.x.1959, R.E. Leech, OMNZ (Honolulu Collection); 2 ♀, Kennedys Bush, -43.6319, 172.6245, 30.xi.1946, RRF, OMNZ; 9 ♂, 36 ♀, Lincoln College, -43.6432, 172.4581, 2.iv.1970, P.A. Campbell, OMNZ; 1 ♂, 1 ♀, Lincoln University, -43.6432, 172.4581, 17.viii.1992, CJV, LUNZ; 1 ♀, 25.i.1993, M.H. Bowie, LUNZ; 1 ♂, 30.v.1995, CJV, LUNZ; 1 ♂, 29.v.1997, M.H. Bowie, LUNZ; 1 ♂, 6.viii.1999, CJV, LUNZ; 1 ♀, Ahuriri Reserve, -43.6663, 172.6071, 12.xi.1991, CJV, LUNZ; 1 ♀, Okains Bay, -43.6900, 173.0746, 18.iv.2000, CJV & M.A. Hudson, LUNZ; 1 ♀, 22.x.2000, CJV & M.A. Hudson, LUNZ; 1 ♂, Mt Herbert, -43.6911, 172.7414, 28.xii.1992, CJV, LUNZ; 1 ♀, McQueens Valley, -43.7303, 172.6249, 9.i.1967, R. MacFarlane, OMNZ; 1 ♀, Kaituna Valley, -43.7364, 172.6952, 25.ix.1952, RRF, OMNZ; 1 ♀, 12.iv.1960, RRF, OMNZ; 1 ♀, 12.v.1967, J.I. Townsend, NZAC; 1 ♀, Rakaia River, -43.7582, 172.0627, 31.x.1966, RRF, OMNZ; 1 ♂, Lake Ellesmere, -43.7860, 172.4814, 6.viii.1992, CJV, LUNZ; 3 ♂, 5 ♀, Winchmore, -43.7913, 171.8008, 29.i.1991, R.G. Townsend, LUNZ; 1 ♂, 14.iv.1992, R.G. Townsend, LUNZ; 1 ♂, 3 ♀, Prices Valley, -43.8000, 172.6833, 29.iv.1994, CJV, LUNZ; 1 ♀, 20.x.1999, CJV & H. Ranson, LUNZ; 2 ♂, 1 ♀, Kaitorete Spit, -43.8170, 172.5999, 19.xi.1992, CJV, LUNZ; 10 ♀, ii.1993, CJV & A.B. Freeman, LUNZ; 3 ♀, 1993, A.B. Freeman, LUNZ; 1 ♂, 2 ♀, Hinewai, -43.8333, 173.0667, 2.iv.1997, R.P. MacFarlane, LUNZ; 1 ♂, 22.x.1997, J.B. Ward, LUNZ; 1 ♀, Dromore, -43.8472, 171.8447, 1-3.xi.1969, CLW, OMNZ; 4 ♂, 2 ♀, 1 imm, Taumutu, -43.8564, 172.3592, 11.i.1961, RRF, OMNZ. **MK.** 1 ♀, 1 ♂, Godley River, 1600 m, -43.5116, 170.4900, 6.ii.1984, J.E. Hunt, OMNZ; 1 ♂, Ball Shelter, -43.6282, 170.1922, 15.xii.1992, CJV, LUNZ; 15-16.xii.1992, CJV, LUNZ; 1 ♀, Tasman River, -43.8370, 170.1377, 14.xii.1992, CJV, LUNZ; 1 ♂, Godley Peaks, -43.8650, 170.4645, 20.xii.1983, OMNZ; 1 ♀, Lake Tekapo, -44.0021, 170.4646, 5.i.2001, M.A. Hudson & CJV, LUNZ; 2 ♂, Burkes Pass, -44.0912, 170.5970, 17.iii.1996, G. Hall, NZAC; 1 ♀, Lake Pukaki, -44.1054, 170.1979, 26-28.i.1976, C. Smith, NZAC; 1 ♂, Ohau Forest, -44.2146, 169.7389, v.1958, Otago University Scientific Association, OMNZ; 6 ♂, 5 ♀, Twizel, -44.2578, 170.0808, 1.iv.1975, T.R. Beatson, OMNZ. **SC.** 1 ♀, Peel

- Forest, -43.9167, 171.2667, 14.xii.1995, ADB, LUNZ; 1 ♀, Peel Forest, -43.9167, 171.2667, 30.ix.1966, RRF & CLW, OMNZ; 2 ♀, Wāhī, -44.0220, 171.1751, 10.xii.1939, A.W. Parrott, OMNZ; 1 ♂, 3 ♀, Orari River, -44.0500, 171.2500, 30.ix.1966, RRF & CLW, OMNZ; 1 ♂, 1 ♀, 1 imm, Rangitata, -44.0677, 171.3750, 1-3.xi.1969, CLW, OMNZ; 1 ♂, 1 ♀, 1 imm, Kakahu, -44.1593, 171.0559, 30.iv.1950, RRF, OMNZ; 1 ♀, Temuka River, -44.2311, 171.2654, 10.xii.1955, B.J. Marples, OMNZ. **FD**. 1 ♂, 2 imm, Red Mountain, 1220 m, -44.3226, 168.3447, 28.i.1975, G.W. Ramsay, NZAC; 1 ♀, Simonin Pass, -44.3402, 168.3617, 28.i-1.ii.1975, J.S. Dugdale, NZAC; 1 ♀, 3.ii.1975, J.S. Dugdale, NZAC; 1 ♀, Tempest Spur, -44.3402, 168.3617, 27.i.1975, J.S. Dugdale, NZAC; 1 ♀, Simonin Stream, -44.3448, 168.3376, 23.i-1.ii.1975, J.S. Dugdale, NZAC; 1 ♂, Mount Annetta, -44.3708, 168.2722, 2.ii.1975, J.S. Dugdale, NZAC; 1 ♀, Red Stream, -44.3831, 168.2834, 2.ii.1975, J.S. Dugdale, NZAC; 1 ♂, 1 ♀, Forgotten River, -44.4391, 168.3524, xi.1960, M.A. Chapman, NZAC; 2 ♀, Tutoko Bench, -44.6000, 168.0000, 14.i.1974, J.S. Dugdale, NZAC; 1 ♀, 10.i.1977, K.J. Fox, OMNZ; 2 ♀, 13.i.1977, J.S. Dugdale, NZAC; 3 ♀, 13.i.1977, J.S. Dugdale, NZAC; 2 ♀, 9-15.i.1977, J.S. Dugdale, NZAC; 2 ♀, Gertrude, -44.7418, 168.0061, 23.i.1946, RRF, OMNZ; 1 ♀, Homer Saddle, -44.7617, 167.9836, 20.i.1946, RRF, OMNZ; 1 ♀, Mt Balloon, -44.8016, 167.7879, 26.i.1948, RRF, OMNZ; 2 ♂, 1 ♀, Lake Te Anau, -45.1517, 167.4949, 28.v.1962, S.S.A., OMNZ; 4 ♀, Thompson Sound, -45.2241, 166.9710, 21.i.1958, RRF, OMNZ; 3 ♀, 21.i.1958, R.A. Chapman, OMNZ; 4 ♂, 4 ♀, Plateau Creek, 1020 m, -45.2423, 167.5302, 1-4.xii.1980, R.M. Emberson & C.A. Muir, LUNZ; 6 ♂, 3 ♀, McKenzie Burn, 1050 m, -45.2614, 167.4119, 5-8.xii.1980, R.M. Emberson & C.A. Muir, LUNZ; 1 ♂, Secretary Island, -45.2858, 166.9621, 27-30.xi.1981, C.F. Butcher, NZAC; 2 ♀, 27.xi.1981, A.C. Harris, OMNZ; 1 ♀, near Te Anau Glow-Worm Caves, -45.2968, 167.7267, 2.iv.1972, CLW, OMNZ; 1 ♀, Mt Barber, 1100 m, -45.5035, 167.2133, 8.i.1970, J.S. Dugdale & J. Hoy, NZAC; 1 ♀, Turret Range, -45.5328, 167.3401, 16.i.1970, J.S. Dugdale, OMNZ; 1 ♂, Mt Grey, 1000 m, -45.5547, 167.2479, 14.ii.1959, Otago University Biological Society, OMNZ; 1 ♀, near Percy Saddle, 1250 m, -45.5654, 167.3150, 16.i.1970, G.W. Ramsay, NZAC; 1 ♀, Wairaki Island, -45.5925, 166.6270, iv.1996, K. Schöps, LUNZ; 2 ♀, Five Finger Peninsula, -45.7430, 166.4294, 16.iv.1996, K. Schöps, LUNZ; 1 ♂, Lake Monk, -46.0193, 166.9592, 18.i.1960, J. Kikkawa, OMNZ; 1 ♂, 21.i.1960, M.A. Chapman, OMNZ; 1 ♂, 1 ♀, 4 imm, 22.i.1960, M.A. Chapman, OMNZ. **OL**. 1 ♂, Kidds Bush, -44.4440, 169.2680, 9.iv.1979, RRF, OMNZ; 1 ♂, near Mt Aspiring, 2500 m, -44.4800, 168.6576, 7.ii.1971, S. Forster, OMNZ; 3 ♀, 2 imm, Hawea, -44.6141, 169.2660, 22.viii.1972, RRF, OMNZ; 1 ♀, Treble Cone, 1300 m, -44.6343, 168.8974, 18.iii.1996, G. Hall, LUNZ; 1 ♀, Wanaka, -44.7080, 169.1238, 7.x.1959, RRF, OMNZ; 1 ♀, 2 imm, Wanaka district, -44.7080, 169.1238, i.1955, B.J. Marples, OMNZ; 1 ♂, Coronet Peak, -44.9242, 168.7277, 16.i.1971, J.S. Dugdale, OMNZ; 2 ♀, Arrowtown, -44.9448, 168.8175, 4.ix.1968, RRF, OMNZ; 1 ♀, Queenstown Hill, -45.0103, 168.6923, 16.xii.1952, B.J. Marples, OMNZ; 1 ♂, Parawa, -45.5429, 168.5304, 5.ix.1948, OMNZ. **CO**. 4 ♂, 2 ♀, Dunstan Range, 1800 m, -44.6003, 169.7128, 22.ii.1974, RRF, OMNZ; 3 ♂, 2 ♀, Grandview Mountain, 1433 m, -44.6450, 169.3515, 12.i.1971, J.S. Dugdale, OMNZ; 1 ♂, Hawkdn Range, -44.7007, 169.9491, 12.xii.1971, J. Child, OMNZ; 3 ♂, Pisa Range, -44.8489, 169.2182, 23.xi.1974, RRF, OMNZ; 1 ♂, 1 ♀, Lake McKay, 1740 m, -44.8508, 169.2081, 28.xi.1974, J.C. Watt, OMNZ; 2 ♂, 3 ♀, 2 imm, Mt Pisa, -44.8738, 169.1907, 4.i.1970, D.R. Forster, OMNZ; 1 ♂, 1 ♀, Danseys Pass, -44.9761, 170.4880, 17.xii.1979, A.C. Harris, OMNZ; 2 ♀, 2 imm, 17.xi.1979, A.C. Harris, OMNZ; 1 ♀, 6.iv.1995, B. Brown, LUNZ; 2 ♂, Kawerau Gorge, -45.0150, 169.0867, 24-27.x.1981, J.C. Watt, NZAC; 2 ♂, 1 ♀, Roaring Meg, -45.0150, 169.0867, 14-17.xi.1977, J.C. Watt, NZAC; 2 ♂, 1 ♀, 24-27.x.1981, J.C. Watt, NZAC; 6 ♂, Kawerau Gorge, -45.0150, 169.0867, 23-27.x.1981, J.C. Watt, NZAC; 2 ♀, Wedderburn, -45.0358, 170.0143, 9.ii.1968, CLW, OMNZ; 14 ♀, 1 imm, Cromwell, -45.0455, 169.1865, 7.xi.1958, RRF, OMNZ; 1 ♂, 1 ♀, 19-28.xi.1974, J. Child, OMNZ; 2 ♂, 1 ♀, Remarkables Ski Field, -45.0531, 168.8155, 20.iii.1996, G. Hall, NZAC; 1 ♀, Wye Creek, -45.0900, 168.8155, 23-25.iv.1977, P. Mason, OMNZ; 1 ♀, Omakau, -45.0974, 169.6040, 6.x.1959, RRF, OMNZ; 1 ♀, 1 imm, Maniototo Station, -45.1234, 170.0296, 21.ii.1968, CLW, OMNZ; 1 ♀, Kyebeam, -45.1484, 170.2482, 6.i.1968, CLW, OMNZ; 1 ♂, Watts Rock, -45.1654, 169.0767, 14.iii.1975, J.C. Watt, NZAC; 2 ♀, Ben Nevis, 1950 m, -45.1693, 168.8483, 16.iii.1975, B.M. May, OMNZ; 1 ♂, Old Woman Range, -45.2530, 169.0590, 20.xi.1974, J.C. Watt, NZAC; 1 ♀, Alexandra, -45.2557, 169.3755, 3.viii.1961, RRF, OMNZ; 1 ♀, Tiroiti, -45.2601, 170.2644, 8.i.1966, CLW, OMNZ; 4 ♂, 4 ♀, Patearoa, -45.2743, 170.0548, 23.v.1968, CLW, OMNZ; 1 ♂, Hyde, -45.2979, 170.2507, 18.iv.1968, CLW, OMNZ; 5 ♂, 29.viii.1968, CLW, OMNZ; 1 ♀, near Shag Valley Station, -45.3206, 170.5407, 13.ix.1966, RRF, OMNZ; 1 ♂, 2 ♀, near Obelisk, Old Man Range, 1695m, -45.3242, 169.2069, 13.i.1999, CJV, LUNZ; 1 ♀, Old Man Range, -45.3340, 169.2089, 15.iii.1975, J.C. Watt, OMNZ; 1 ♀, 15.ii.1976, L.L. Deitz, NZAC; 1 ♂, 15.xi.1985, RRF, OMNZ; 1 ♀, Garvie Mts, -45.3439, 168.9708, 9.iii.1985, G.M. Mason, OMNZ; 1 ♂, 10.iii.1985, G.M. Mason, OMNZ; 1 ♂, 1 ♀, Deepdell, -45.3734, 170.3675, 15.i.1969, CLW, OMNZ; 2 ♂, 3 ♀, Dunback, -45.3828, 170.6270, 30.vii.1968, CLW, OMNZ; 3 ♀, Rock and Pillar Range, -45.3884, 170.1179, 16.xi.1968, J. Child, OMNZ; 5 ♀, 31.xii.1968, J. Child, OMNZ; 1 ♂, Old Man Range, 1800 m, -45.3893, 169.1974, 21.ii.1974, RRF, OMNZ; 1 ♂, 4 ♀, 22.ii.1974, RRF, OMNZ; 4 ♂, 24.ii.1974, RRF, OMNZ; 8 ♂, 4 ♀, 1 imm, Rock & Pillar Range, 1500 m, -45.4656, 170.0488, 15.iv.1971, J. Child, OMNZ; 1 ♀, Rock & Pillar Range, 1000 m, -45.4656, 170.0488, 29.xi.1983, RRF, OMNZ; 1 ♀, Logan Burn, 900 m, -45.4749, 169.9056, 7-12.x.1982, B.I.P. Barratt, OMNZ; 9 ♂, 15-30.xi.1982, B.I.P. Barratt, OMNZ; 5 ♂, 1 ♀, 2-15.xii.1982, B.I.P. Barratt, OMNZ; 3 ♂, 5 ♀, 5 imm, 11-23.ii.1983, B.I.P. Barratt, OMNZ; 2 ♀, 23.ii-7.iii.1983, B.I.P. Barratt, OMNZ; 3 ♂, 4 imm, near Blue Lake, -45.4772, 168.9276, 7.iii.1983, A.C. Harris, OMNZ; 1 ♂, near Middlemarch, -45.4867, 170.0833, 10.ii-3.iii.1999, C. Rufaut, LUNZ; 1 ♂, Middlemarch, -45.5099, 170.1252, 10.iv.1971, B. Beatson, OMNZ; 5 ♂, 12.iv.1971, B. Beatson, OMNZ; 1 ♂, Titan Rocks Track, -45.5316, 168.9910, 9.xii.1998, G. Hall, B. Brown & E. Edwards, LUNZ; 2 ♀, near Salt Lake, -45.5775, 170.0880, 8.i.1956, B.J. Marples, OMNZ; 1 ♂, 1 ♀, Teviot Swamp, -45.6387, 169.6382, 8.v.2001, A.M. Evans, LUNZ; 3 ♂, Millers Flat, 500 m, -45.6627, 169.4144, viii.1978, B.I.P. Barratt, OMNZ; 2 ♂, x.1978, B.I.P. Barratt, OMNZ; 1 ♂, 1 ♀, 4 imm, Millers Flat, 1400 m, -45.6627, 169.4144, viii.1978, B.I.P. Barratt, OMNZ; 1 ♂, Rocklands, -45.6665, 169.9890, 21.xi-5.xii.1978, B.I.P. Barratt, OMNZ; 1 ♂, 1 imm, Lammermoor, -45.6836, 169.7567, 2.v.2001, A.M. Evans, LUNZ; 2 ♀, Craig Flat, -45.7382, 169.4937, 21.xii-18.i.1985, B.I.P. Barratt, NZAC; 1 ♀, Waipori, 520 m, -45.8268, 169.8820, 20.ix.1977, RRF, OMNZ; 1 ♂, 10-24.x.1978, B.I.P. Barratt, NZAC; 4 ♀, 5 imm, Blue Mountains, -45.9088, 169.3675, 5-27.i.1985, B.I.P. Barratt, OMNZ; 3 ♂, 1 ♀, Waianakuru, -45.2710, 170.8039, 22.v.1971, T.R. Beatson, OMNZ. **DN**. 1 ♂, 2 ♀, Waianakuru, -45.2710, 170.8039, 22.v.1971, T.R. Beatson, OMNZ; 9 ♂, 1 ♀, Waianakuru, -45.2710, 170.8039, 22.v.1971, B. Beatson, OMNZ; 1 ♂, Waitaiti Stream, -45.7667, 170.5500, 26.ix.1995, L.J. Boutin, MONZ; 1 ♂, 2 ♀, Aramoana, -45.7782, 170.6930, 15.v.1966, CLW, OMNZ; 1 ♂, Otakou, -45.8056, 170.7061, 27.xii.1965, CLW, OMNZ; 3 ♂, 2 ♀, Sullivans Dam, -45.8079, 170.5244, 1.xi.1966, RRF & CLW, OMNZ; 1 ♂, 1 ♀, Whare Flat, -45.8149, 170.4271, 28.ix.1961, W. Poppelwell, OMNZ; 1 ♂, Leith Saddle, -45.8333, 170.5167, 15.xi-1.xii.1976, A.C. Harris, NZAC; 1 ♀, i.1977, A.C. Harris, NZAC; 6 ♀, Flagstaff, -45.8342, 170.4662, 7-21.ii.1971, CLW, OMNZ; 1 ♂, Allans Beach, -45.8824, 170.6870, 13.xi.1952, B.J. Marples, OMNZ; 1 ♂, 1 ♀, 1 imm, 19.ii-1.iv.1953, RRF, OMNZ; 2 ♀, 8.x.1953, B.J. Marples, OMNZ; 1 ♀, 25.x.1953, B.J. Marples, OMNZ; 1 ♂, 15.xi.1953, B.J. Marples, OMNZ; 1 ♀, 11.viii.1966, RRF, OMNZ; 1 ♂, 2 ♀, 21.viii.1966, RRF, OMNZ; 2 ♀, 4 imm, 7.ix.1966, RRF, OMNZ; 2 ♂, 2 ♀, 1 imm, Rabbit Meadow, -45.8824, 170.6870, 1-16.iv.1953, B.J. Marples, OMNZ; 1 ♂, 1 ♀, 16-30.iv.1953, B.J. Marples, OMNZ; 3 ♂, 3 ♀, 14-28.v.1953, B.J. Marples, OMNZ; 1 ♂, 2 ♀, 9-23.vii.1953, B.J. Marples, OMNZ; 1 ♂, 2 imm, 23.vii-6.viii.1953, B.J. Marples, OMNZ; 1 ♀, Dunedin, -45.8828, 170.5137, v.1961, W.T. Poppelwell, OMNZ; 1 ♂, 4.x.1961, W.T. Poppelwell, OMNZ; 1 ♂, 20.ii.1962, W.T. Poppelwell, OMNZ; 1 ♂, Tainui, -45.9028, 170.5192, 2.x.1966, J. Dineen, OMNZ; 1 ♀, Corstorphine, -45.9037, 170.4661, OMNZ; 1 ♀, Saint Clair, -45.9136, 170.4840, iv.1970, RRF, OMNZ; 1 ♂, 4.x.1970, M.R. Forster, OMNZ; 1 ♀, Taieri Mouth, -46.0562, 170.1933, 19.x.1999, S. Clifford, OMNZ; 2 ♀, Balclutha, -46.2333, 169.7333, 20.xi.1950, RRF, OMNZ; 1 ♀, Takitimu Mts, -45.7498, 167.8268, 2.iv.1974, K. Mason, OMNZ. **SL**. 2 ♂, near Kelso, -45.9076, 169.2317, 23.xi-7.xii.1969, CLW, OMNZ; 1 ♂, 1 ♀, Pomohaka, -46.0104, 169.2376, 23.xi-7.xii.1969, CLW, OMNZ; 1 ♀, Tuatapere, -46.1332, 167.6953, 1.vi.1963, OMNZ; 1 ♀, Colac Bay, -46.3606, 167.8769, 19.iii.1975, A.C. Harris, OMNZ; 1 ♂, 2 ♀, Riverton, -46.3667, 168.0167, 2.ii.2000, CJV, LUNZ; 1 ♀, Pig Island, Foveaux Strait, -46.4069, 167.9939, 12.i.1999, E. Edwards, LUNZ; 1 ♀, Fortrose, -46.5751, 168.8016, i.1963, Poppelwell, OMNZ. **SI**. 1 ♀, Solander Island, -46.5655, 166.9000, 16.ii.1996, A. Tennyson, MONZ; 1 ♀, 17.ii.1996, A. Tennyson, MONZ; 2 ♀, 28.ii.1996, A. Tennyson,

MONZ; 1 ♀, Codfish Island, -46.7759, 167.6224, OMNZ; 1 ♀, Stewart Island, -46.8416, 167.8760, i.1956, B.J. Marples, OMNZ; 1 ♂, 1 ♀, ii.1960, M.N. Watt, OMNZ; 1 ♀, 25.iv.1962, W.T. Poppelwell, OMNZ; 1 ♀, Lee Bay, -46.8621, 168.1230, 25.xii.1975, A.C. Harris, OMNZ; 1 ♂, 1 ♀, Horseshoe Bay, -46.8753, 168.1452, 5.xii.1954, R.J. Scarlett, OMNZ; 1 ♂, Halfmoon Bay, -46.8937, 168.1094, 14.iii.1949, D.Allan, OMNZ; 1 ♀, 30.x.1960, R.G. Ordish, OMNZ; 1 ♂, Oban, -46.8937, 168.1094, iii.1960, G. Collett, OMNZ; 3 ♂, 1 ♀, Golden Bay, -46.9054, 168.1224, i.1960, M.N. Watt, OMNZ; 2 ♀, 1 imm, xi.1960, M.N. Watt, OMNZ; 1 ♂, 2 ♀, 2 imm, i.1961, M.N. Watt, OMNZ; 1 ♀, Tin Range, 1640', -47.1212, 167.7582, 27.ii.1972, R.G. Ordish, MONZ; 1 ♀, Mokoniui Island, -47.1520, 167.4101, 28.i.1955, R.K. Dell & B.A. Holloway, OMNZ; 1 ♀, 1 imm, Easy Harbour, -47.1610, 167.5681, 26.i.1955, B.A. Holloway & R.K. Dell, OMNZ. SN. 1 ♀, Signpost Hill, -48.0152, 166.5986, 26.i.1972, D.S. Horning, NZAC. AU. 1 ♀, Disappointment Island, -50.6083, 165.9750, 11.xii.1976, J.A. Bartle, MONZ.

#### *Anoteropsis insularis*

CH. 2 ♂, 4 imm, Ohira Bay, -43.8083, -176.6500, 28.xi.2000, R.M. Emberson & J.B. Johnson, LUNZ; 1 ♂, Waitangi Bay, -43.9166, -176.5333, 6.xii.1999, CJV, LUNZ; 6 ♂, 1 ♀, 6.xii.1999, CJV & J.C. Banks, LUNZ; holotype ♂, allotype ♀, 2 ♂ paratypes, 1 ♀ paratype, near Red Bluff, -43.9166, -176.5333, 7.xii.1999, CJV, LUNZ; 1 ♂ paratype, 7.xii.1999, CJV, NZAC; 1 ♀, Motutapu Point, -44.2833, -176.2833, 5.xii.1997, A. Tennyson, MONZ.

#### *Anoteropsis lacustris*

NN. 1 ♂, Mokiniui River, -41.5333, 171.9833, 20.v.1956, L.R. Jackson, OMNZ. BR. 1 ♂, Lake Rotoiti, -41.8167, 172.8500, 7.ii.1997, CJV, LUNZ; 1 ♀, 15.ii.1998, CJV, LUNZ. NC. 1 ♀, Foible Stream, -42.5748, 172.1826, 23.xii.1952, W. Dukes, OMNZ; holotype ♂, Bealey River, -42.9077, 171.5493, 30.iv.1998, K. Rennie, LUNZ; allotype ♀, 2 ♂ paratypes, 2 ♀ paratypes, 9.iv.1999, CJV & M.A. Hudson, LUNZ; 1 ♂ paratype, 1 ♀ paratype, 9.iv.1999, CJV & M.A. Hudson, NZAC. WD. 1 ♀, Otira Valley, -42.8982, 171.5439, 28.v.1954, J.S. Dugdale, OMNZ; 1 ♂, Franz Josef, -43.4000, 170.1833, 29.iv.1951, RRF, CJV, OMNZ; 1 ♂, 16.xi.1995, CJV, LUNZ; 1 ♀, 11.iv.1999, CJV & M.A. Hudson, LUNZ; 1 ♀, Fox Glacier, -43.4667, 170.0167, 14.xii.1994, CJV & ADB, LUNZ; 1 ♀, 16.xi.1995, CJV & ADB, LUNZ; 1 ♀, Ohinetamatea Creek, -43.5200, 169.9092, 17.xi.1995, CJV, LUNZ; 1 ♀, Thomas Riverbed, -43.8853, 169.2232, 18.iii.1966, RRF, OMNZ; 1 ♂, head of Diorite Stream, -44.4333, 168.2833, xi.1960, M.A. Chapman, OMNZ; 2 ♀, Head of Lake McKerrow, -44.5167, 168.0667, 6.ii.1955, RRF & J.S. Dugdale, CMNZ. MC. 1 ♀, Mt Algidus, -43.2333, 171.3500, 29.xi.[?], 1913, i. Hall, OMNZ; 1 ♀, Foggy[?], Porters Pass, 1300m, -43.2811, 171.7483, 19.xii.1954, RRF, CMNZ. SC. 1 ♀, Frances River, -43.3833, 170.7833, i.1975, K. Mason, OMNZ. MK. 1 ♂, Elcho Stream, 1000m, -43.9166, 169.7833, 28.iii.1973, K. Mason, OMNZ; 1 ♀, Ohau ski field, -44.2283, 169.7833, 13.xi.1984, C. Butts, OMNZ. OL. 1 ♀, Head of Dart Valley, -44.5083, 168.5500, 22.iii.1980, K. Mason, OMNZ; 2 ♀, Hawea, -44.6141, 169.2660, 29.i.1975, RRF, OMNZ; 4 ♀, 30.i.1975, RRF, OMNZ; 15 ♀, Frankton, -45.0220, 168.7201, 15.ii.1973, RRF, OMNZ; 2 ♀, Queenstown, -45.0429, 168.6452, 12.ii.1962, B.J. Marples, OMNZ; 2 ♂, 4 ♀, Lake Wakatipu, -45.0750, 168.5000, 12.i.1999, CJV, LUNZ. FD. 1 ♀, Lower Hollyford, -44.5500, 168.0833, 12.i.1971, RRF, OMNZ; 1 ♀, Gertrude shingle slide, -44.7500, 168.0166, 23.i.1940, RRF, OMNZ; 1 ♀, Cleddau Portal, Homer Tunnel, -44.7664, 167.9766, 26.i.1957, RRF, OMNZ; 1 ♀, Homer Tunnel, -44.7664, 167.9766, 28.xii.1943, OMNZ; 1 ♂, 5.iv.1958, R. Marples, OMNZ; 1 ♀, 23.i.1962, P.M. Johns, OMNZ; 1 ♂, 4 ♀, 16.ii.1966, RRF, OMNZ; 1 ♀, ii.1966, RRF, OMNZ; 5 ♀, 11.i.1970, RRF, OMNZ; 2 ♀, 12.i.1971, RRF, OMNZ; 1 ♀, Cascade Creek, -44.8976, 168.0844, 12.i.1971, RRF & L.M. Forster, OMNZ; 1 ♀, Wilmot Pass, -45.5097, 167.1843, 20.ii.1959, Otago University Biological Society, OMNZ; 1 ♀, Lake Earnslaw, -45.5990, 167.1885, xii.1976, K. Mason, OMNZ. CO. 1 ♀, Luggate, -44.7477, 169.2690, 22.x.1959, RRF, OMNZ; 3 ♀, 21.xi.1974, J.S. Dugdale, NZAC; 1 ♀, Cardrona River, -44.9167, 168.9833, 11.i.1999, CJV, LUNZ; 1 ♀, 2.ii.1999, CJV, LUNZ; 1 ♀, Clutha River, near Cromwell, -45.0667, 169.2333, 21.xi.1974, J.S. Dugdale, NZAC. SL. 1 ♀, Spence Hut, 1000m, -45.7050, 167.8833, 5.vi.1973, K. Mason, OMNZ. Unknown locality. 1 ♂, A 1/78, OMNZ; 3 ♂, 4/77, OMNZ.

#### *Anoteropsis litoralis*

CL. 2 ♂, Whangapoua, -36.7166, 175.6166, 25.i.2000, CJV, LUNZ; 1 ♂, 1 ♀, 16.ii.2000, CJV, LUNZ; 1 ♂, Oputere, -37.1000, 175.8833, 15.vi.2000, J.W. Griffiths & C.N.L. Chambers, LUNZ. BP. 1 ♂, Whale Island, -37.8517, 176.9750, 27.viii.1970, Auckland University Field Club, OMNZ; 1 ♂, Ohope Beach, -37.9633, 177.0344, 2.x.1969, CLW, OMNZ. HB. 1 ♂, Pourerere Beach, -40.1010, 176.8722, 20.iv.1984, J.C. Watt, NZAC. WN. 1 ♀, Waitarere Beach, -40.5500, 175.2000, 21.iii.1969, OMNZ; 1 ♂, Waikanae Beach, -40.8644, 175.0086, 11.i.1996, A. Tennyson, MONZ; 1 ♀, Red Rocks, -41.3605, 174.7263, 29.xi.1941, F.A. Bodley, OMNZ. WA. 1 ♀, 5.5km S of Mataikona, -40.8167, 176.2500, 11.vii.2000, B. Tennyson, MONZ. NC. 1 ♀, Woodend Beach, -43.3333, 172.7000, 12-18.i.1958, R.L.C. Pilgrim, OMNZ. MC. 1 ♀, Spencer Park beach, -43.4333, 172.7166, 9.xi.1958, R.L.C. Pilgrim, OMNZ; 1 ♂, New Brighton, -43.5077, 172.7216, 25.x.1960, R.E. Leech, OMNZ (Honolulu Collection); 11 ♂, 4 ♀, Okains Bay, -43.6900, 173.0746, 18.iv.2000, CJV & M.A. Hudson, LUNZ; 3 ♂, 1 ♀ paratype, Kaitorete Spit, -43.8170, 172.5999, 1.viii.1991, A.B. Freeman, LUNZ; 1 ♀ paratype, 9.viii.1991, A.B. Freeman, NZAC; allotype ♀, 16.viii.1991, A.B. Freeman, LUNZ; holotype ♀, 5 ♂ paratypes, 2 ♀ paratypes, ii.1993, CJV & A.B. Freeman, LUNZ; 2 ♂ paratypes, ii.1993, CJV & A.B. Freeman, NZAC; 1 ♂, Taumutu, -43.8564, 172.3592, iv.1956, R.L.C. Pilgrim, OMNZ; 1 ♂, 21.x.1999, S.J. Crampton & CJV, LUNZ.

#### *Anoteropsis montana*

NN. 1 ♀, Lockett Range, -41.0667, 172.5667, 7.i.1998, A. Tennyson, MONZ; 1 ♀, Mount Arthur, 1800m, -41.2197, 172.6815, 29.i.1948, J.T. Salmon, OMNZ; 1 ♀, Mount Arthur, 1463-1751m, 23.iv.1971, J.S. Dugdale, ACNZ. MB. 1 ♂, Black Birch Range, 1500m, -41.7299, 173.8321, 21.x.1970, J.S. Dugdale, ACNZ; 1 ♂, 1 ♀, Mt Altamarlock, 1830m, -41.7500, 173.7667, 21.x.1970, J.S. Dugdale, ACNZ; 1 ♀ paratype, Molesworth, -42.1417, 172.7333, 11.ii.1988, J. Arund, LUNZ; allotype ♀, near Princess Bath, -42.1849, 172.6898, 2.i.1993, GN. Bawden, LUNZ. KA. holotype ♂, Hapuku River, North branch, -42.2889, 173.6786, 29.iv-1.v.1991, MONZ; 1 ♀ paratype, Molesworth, -42.3167, 173.1083, 6.xii.1987, J. Arund, LUNZ. BR. 1 ♂, Lewis Pass, above 1500m, -42.3810, 172.4030, xii.1961, RRF, OMNZ. NC. 1 ♂, Castle Hill at Casey Stream, 1500m, -42.8870, 171.8346, 22.xi.1961, RRF, OMNZ; 1 ♀, Temple Basin, -42.9087, 171.5793, 23.i.1959, P.M. Johns, OMNZ. MC. 2 ♂, Anti Crow River, -43.0217, 171.4720, xii.1950, I. Cresswell, OMNZ; 1 ♀, Foggy Peak, -43.2811, 171.7483, 14.xi.1999, H. Ranson, LUNZ; 1 ♂, 1 subadult ♀, Springfield, -43.3365, 171.9216, i.1953, C. Talbot, OMNZ. MK. 1 ♂, Godley River, 1650m, -43.5116, 170.4900, 6.ii.1984, J. Hunt, OMNZ.

#### *Anoteropsis okatainae*

BP. 1 ♂, Lake Okataina, -38.1141, 176.4203, 20.x.1984, D.J. Court, OMNZ; 1 ♂, 2 ♀, 18.ii.1999, CJV, LUNZ; holotype ♂, allotype ♀, 2 ♀ paratypes, 17.ii.2000, CJV, LUNZ. Unknown locality. 1 ♀, OMNZ.

#### *Anoteropsis ralphii*

CH. 2 ♂, Mairangi Road, -43.7000, -176.6000, 7-8.xii.1999, CJV & J.C. Banks, LUNZ; 3 ♂, 3 ♀, Mairangi, -43.7000, -176.6333, 7.xii.1999, CJV, LUNZ; 1 ♂, Kaingaroa, -43.7333, -176.2666, 30.ix.1974, A. Wright, NZAC; 1 ♀, 28.i.1954, RRF, OMNZ; 1 ♀, 4 imm, Titirangi, -43.8000, -176.5000, 1.ii.1954, RRF, CMNZ; 1 ♀, Hapupu Reserve, -43.8000, -176.3500, 9.xii.1999, CJV, LUNZ; 1 ♀, Ohira Bay, -43.8083, -176.6500, 28.xi.2000, R.M. Emberson & J.B. Johnson, LUNZ; 1 ♀, Port Hutt, -43.8166, -176.7000, 9.ii.1954, RRF, OMNZ; 1 ♂, Henga Reserve, -43.8500, -176.5667, 8.xii.1999, CJV, LUNZ; 1 ♀, 29.xi.2000, R.M. Emberson & J.B. Johnson, LUNZ; 3 ♂, 2 ♀, Waitangi Bay, -43.9166, -176.5333, 6.xii.1999, CJV, LUNZ; 7 ♂, 3 ♀, near Te Ranga, -43.9166, -176.4833, 9.xii.1999, CJV, LUNZ; 2 ♂, Te One, -43.9250, -176.5250, 13.i.1997, R.M. Emberson, LUNZ; 1 ♀, Waitangi Beach, -43.9500, -176.5417, 26.viii.1997, R.M. Emberson, LUNZ; 2 ♀, Owenga, -44.0333, -176.3666, 5.ii.1954, J. McIntyre, OMNZ; 1 ♀, Taiko Camp, -44.0667, -176.6333, 5.xii.1992, J.W. Early, AMNZ; 1 ♀, 18.xi.1997, A. Tennyson, MONZ; 1 ♀, 19.xi.1997, A. Tennyson, MONZ; 1 ♀, 30.xi.1997, A. Tennyson, MONZ; 1 ♀, Star Keys, -44.2166, -175.9666,

23.i.1998, J.W.M. Marris, LUNZ; 1 ♂, Motutapu Point, Pitt Island, -44.2333, -176.2333, 5.xii.1997, A. Tennyson, MONZ; 1 ♀, NE Pitt Island, -44.2500, -176.1833, 9.xii.1997, A. Tennyson, MONZ; 1 ♂, North Head, Pitt Island, -44.2666, -176.1666, 23.xi-1.xii.1992, R.M. Emberson & P. Syrett, LUNZ; 1 ♂, Mangere Island (Big Island), 27.xi.1961, I. Hogarth, MONZ; 1 ♀, 29.xi.1977, A. Wright, OMNZ; 10 ♂, 13 ♀, 1.vi.1978, A. Wright, OMNZ; 4 ♀, 22.xi.1992, J.W. Early, AMNZ; 1 ♀, 2.xii.1992, J.W. Early, AMNZ; 1 ♂, 1 ♀, K. Schöps, LUNZ; 8 ♂, 3 ♀, 10-13.xii.1994, K. Schöps, LUNZ; 1 ♀, Caravan Bush, Pitt Island, -44.2750, -176.1667, 2.xii.2000, R.M. Emberson & J.B. Johnson, LUNZ; 2 ♀, Waipaua Reserve, Pitt Island, -44.3000, -176.2333, 3.xii.2000, R.M. Emberson & J.B. Johnson, LUNZ; 7 ♀, Rangiauria Reserve, Pitt Island, -44.3250, -176.2666, 22.xi.1992, J.W. Early, AMNZ; 1 ♀, The Pyramid, -44.4333, -176.2500, 20.ix.1974, A. Wright, ACNZ; 1 ♀, Chatham Island, ii.1952, J. Eyles, OMNZ; 1 ♂, 1 imm, Chatham Islands, Ar. 27/8 & Ar. 27/9, OMNZ.

### *Anoteropsis senica*

**GB.** 2 ♀, Karakatuwhero River, -37.6667, 178.25, 1.v.1993, G.Hall, MONZ; 3 ♀, Papaotehiwera Bay, -38.7711, 177.0763, 19-26.xi.1996, L.J. Boutin, MONZ. **TO.** 1 ♀, Lake Kuratau, -38.8696, 175.7122, 20.v.1966, R.W. Huttan, OMNZ; 1 ♂, Taumarunui, -38.882, 175.2622, i.1974, RRF, OMNZ; 2 ♀, Whakapapanui Dam, -39.1633, 175.5143, 13.i.1967, K.A.J. Wise, AMNZ. **TK.** 1 ♀, Stony River, -39.25, 173.95, 13.xi.1994, CJV, LUNZ; 1 ♀, Dawson Falls, -39.3274, 174.1078, 2.xii.2000, CJV, LUNZ. **RI.** 1 ♀, Totara Reserve, Pohangina Valley, -40.1738, 175.7817, 25.v.1979, RRF, OMNZ. **WA.** 1 ♂, 1 ♀, Kiriwhakapapa, -40.816, 175.5747, 6.iii.1966, CLW, OMNZ. **SD.** 1 ♂, Greville Harbour, -40.8467, 173.8004, 20.viii.1960, I. Mannering, OMNZ. **NN.** 1 ♀, Riwaka River, -41.05, 172.9167, 1.xii.1994, CJV & ADB, LUNZ; 1 ♀, 2.xii.1994, CJV, LUNZ; 1 ♀, Lake Sylvester, -41.1087, 172.6285, 28.iv.1969, J.S. Dugdale, NZAC; 2 ♀, Kakapo River, -41.3445, 172.3107, 14.x.1959, P. Rowlex, CMNZ; 1 ♂, 2 ♀, Mokihimui River, -41.5333, 171.9833, 28.ix.1966, RRF & CLW, OMNZ; 1 ♀, Larrikin Creek, -42.6, 172.2167, 24.iv.1995, B. Brown, LUNZ. **WN.** 1 ♀, Rimutaka State Forest, -41.25, 175.0833, iii.1996, L.J. Boutin, MONZ; 2 ♂, 3 ♀, Rimutaka Creek, -41.25, 175.1, 27.iii.1996, P.J. Sirvid & L.J. Boutin, MONZ; 1 ♂, 4 ♀, Orongorongo Valley, -41.3667, 174.9, 16.viii.1995, B.M. Fitzgerald, MONZ; 1 ♀, Orongorongo River, -41.4167, 174.9, 3.xii.2000, CJV & P.J. Sirvid, LUNZ. **KA.** 1 ♀, Waimea River, -41.9, 174.1167, 16.iii.1969, RRF, OMNZ; 1 ♀, Oaro River, -42.4628, 173.4488, 1.vi.1952, J.S. Dugdale, OMNZ; 1 ♂, Waitau River (upper), -42.5833, 172.5833, 18.v.1979, RRF, OMNZ; 1 ♀, Conway River Mouth, -42.6167, 173.4667, 12.v.1955, RRF, OMNZ. **BR.** 1 ♂, Punakaiki, -42.1092, 171.3278, 27.ix.1966, RRF & CLW, OMNZ; 1 ♂, Reefcun, -42.1167, 171.8667, 10.iv.1920, W.L. Parham, OMNZ; 1 ♂, Blackball, -42.3667, 171.4167, 10.iv.1950, P.J. Hughson, OMNZ; 1 ♀, Grey River (east), -43.1667, 172.4833, 17.i.1921, G. Archey, OMNZ. **WD.** 1 ♀, Arahura Valley, -42.7356, 171.1175, 7.xii.1972, Entomology Department, Lincoln College, LUNZ; 1 ♂, 1 ♀, Pukekura, -43.0167, 170.6667, viii.1952, M. Warren, OMNZ; 1 ♂, Whataroa, -43.2667, 170.3667, viii.1952, M. Warren, OMNZ; 1 ♂, Canavans Knob, -43.3833, 170.1667, 26.iv-5.v.1982, A.B. Miller, NZAC; 2 ♀, Waiho River, -43.3833, 170.1667, 19.xi.1995, CJV, LUNZ; 3 ♀, Franz Josef, -43.4, 170.1833, xii.1960, P.R. Kettle & J.I. Townsend, OMNZ; 2 ♂, 1 ♀, 15.iv.1967, R.R. Huttan, OMNZ; 1 ♀, 20.i.1971, RRF, OMNZ; 1 ♀, 11.xii.1994, CJV, LUNZ; 5 ♀, 16.xi.1995, CJV, LUNZ; 1 ♂, 10.iv.1996, CJV, LUNZ; 3 ♂, 2 ♀, 10.iv.1999, CJV & M.A. Hudson, LUNZ; 2 ♀, Fox Gacier, -43.4667, 170.0167, 20.i.1971, RRF, OMNZ; 2 ♀, 14.xii.1994, CJV & ADB, LUNZ; 2 ♂, 2 ♀, 16.xi.1995, CJV, LUNZ; 1 ♀, Saltwater Creek, -43.5262, 171.1752, 27.ix.1966, RRF, OMNZ; 1 ♀, Karangarua, -43.537, 169.8276, 27.ix.1966, RRF, OMNZ; 1 ♂, 1 ♀, Bruce Bay, -43.609, 169.5913, 15.iv.1967, R.W. Huttan, OMNZ; 7 ♂, 7 ♀, Lake Moeraki, -43.7177, 169.2721, 26.ix.1966, RRF & CLW, OMNZ; 1 ♀, Rata Creek, -43.75, 169.3833, 12.xii.1994, CJV, LUNZ; 1 ♀, Otoko River, -43.75, 169.5167, 6.v.1973, K. Mason, OMNZ; 7 ♂, 1 ♀, Waita River, -43.8108, 169.1605, 15.iii.1966, RRF, OMNZ; 1 ♂, 1 ♀, Thomas River, -43.9333, 169.1666, 18.iii.1966, RRF, OMNZ; 1 ♀, Jackson Bay, -44, 168.65, 22.i.1960, R.E. Leech, OMNZ; 3 ♂, 2 ♀, 15.iii.1966, RRF, OMNZ; 2 ♀, Fantaill Falls — Haast River, -44.0833, 169.3833, 18.xi.1995, CJV, LUNZ; 1 ♀, N of Haast Pass, -44.1079, 169.348, 21.i.1960, R.E. Leech, OMNZ (Honolulu Collection); 3 ♀, Makarora, -44.2378, 169.233,

17.iii.1966, RRF, OMNZ; 10 ♀, 12.xii.1977, RRF, OMNZ; 1 ♂, North end of Lake McKerrow, -44.3833, 168.0167, 9.ix.1983, D.H., OMNZ; 1 ♀, Head of Lake McKerrow, -44.5167, 168.0667, 6.ii.1959, RRF & J.S. Dugdale, OMNZ. **NC.** 1 ♀, Hurumui River (South Branch), -42.7752, 172.1826, 23.xii.1957, R.L.C. Pilgrim, OMNZ; 1 ♀, Arthur's Pass, -42.9077, 171.5493, 14.xi.1922, J.G. Myers, OMNZ; 1 ♀, 28.iii.1961, C. Mitchell, OMNZ (Honolulu Collection); 1 ♀, Waipara River, -43.0667, 172.7333, 1.iii.1949, OMNZ; 1 ♀, 22.vi.1997, M. Provis, LUNZ; 1 ♂, 3 ♀, Ashley Gorge, -43.25, 172.2, 16.x.1949, RRF, OMNZ; 1 ♂, Chalk Hill, -43.2667, 172.1667, 4.xi.1951, RRF, OMNZ; 1 ♂, 1 ♀, 3.v.1952, RRF, OMNZ; 4 ♀, Coopers Creek, -43.3, 172.1667, 1.xii.1948, RRF, OMNZ; 1 ♀, 11.xii.1948, RRF, OMNZ. **MC.** 1 ♂, 1 ♀, Waimakariri River, -43.0333, 171.6333, 29.ix.1966, CLW, OMNZ; 1 ♂, Clyde River, -43.4673, 170.8337, moulting 14.iii.1975, K. Mason, OMNZ; 2 ♀, Hinds River, -44.1113, 171.6652, 12.ix.1954, RRF, OMNZ. **SC.** 1 ♂, 2 ♀, Peel Forest, -43.9167, 171.2667, 8.v.1996, ADB, LUNZ; 3 ♀, Rangitara River, -43.9167, 171.2667, 30.ix.1966, RRF & CLW, OMNZ; 1 ♀, Waihi, -44.022, 171.1751, 10.xii.1939, A.W. Parrott, OMNZ; 3 ♀, Orari River, -44.05, 171.25, 30.ix.1966, RRF & CLW, OMNZ; 1 ♂, 6 ♀, Waiho River, -44.7892, 171.0092, 30.ix.1966, OMNZ; CO. 1 ♀, Ahuriri River, Omarama, -44.4867, 169.9558, 18.i.1982, RRF & L.M. Forster, OMNZ; 1 ♂, 1 ♀, Lindis River, -44.8833, 169.35, 26.vii.1967, RRF, OMNZ; 3 ♂, 5 ♀, 10.x.1985, RRF, OMNZ; 7 ♂, 11 ♀, Ophir Riverbed, -45.1112, 169.609, 2.viii.1961, RRF, OMNZ; 1 ♀, Swin Burn, -45.135, 170.3306, 9.ii.1968, CLW, OMNZ; 2 ♀, Shag Valley Station, -45.3206, 170.5407, 13.ix.1966, RRF, OMNZ; 1 ♀, Filly Burn, -45.3427, 170.2874, 16.i.1968, RRF & CLW, OMNZ; 2 ♀, Gorge Creek, -45.3814, 169.2754, 12.xii.1967, RRF, OMNZ; 1 ♀, Tawhihi, -45.3833, 169.2833, 27.vi.1956, RRF, OMNZ. **FD.** 4 ♀, Lower Hollyford River, -44.55, 168.1, 12.i.1971, OMNZ; 1 ♀, Hollyford Track, -44.6167, 168.1167, 22.i.1998, G.Hall & D.M. Gleeson, NZAC; 2 ♀, Homer Tunnel, -44.7664, 167.9766, 11.i.1971, L.M. Forster & RRF, OMNZ; 2 ♀, Cascade Creek, -44.8976, 168.0844, 12.i.1971, RRF & L.M. Forster, OMNZ; 1 ♀, Rugged Burn, -45.0203, 167.5211, 15-18.xii.1953, G. Ramsay, OMNZ; 1 ♂, Eglington Valley, -45.1, 167.9667, 23.xii.1943, J.W., OMNZ; 1 ♂, Secretary Island, -45.2313, 166.9283, 24.xi.1981, A.C. Harris, OMNZ; 1 ♂, Gair Loch, -45.6333, 167.1167, 27.ii.1996, A. Tennyson, MONZ; 1 ♀, near Monowai, -45.7833, 167.6119, 15.i.1971, RRF, OMNZ; 1 ♀, Islet Cove, -45.95, 166.75, 18.iv-3.v.1979, R.A. Savill, CMNZ. **OL.** 12 ♀, Wanaka, -44.708, 169.1238, 7.x.1959, RRF, OMNZ; 1 ♂, 1 ♀, Queenstown, -45.0333, 168.6667, viii.1949, P.O. Braddell, OMNZ; 1 ♀, Mataura River — head of, -45.4, 168.5833, 12.i.1999, CJV, LUNZ. **DN.** 1 ♀, Inch Valley, -45.4105, 170.6389, 20.iii.1966, T. Bruce, OMNZ; 1 ♀, Waitaiti Stream, -45.7667, 170.55, 6.xii.1970, RRF, OMNZ; 1 ♀, 12.xii.1970, RRF, OMNZ; 1 ♂, 2 ♀, 26.ix.1995, L.J. Boutin, MONZ. **SL.** 1 ♂, Te Anau, -45.417, 167.699, 4.iv.1980, C. Forster, OMNZ; 1 ♀, Whare Creek, -45.6573, 167.7214, 2.iv.1974, K. Mason, OMNZ; 1 ♀, Coal Creek, -45.6667, 168.5, 5.iv.1974, K. Mason, OMNZ. **SI.** 1 ♀, Oban, -46.8924, 168.1527, 29.iii.1975, A.C. Harris, OMNZ. **Unknown locality,** 1 ♂, 1 ♀, Waituna, R.W. Huttan, OMNZ; 1 ♀, T.K. Lomas, OMNZ; 1 ♀, OMNZ.

### *Anoteropsis urquharti*

**MC.** 1 ♀, Porters Pass, -43.2972, 171.7386, 25.vi.2000, CJV & M.A. Hudson, LUNZ. **OL.** 1 ♂, near Rees Valley, 1700m, -44.6083, 168.5417, 3.xi.1970, D.R. Forster, OMNZ; 1 ♀, Treble Cone, 1300m, -44.6340, 168.8726, 18.iii.1996, G.Hall, NZAC; 1 ♂, Copper Creek, -44.7911, 168.6253, 26.xii.1970, S.A. Forster, OMNZ; 1 ♂, Cardrona Ski Field, -44.8706, 168.9419, 10.i.1999, CJV, LUNZ; 1 ♂, top of Cardrona Valley, -44.9916, 168.9416, ii.1999, CJV, LUNZ; 1 ♀, slopes of Ben Lomond, -45.0088, 168.6154, 12.iv.1952, B.J. Marples, OMNZ. **CO.** 1 ♂, Mt Kyeburn, -44.9329, 170.2980, 16.ix.1973, S. Forster, OMNZ; 1 ♂, top of Cardrona Valley, -44.9922, 168.9417, 2.ii.1999, CJV, LUNZ; 1 ♀, Lake Alta, -45.0654, 168.8109, OMNZ; 1 ♂, Ridge of Remarkables, -45.0685, 168.7982, 2.iv.1971, D. Forster & S. Forster, OMNZ; 1 ♂, Remarkables, -45.0685, 168.7982, 1.x.1970, M.R. Forster, OMNZ; 1 ♀, Remarkables, 1000m, opposite Bayonet Peaks, -45.0685, 168.7982, 23-25.iv.1977, P. Mason, OMNZ; 3 ♂, near Mt Pisgah, -45.0818, 170.3919, 7.ix.1974, J. Child, OMNZ; 1 ♀, Rock and Pillar Range, 1300m, -45.4656, 170.0488, 14.x.1983, D.H., OMNZ; 1 ♀, Logan Burn, 900m, -45.4749, 169.9056, 7-21.x.1982, B.I.P. Barratt, OMNZ; 1 ♂, Mt Pleasant, Lake Wakatipu, ii.1960, RRF, OMNZ.

*Anoteropsis westlandica*

**NN.** 1 ♂, Upper Cobb Valley, -41.0500, 172.5167, 6.i.1998, A. Tennyson, MONZ. **WD.** 2 ♀, 2 imm, Saltwater Forest, -43.1333, 170.4333, 25.ii.1991, P. Walsh, MONZ; 1 ♀, vi.1991, P. Walsh, MONZ; 1 ♂, Franz Josef, -43.4000, 170.1833, 6.xii.1995, B.J. Marples, OMNZ; 3 ♀, 20.i.1971, RRF, OMNZ; holotype ♂, 15.xi.1995, CJV, LUNZ; allotype ♀, 1 ♀ paratype, Lake Paringa, -43.7167, 169.4000, 6-9.xii.1960, J.I. Townsend & P.R. Kettle, OMNZ; 5 ♂ paratypes, 1 ♀ paratype, 11-14.xii.1994, CJV, LUNZ. **SC.** 1 ♀, Head of Havelock River, -43.4167, 170.7000, xii.1961, OMNZ. **FD.** 1 ♀, Martins Bay, -44.3667, 168.0000, 1.ii.1955, J.S. Dugdale, CMNZ; 1 ♀, Cascade Creek, -44.8976, 168.0844, 12.i.1971, RRF & L.M. Forster, OMNZ; 1 ♀, Thompson Sound, -45.2000, 167.0000, 23.i.1958, RRF, OMNZ; 1 ♂, Hall Arm, -45.4598, 167.1148, Otago University Biological Society, OMNZ; 1 ♀, Disappointment Cove, -45.6167, 166.6500, 10.i.1998, G Hall & D.M. Gleeson, NZAC; 1 ♀, Knob below "top camp", -45.6833, 166.7667, 23.i.1958, E.G. Turbott, CMNZ.

*Artoria hospita*

**CL.** 4 ♂, 3 ♀, Little Barrier Island, -36.1984, 175.1130, ix.1996, C.J. Green, MONZ; 1 ♂, AK, Waitakere, -36.8522, 174.5351, 14.vi.1943, RRF, OMNZ; 1 ♀, AK, Cutty Grass Track, -36.9333, 174.5333, 24.i.1993, CJV, LUNZ. **AK.** 1 ♀, 1 imm, Captains Bush, -36.9333, 174.7500, 10.ii.1992, NZAC; 1 ♂, Lynfield, -36.9333, 174.7204, 4.xiii.1974, G Kuschel, NZAC; 1 ♂, 1 ♀, Olive Davis Reserve, -37.0000, 174.9500, 3-7.viii.1983, J.C. Watt, NZAC. **BP.** 1 ♀, Papatea Bay, -37.6500, 177.8500, 30.x.1992, G Hall, NZAC; holotype ♂, 1 ♂ paratype, Mt Ngongotaha, -38.0833, 176.2166, 13.v.1971, R.G. Ordish, MONZ; 1 ♀ paratype, 1962, C.W. O'Brien, OMNZ (Honolulu Collection); allotype ♀, Lake Okataina, -38.1333, 176.4166, 11.iii.1995, M-C Larivière, NZAC. **TO.** 1 ♀, Taupo, -38.6971, 176.0706, 21.iv.1965, N.A. Walker, NZAC.

*Artoria segregata*

**ND.** holotype ♂, Tawhiti Rahi, -35.4563, 174.7182, 7-12.ix.1980, J.C. Watt, NZAC; 1 ♀ paratype, 3-10.xii.1980, J.C. Watt, NZAC; allotype ♀, 5.xii.1980, G Kuschel, NZAC.

*Artoria separata*

**ND.** 1 ♂, Omahuta Forest, -35.2291, 173.6663, 30.vi.1965, M.G., OMNZ. **WO.** 1 ♀, near Manganui River, -38.5390, 174.7083, 20.viii.2000, M-C. Larivière & A. Laroche, NZAC. **TK.** 1 ♀, near Ohura, -38.8410, 174.9852, 6.xii.2000, G Hall, NZAC; 4 ♂, 1 ♀, White Cliffs, -38.8500, 174.5667, 21.vi.1991, L. Stanley, MONZ; 1 ♂, 4.vii.1991, L. Stanley, MONZ; 1 ♂, 30.viii.1991, L. Stanley, MONZ; 2 ♂, 30.xi.1991, L. Stanley, MONZ; 5 ♀, 31.i.1993, L. Stanley, MONZ; 3 ♀, 28.ii.1993, L. Stanley, MONZ; 1 ♀, Mount Messenger, -38.8957, 174.5942, 21.iii.1969, RRF, OMNZ; 2 ♀, Pouiatua State Forest, -39.0833, 174.5166667, i.1999, G.M. Coombe, LUNZ; allotype ♀, Tarata, -39.1500, 174.3667, 24.vii.1996, J. Clark, MONZ; 1 ♀, Lucys Gully, -39.1502, 173.9406, 1.xii.2000, CJV, LUNZ; holotype ♂, 1 ♂ paratype, 1 ♀ paratype, Kaitake Range, -39.1667, 173.9667, 27.vii.1996, J. Clark, MONZ; 2 ♂, Oaonui, -39.3885, 173.8076, 20.v.1966, M.G., OMNZ.

*Geolycosa tongatabuensis*

**KE.** 1 ♀, Meyer Island, -29.2450, -177.8667, 24.ix.1944, J.H. Sorensen, OMNZ; 1 ♀, 1 subadult ♀, Raoul Island, -29.2667, -177.9167, 1944, J.H. Sorensen, OMNZ; 1 ♀, 22.iii.1965, W.G. Little, MONZ; 1 ♂, Curtis Island, -30.5333, -178.6000, 15.ix.1988, A. Tennyson, MONZ. **ND.** 1 ♀, Cavalli Islands, -35.0000, 173.9333, Auckland University Biological Survey, OMNZ; 2 ♀, 1 subadult ♀, Matauri Bay, -35.0369, 173.9162, 20.xi.1970, D.J. Court, OMNZ; 1 ♀, Ahipara Beach, -35.1539, 173.113, 1.ii.1981, RRF, OMNZ; 1 ♀, Mimiwhangata, -35.4324, 174.4040, 17.xii.1970, J.T. Darby, OMNZ; 1 ♂, Waipoua State Forest, -35.6164, 173.5515, 24.xii.1978, A.C. Harris, OMNZ. **CL.** 1 ♂, Kuaotunu, -36.7167, 175.7333, 16.ii.2000, CJV, LUNZ; 1 subadult ♀, Matarangi, -36.7333, 175.6667, 17.vi.2000, J.W. Griffiths & C.N.L. Chambers, LUNZ.

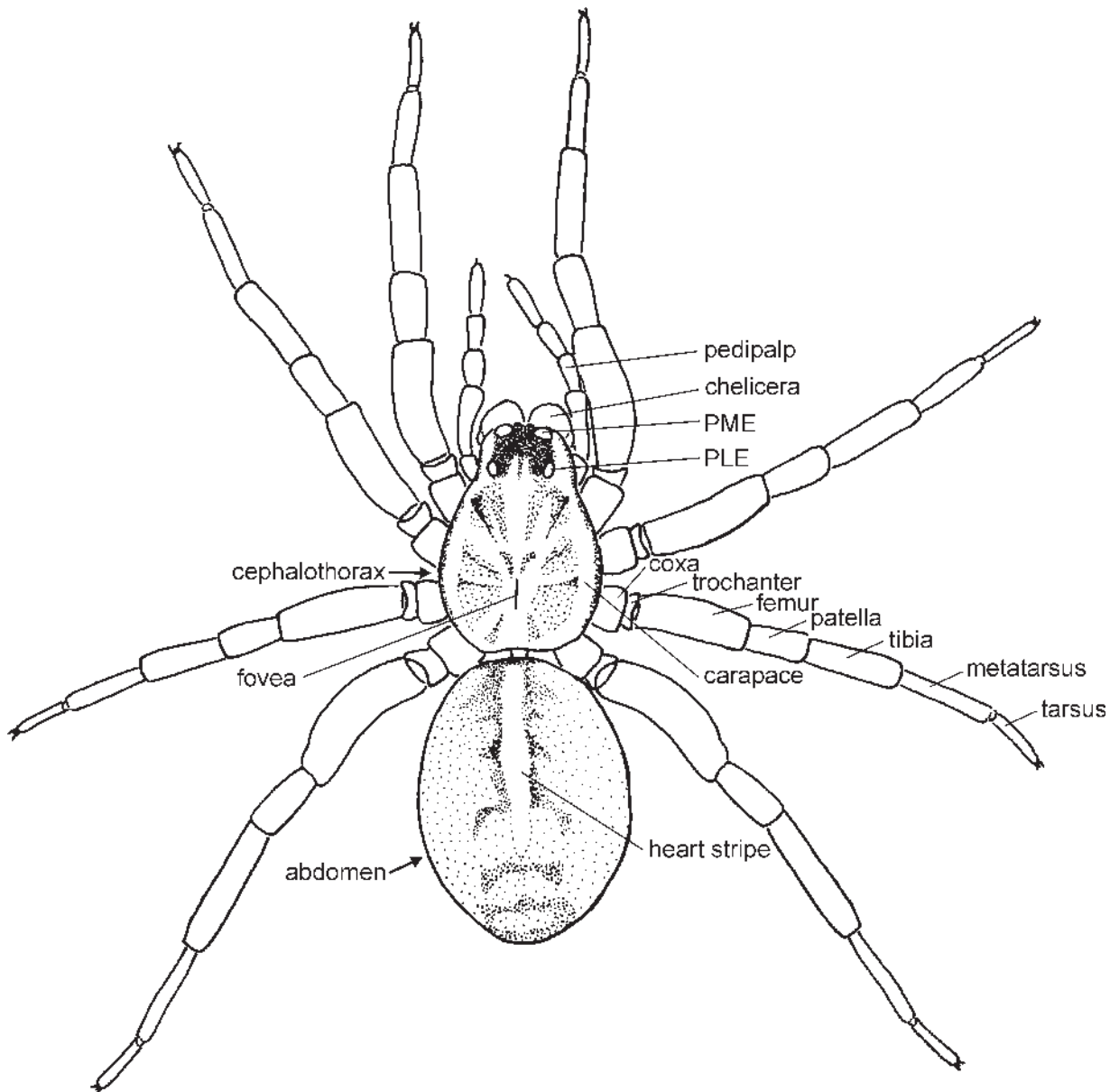
*Notocosa bellicosa*

**MC.** 1 ♀, Mt Bailey, -43.0833, 171.7500, 16.ii.1962, E.G. White, OMNZ; 11 ♂, McLeans Island, -43.4667, 172.4667, 30.xii.1996, R.P. Macfarlane, LUNZ; 9 ♂, 3 ♀, 21-31.i.1997, R.P. Macfarlane, LUNZ; 2 ♀, Christchurch Airport, -43.4833, 172.5333, ix.1968, A. Moeed, OMNZ; 1 ♀, x.1968, A. Moeed, OMNZ; 3 ♀, xii.1968, A. Moeed, OMNZ; 3 ♂, ii.1969, A. Moeed, OMNZ; 10 ♂, iii.1969, A. Moeed, OMNZ; 1 ♂, 3 ♀, iv.1969, A. Moeed, OMNZ; 1 ♀, v.1969, A. Moeed, OMNZ; 3 ♂, Hornby, -43.5475, 172.5261, 14.ii.1997, Y.J. Wei, LUNZ; 2 ♂, Birdlings Flat, -43.8333, 172.7000, 9-13.iii.1992, A.B. Freeman, LUNZ; 5 ♂, 1 ♀, ii.1993, CJV & A.B. Freeman, LUNZ. **SC.** 1 ♂, Temuka, -44.2367, 171.2841, iii.1999, M. Ross, LUNZ. **MK.** 1 ♀, Longslip Creek, -44.5535, 169.6943, 11.i.1984, C. Butts, OMNZ. **CO.** 2 ♀, near Naseby Forest, -45.0157, 170.0975, 6.i.1968, CLW, OMNZ; 3 ♂, 21.ii.1968, CLW, OMNZ; 1 ♀, Cromwell, -45.0455, 169.1865, 19-28.xi.1974, J.C. Watt, NZAC; 223.iii.1975, S. Connelly, NZAC; 2 ♂, Little Keyburn, -45.0500, 170.2500, 9.ii.1968, CLW, OMNZ; 4 ♂, between Naseby and Kyeburn, -45.0833, 170.2000, 21.ii.1968, CLW, OMNZ; 2 ♂, 1.iii.1968, CLW, OMNZ; 1 ♀, Maniototo Station, -45.1234, 170.0296, 6.i.1968, CLW, OMNZ; 3 ♂, 21.ii.1968, CLW, OMNZ; 1 ♀, Kyeburn, -45.1484, 170.2482, 6.i.1968, CLW, OMNZ; 1 ♂, 1.iii.1968, CLW, OMNZ; 2 ♂, 21.ii.1968, CLW, OMNZ; 1 ♂, near Swinburn Peak, -45.1768, 170.3465, 21.ii.1968, CLW, OMNZ; 2 ♂, Kokonga, -45.2117, 170.2462, 9.ii.1968, CLW, OMNZ; 1 ♀, 14.iii.1968, CLW, OMNZ; 9 ♂, Patearoa, -45.2743, 170.0548, 27.i.1969, CLW, OMNZ; 1 ♂, Hyde, -45.2979, 170.2507, 1.iii.1968, CLW, OMNZ. **DN.** 1 ♀, Taieri [River], -45.5248, 169.7537, x.1957, [B.J.] Marples; 1 ♀, Allans Beach, -45.8824, 170.6870, 25.x.1953, B.J. Marples, OMNZ; 1 ♀, Rabbit Meadow, -45.8824, 170.6870, 26.xii.1952-8.i.1953, B.J. Marples, OMNZ. **Unknown locality.** 1 ♀, Ar. 1/74, OMNZ.

*Venatrix goyderi*

**ND.** 2 ♂, near Matarau, -35.6335, 174.1909, 21.iii.1995, C.A. Stewart, LUNZ; 1 ♂, 2 ♀, 15.ii.1999, CJV, LUNZ.

## ILLUSTRATIONS



**Fig. 1** Schematic dorsal view, *Anoteropsis adumbrata*, female (PLE – posterior lateral eye; PME – posterior median eye)

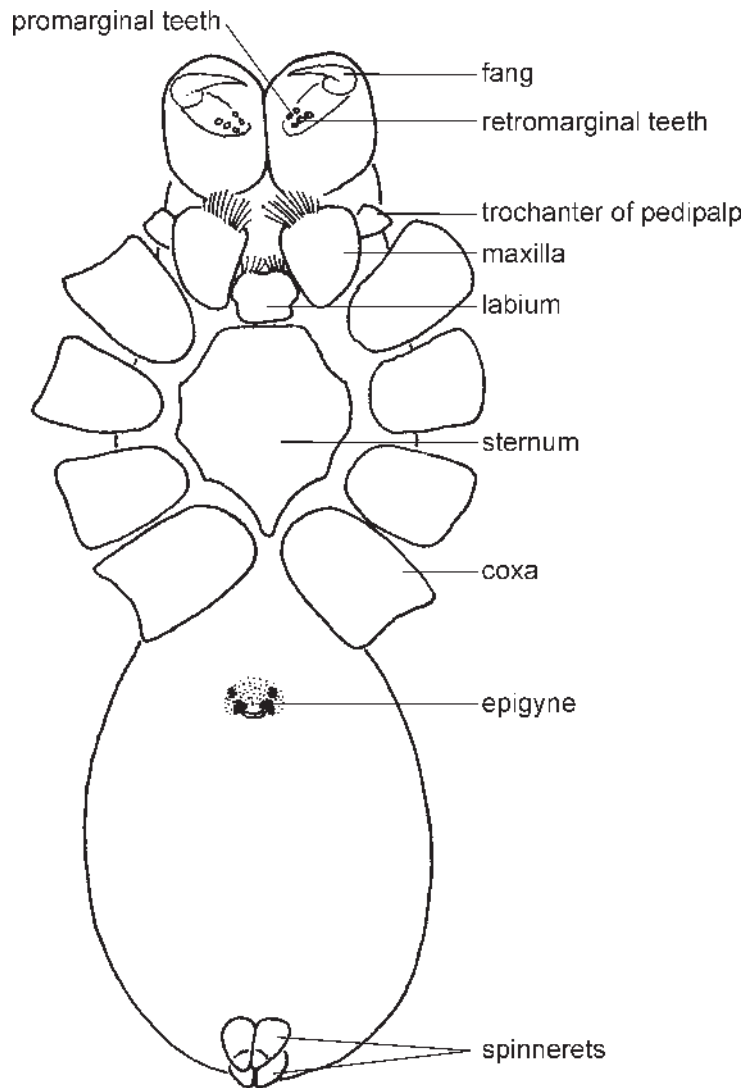
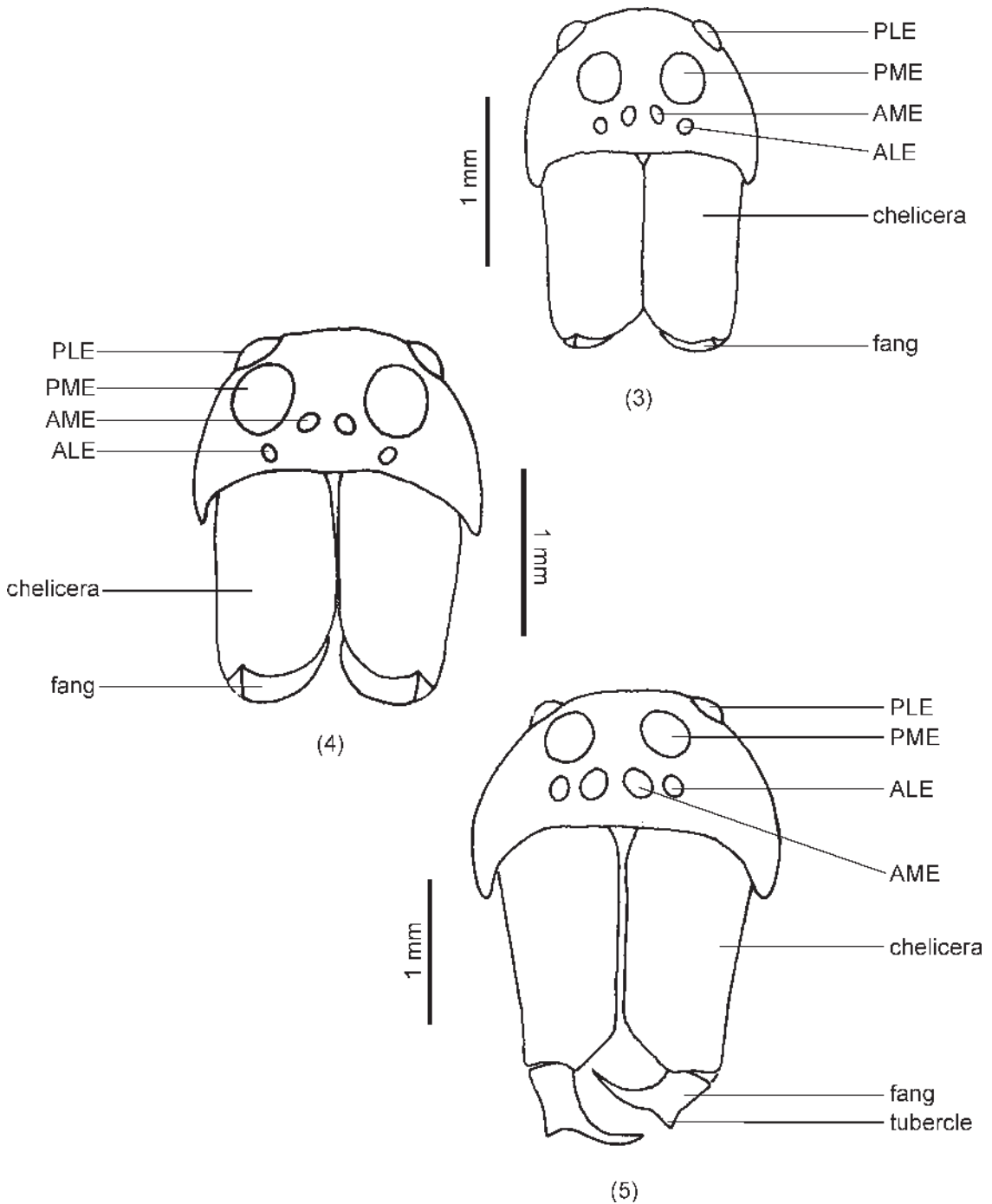
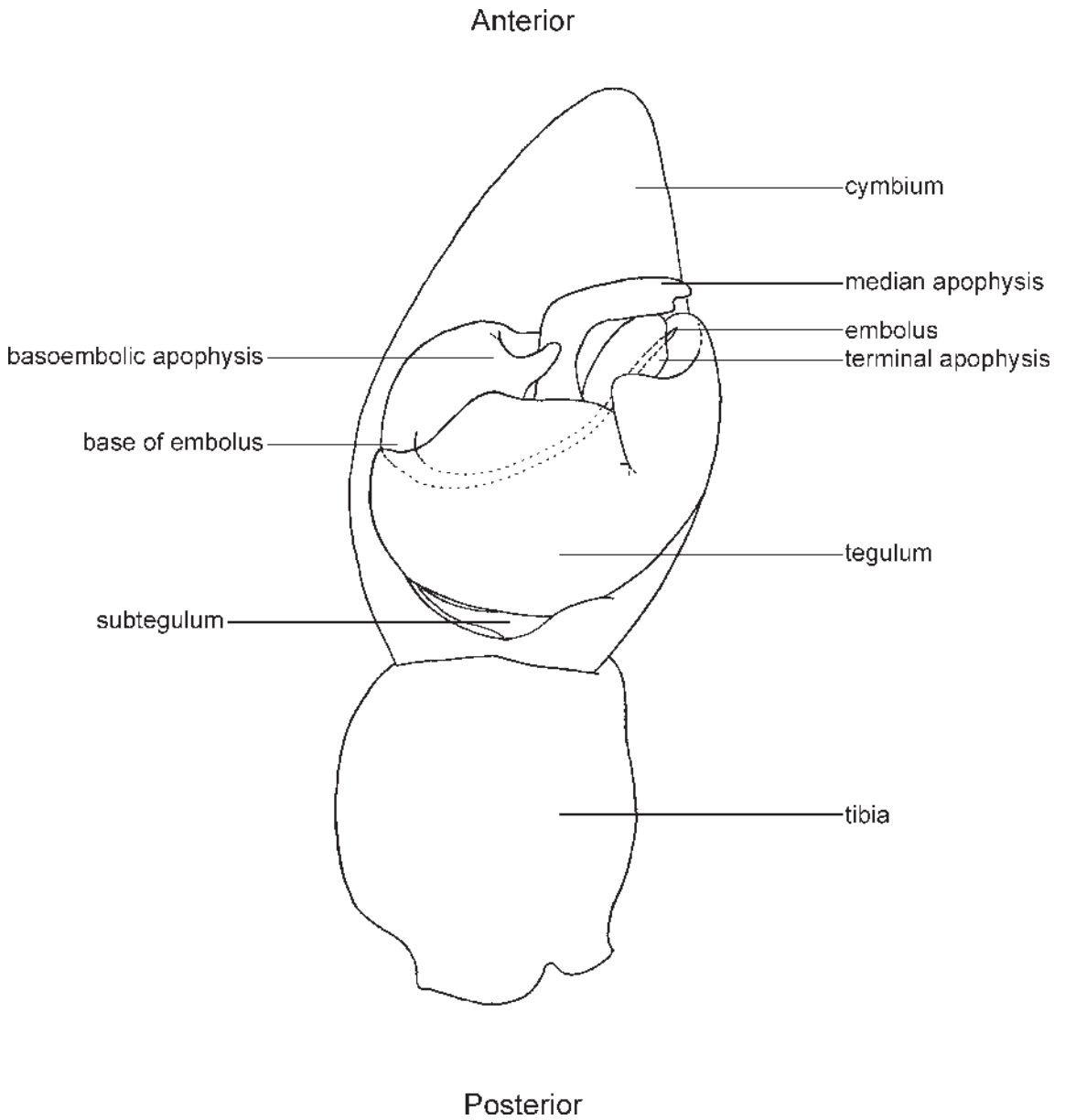


Fig. 2 Schematic ventral view, *Anoteropsis adumbrata*, female.

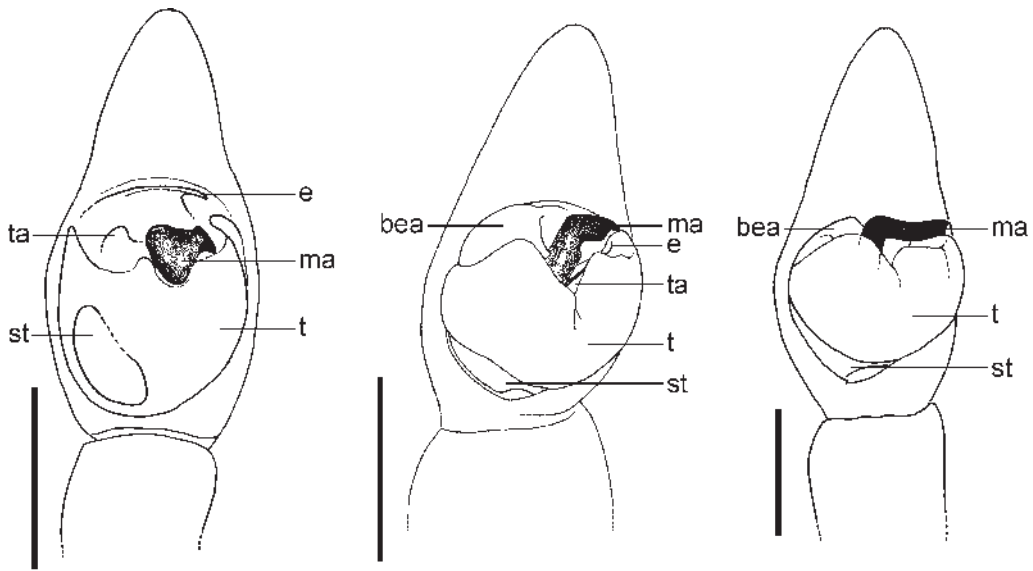
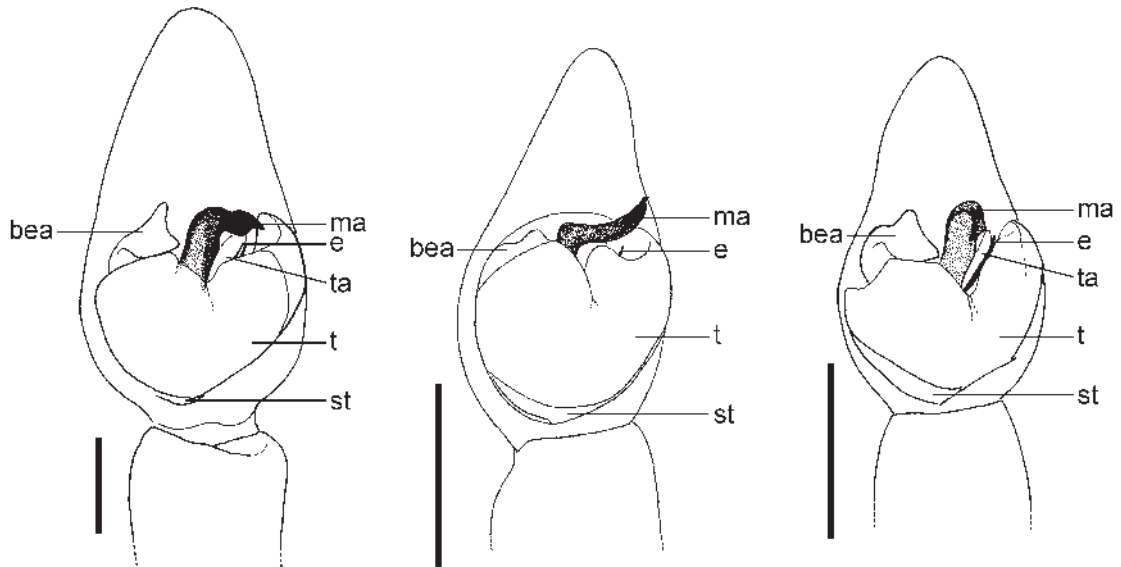




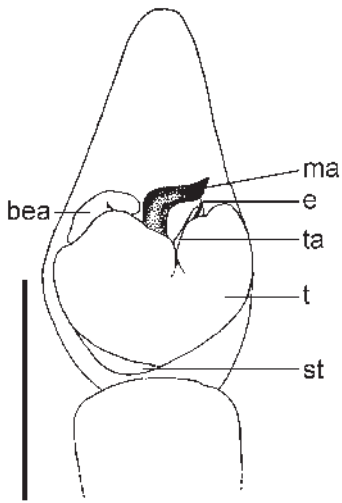
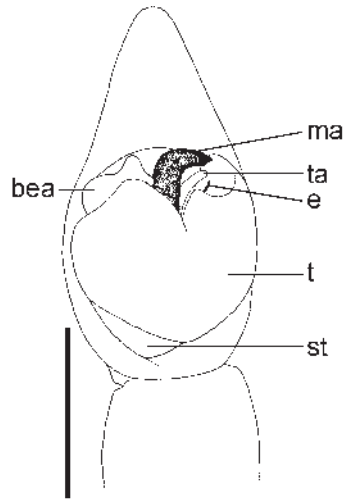
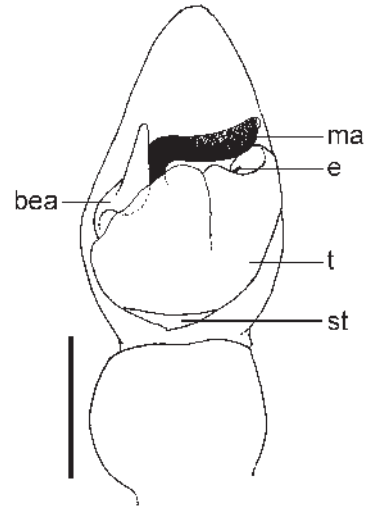
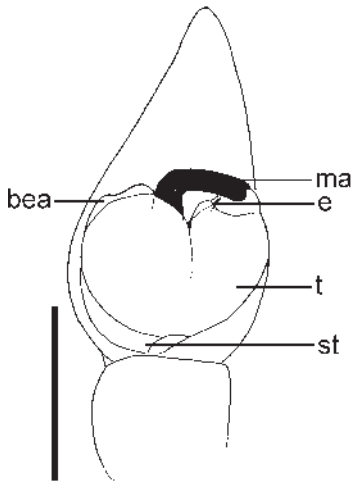
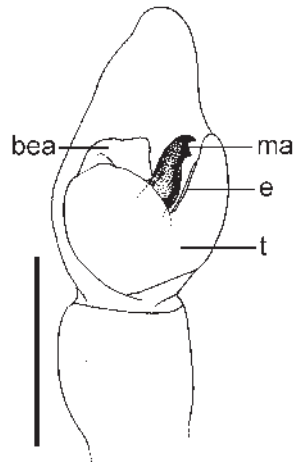
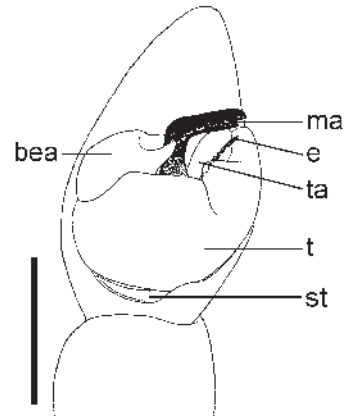
**Fig 3–5** Anterior view of cephalothorax: (3) *Anoteropsis adumbrata*, female, showing recurved anterior eye group (PLE – posterior lateral eye; PME – posterior median eye; AME – anterior median eye); (4) *Artoria separata*, female, showing strongly recurved anterior eye group; (5) *Venatrix goyderi*, male, showing straight anterior eye group and tubercles on fangs.

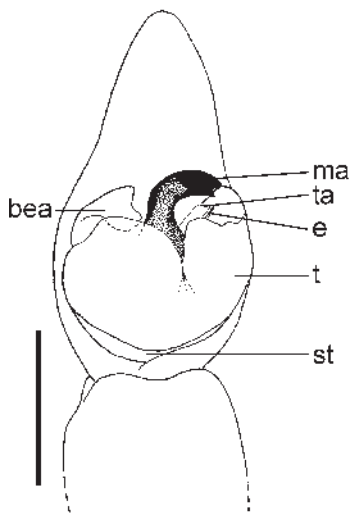


**Fig. 6** Schematic ventral view of left male pedipalp, *Anoteropsis hilaris*.

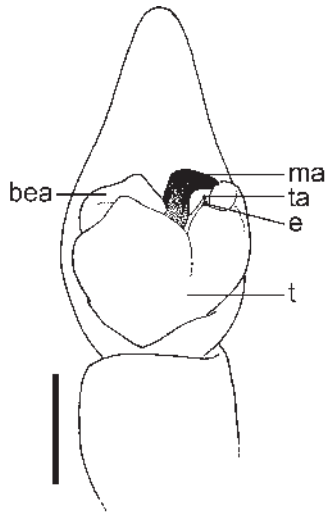
(7) *Allotrochosina schauinslandi*(8) *Anoteropsis adumbrata*(9) *Anoteropsis aerescens*(10) *Anoteropsis alpina*(11) *Anoteropsis arenivaga*(12) *Anoteropsis blesti*

**Fig. 7-33** Ventral view of left male pedipalps (ma – median apophysis; e – embolus; t – tegulum; st – subtegulum; ta – terminal apophysis; bea – basoembolic apophysis; tl – tegular lobe). Scale lines are 0.5 mm.

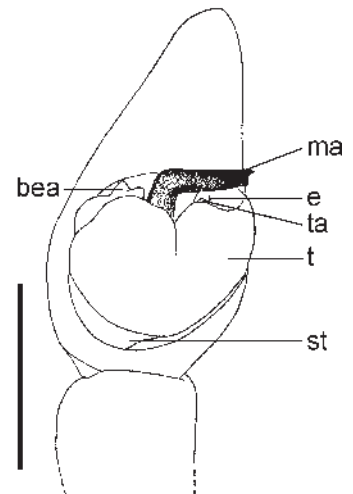
(13) *Anoteropsis canescens*(14) *Anoteropsis cantuaria*(15) *Anoteropsis flavescens*(16) *Anoteropsis forsteri*(17) *Anoteropsis hallae*(18) *Anoteropsis hilaris*



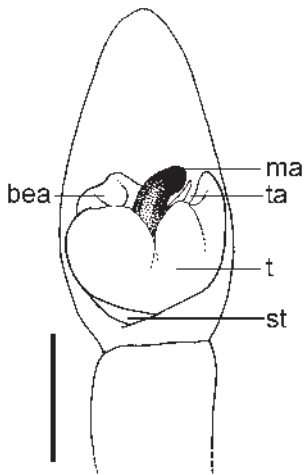
(19) *Anoteropsis insularis*



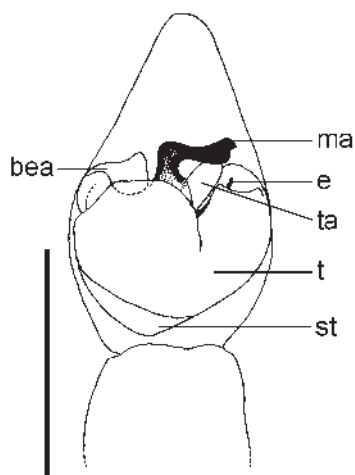
(20) *Anoteropsis lacustris*



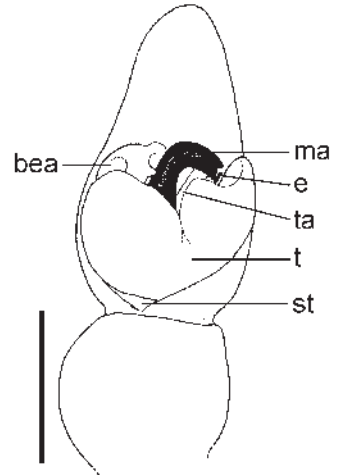
(21) *Anoteropsis litoralis*



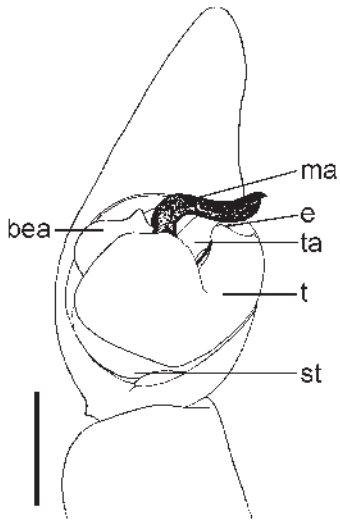
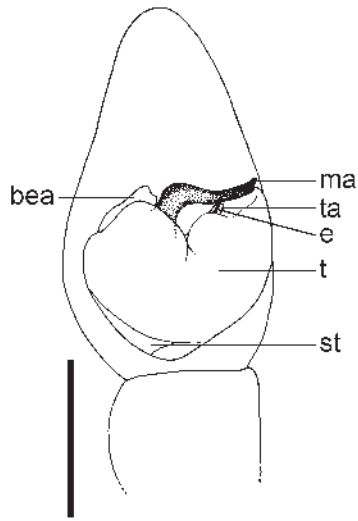
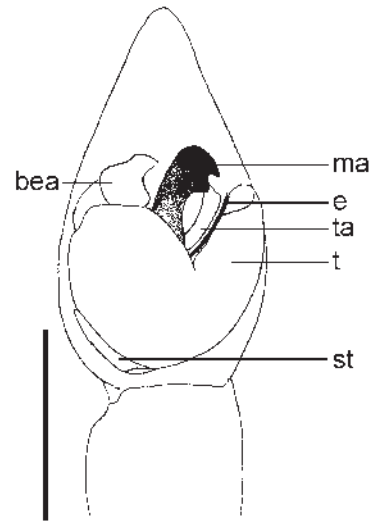
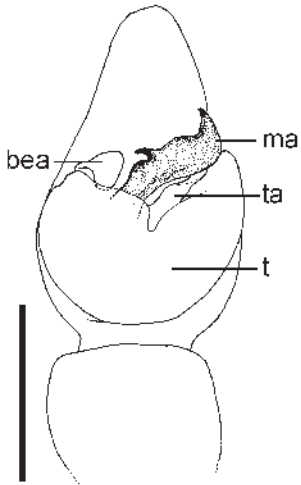
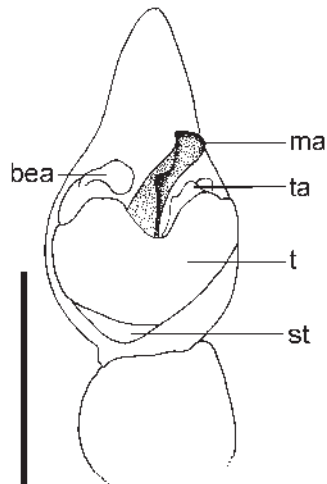
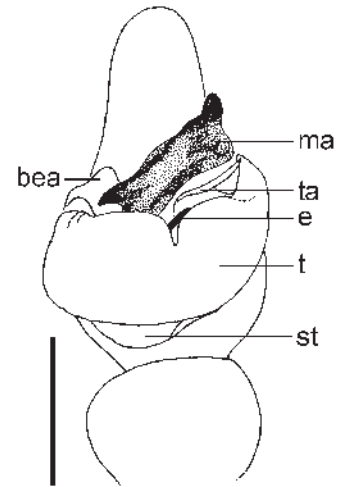
(22) *Anoteropsis montana*

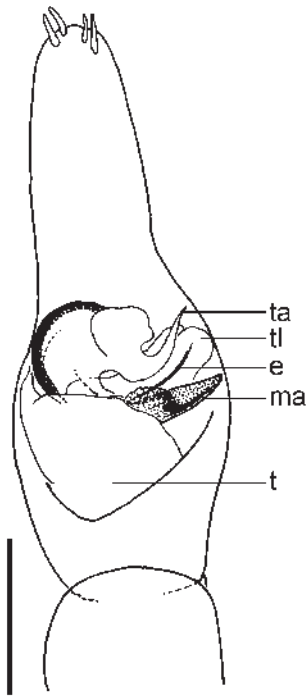


(23) *Anoteropsis okatainae*

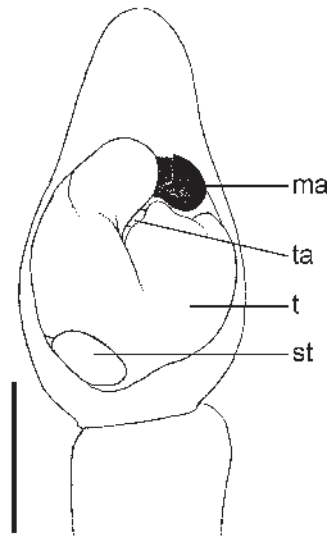


(24) *Anoteropsis ralphi*

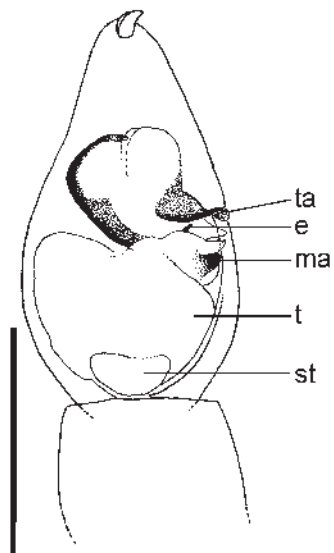
(25) *Anoteropsis senica*(26) *Anoteropsis urquharti*(27) *Anoteropsis westlandica*(28) *Artoria hospita*(29) *Artoria segregata*(30) *Artoria separata*



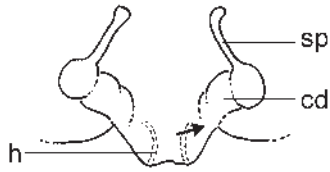
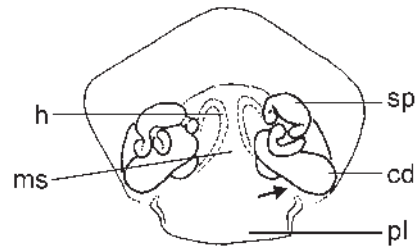
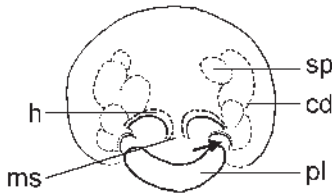
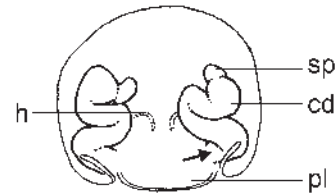
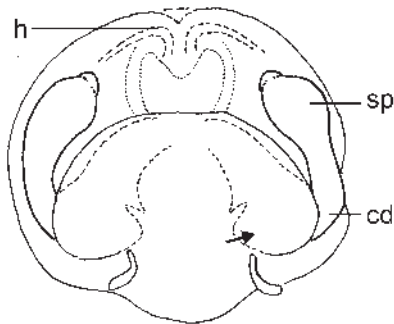
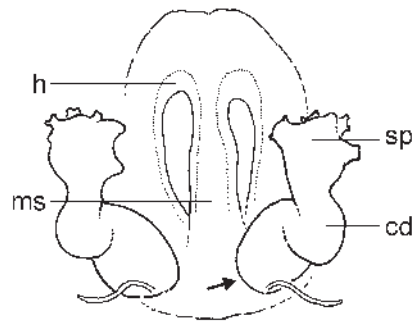
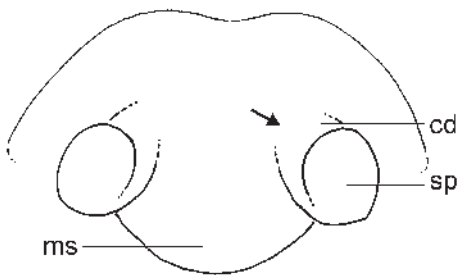
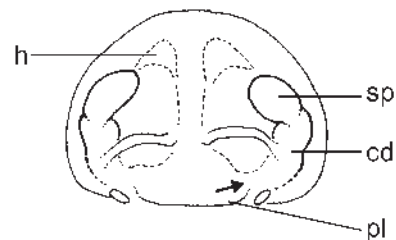
(31) *Geolycosa tongatabuensis*



(32) *Notocosa bellicosa*

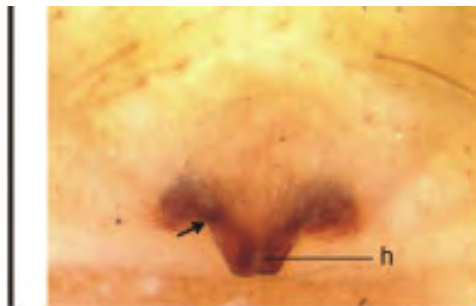
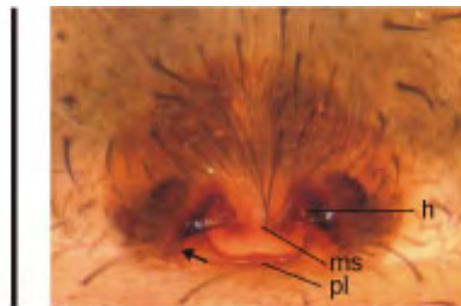
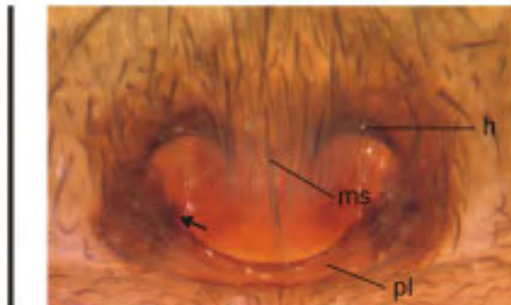
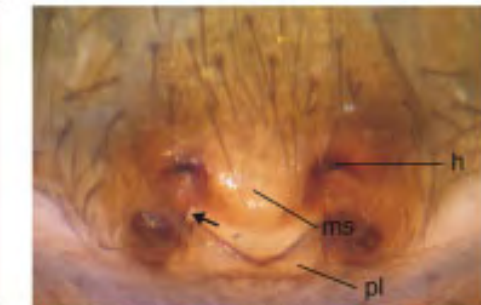
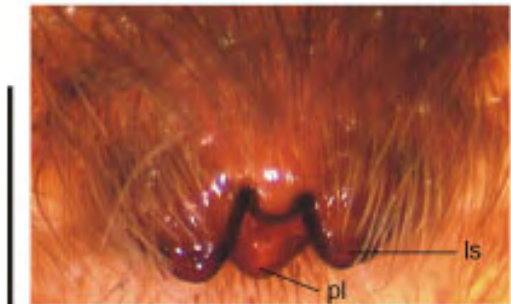
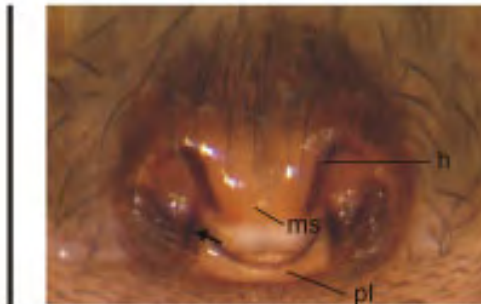


(33) *Venatrix goyderi*

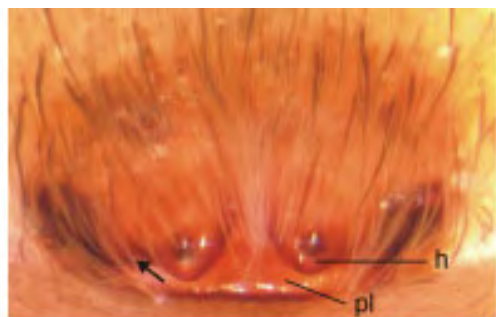
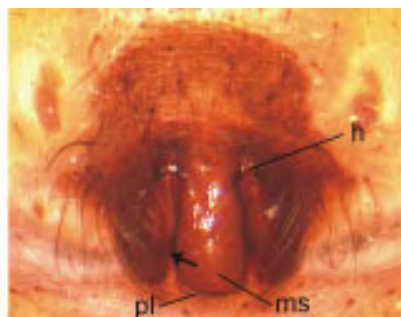
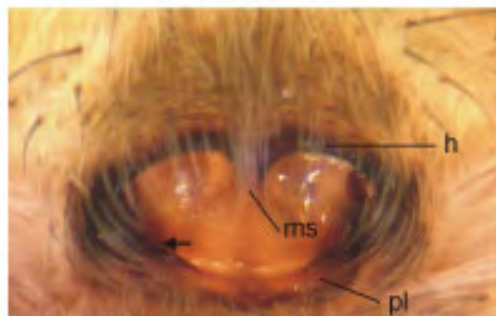
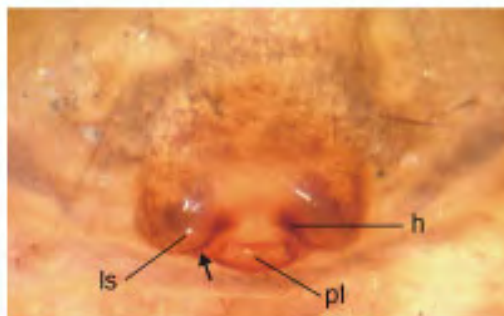
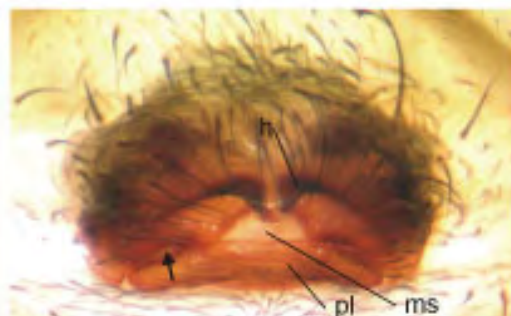
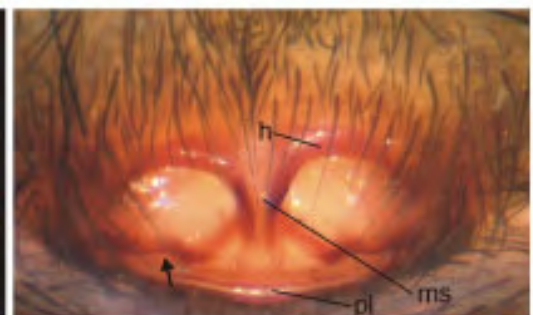
(34) *Allotrochosina schauinslandi*, ventral(35) *Anoteropsis hilaris*, ventral(36a) *Anoteropsis canescens*, dorsal(36b) *Anoteropsis canescens*, ventral(37) *Artoria separata*, ventral(38) *Geolycosa tongatabuensis*, ventral(39) *Notocosa bellicosa*, ventral(40) *Venatrix goyderi*, ventral

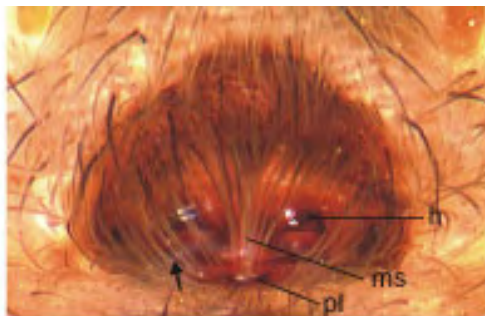
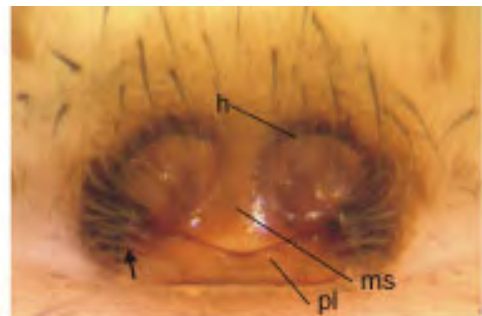
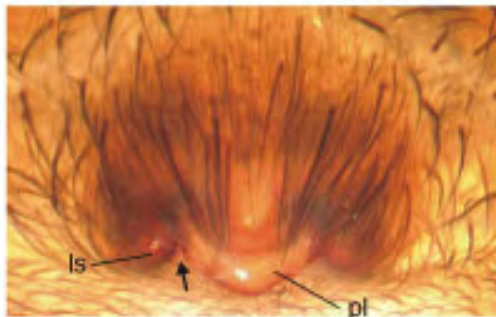
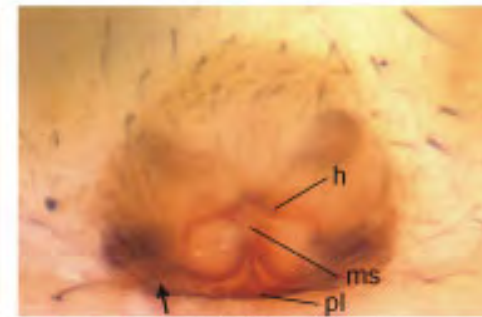
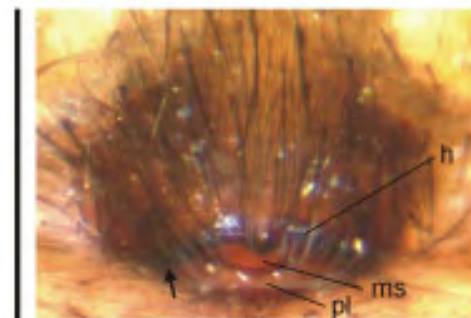
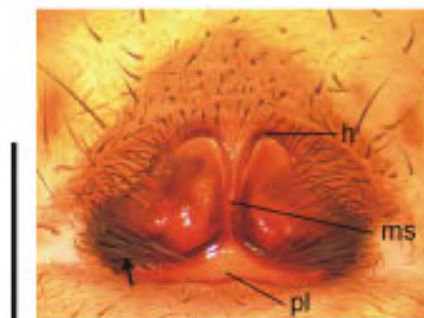
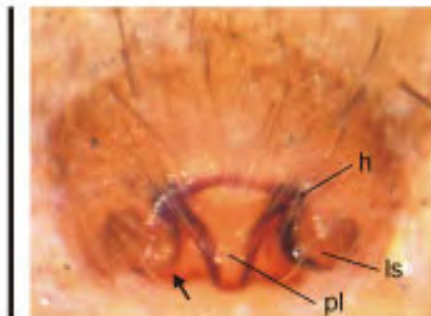
**Fig. 34–40** Epigyna, cleared to show internal genitalia (arrow – opening to copulatory duct; cd – copulatory duct; h – hood; ms – median septum; pl – posterior lip; sp – spermatheca). Scale line is 0.5 mm.

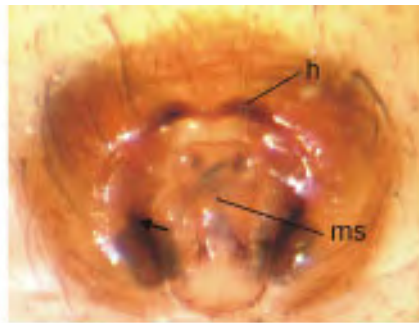
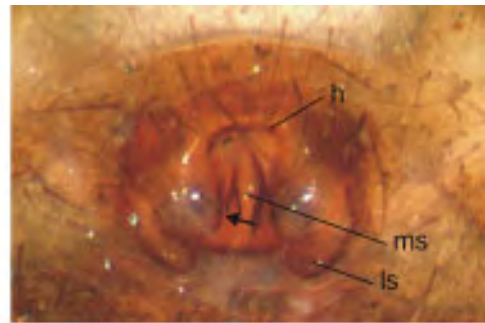
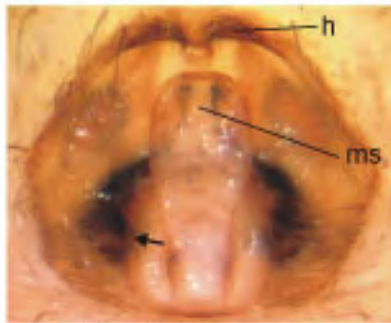
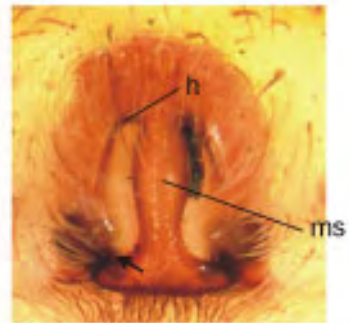
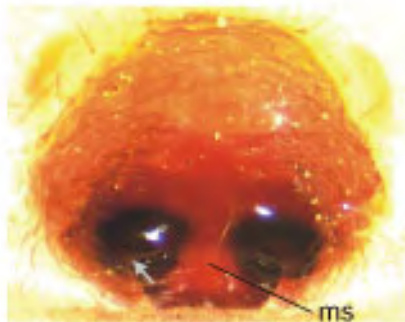
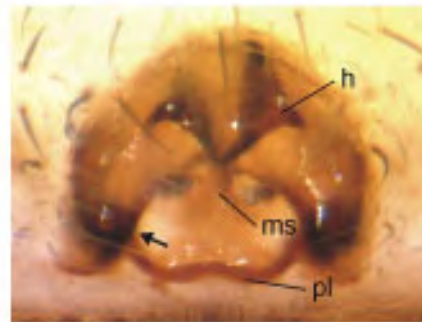


(41) *Allotrochosina schauinslandi*(42) *Anoteropsis adumbrata*(43a) *Anoteropsis aerescens* WN(43b) *Anoteropsis aerescens* MK(44) *Anoteropsis alpina*(45) *Anoteropsis arenivaga*(46) *Anoteropsis blesti*(47) *Anoteropsis canescens*

**Fig 41–67** Ventral view of epigynes (arrow – opening to copulatory duct; h – hood; ls – lateral sclerite; ms – median septum; pl – posterior lip); 43a–b and 52a–c show variation. Scale lines are 0.5 mm.

(48) *Anoteropsis cantuaria*(49) *Anoteropsis flavescens*(50) *Anoteropsis forsteri*(51) *Anoteropsis hallae*(52a) *Anoteropsis hilaris* FD(52b) *Anoteropsis hilaris* AK(52c) *Anoteropsis hilaris* CO(53) *Anoteropsis insularis*

(54) *Anoteropsis lacustris*(55) *Anoteropsis litoralis*(56) *Anoteropsis montana*(57) *Anoteropsis okatainae*(58) *Anoteropsis ralphi*(59) *Anoteropsis senica*(60) *Anoteropsis urquharti*(61) *Anoteropsis westlandica*

(62) *Artoria hospita*(63) *Artoria segrega*(64) *Artoria separata*(65) *Geolycosa tongatabuensis*(66) *Notocosa bellicosa*(67) *Venatrix goyderi*

(68) *Allotrochosina schauinslandi* MC(69a) *Anoteropsis adumbrata* WN(69b) *Anoteropsis adumbrata* MC(69c) *Anoteropsis adumbrata* KA

**Fig. 68–94** Habitus images of Lycosidae known from New Zealand: 69a–c, 70a–b, 75a–b, 79a–g, 80a–b, 82a–c, 85a–c, and 86a–b show variation. The two-letter code shows where the specimen was collected. Adult females, except (78). Actual size on the right.



(70a) *Anoteropsis aerescens* TK



(70b) *Anoteropsis aerescens* WN



(71) *Anoteropsis alpina* CO



(72) *Anoteropsis arenivaga* MC



(73) *Anoteropsis blesti* CL



(74) *Anoteropsis canescens* MC



(75a) *Anoteropsis cantuaria* MC



(75b) *Anoteropsis cantuaria* MC



(76) *Anoteropsis flavescens* DN



(77) *Anoteropsis forsteri* SL



(78) *Anoteropsis hallae* NN



(79a) *Anoteropsis hilaris* AU





(79b) *Anoteropsis hilaris* CO



(79c) *Anoteropsis hilaris* CO



(79d) *Anoteropsis hilaris* CO



(79e) *Anoteropsis hilaris* CO



(79f) *Anoteropsis hilaris* AK



(79g) *Anoteropsis hilaris* FD



(80a) *Anoteropsis insularis* CH



(80b) *Anoteropsis insularis* CH



(81) *Anoteropsis lacustris* NC



(82a) *Anoteropsis litoralis* MC



(82b) *Anoteropsis litoralis* CL



(82c) *Anoteropsis litoralis* MC



(83) *Anoteropsis montana* MB



(84) *Anoteropsis okatainae* BP



(85a) *Anoteropsis ralphi* CH



(85b) *Anoteropsis ralphi* CH



(85c) *Anoteropsis ralphi* CH



(86a) *Anoteropsis senica* WD



(86b) *Anoteropsis senica* WD



(87) *Anoteropsis urquharti* OL



(88) *Anoteropsis westlandica* WD



(89) *Artoria hospita* BP



(90) *Artoria segregata* ND



(91) *Artoria separata* TK



(92) *Geolycosa tongatabuensis* KE



(93) *Notocosa bellicosa* MC



(94) *Venatrix goyderi* ND



(95)



(96)



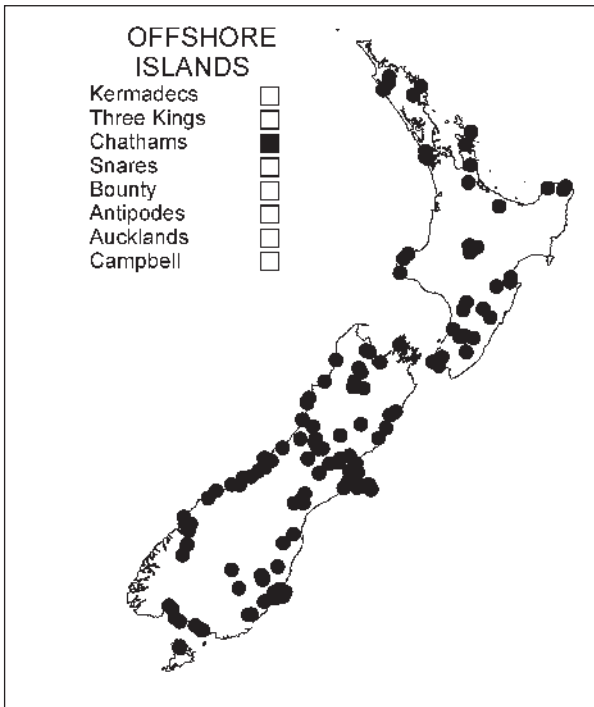
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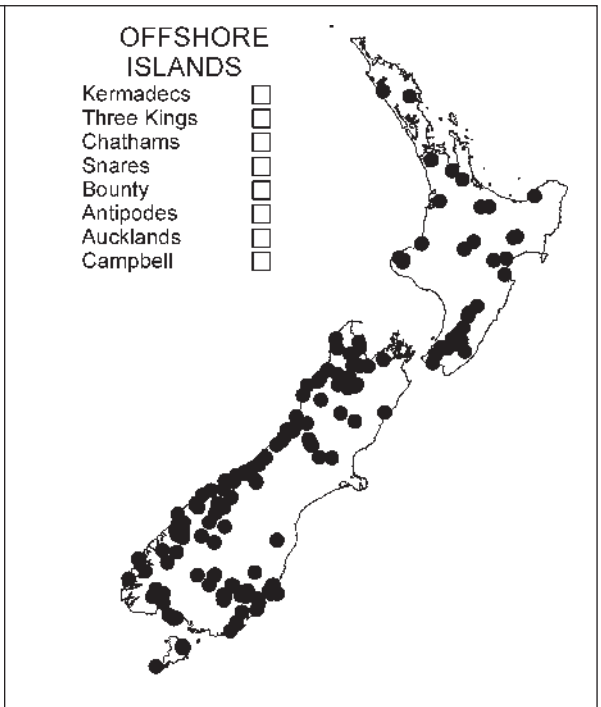
(98)

**Fig. 95–98** Photographs of Lycosidae. (95) *Allotrochosina schauinslandi*, male, showing long front pair of legs (photographer: Cor Vink); (96) *Notocosa bellicosa*, copulating male (on top) and female; the male is inserting his right pedipalp into the female's right epigynal opening (photographer: Andrew McLachlan); (97–98) *Anteropsis hilaris*: (97) male (photographer: David Hollander); (98) female with spiderlings on her abdomen (photographer: John Marris).

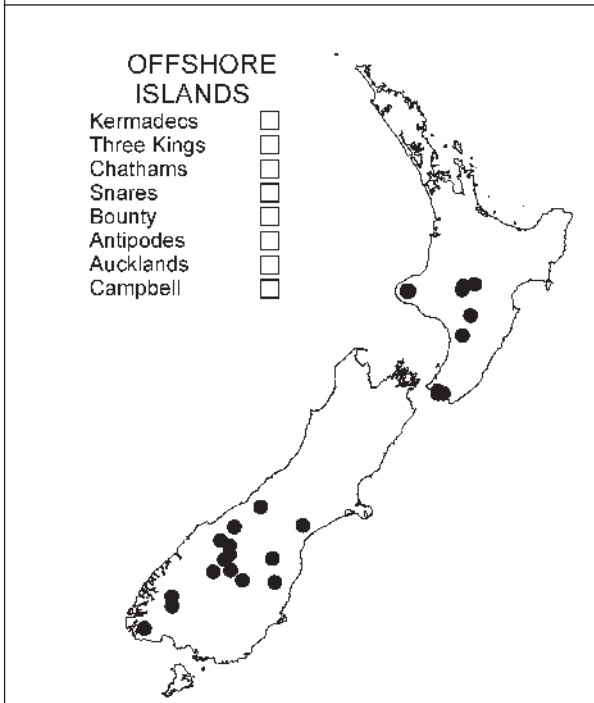




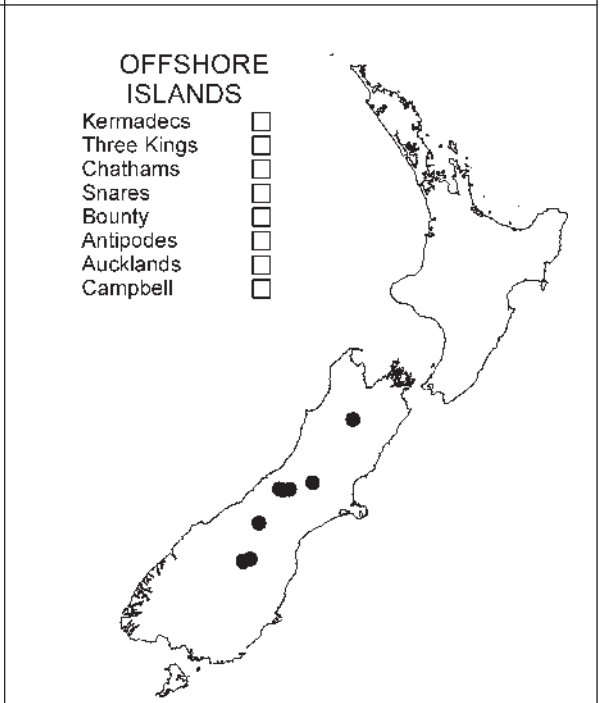
**Map 1** Collection localities, *Allotrochosina schauinslandi*.



**Map 2** Collection localities, *Anoteropsis adumbrata*.



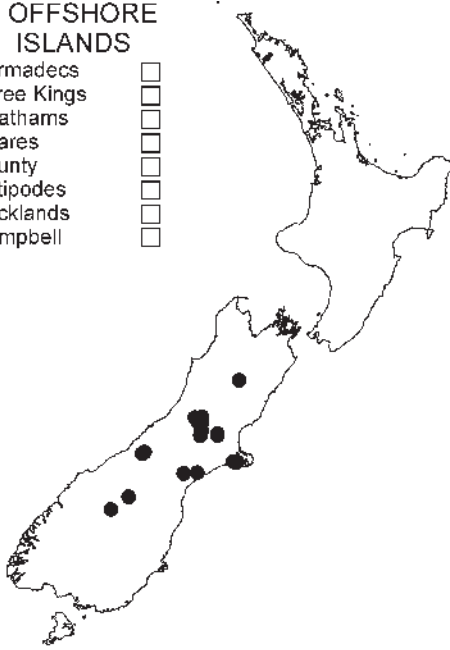
**Map 3** Collection localities, *Anoteropsis aerescens*.



**Map 4** Collection localities, *Anoteropsis alpina*.

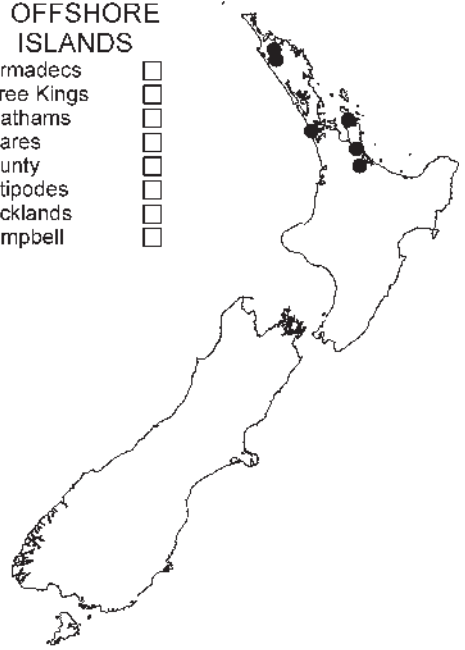
## OFFSHORE ISLANDS

- Kermadecs
- Three Kings
- Chathams
- Snares
- Bounty
- Antipodes
- Aucklands
- Campbell

Map 5 Collection localities, *Anoteropsis arenivaga*.

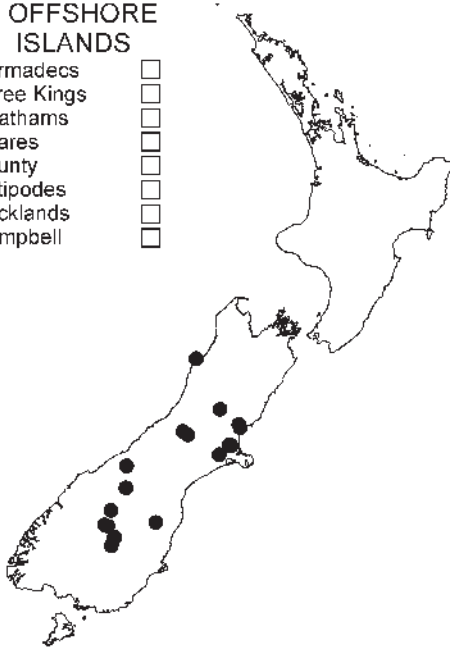
## OFFSHORE ISLANDS

- Kermadecs
- Three Kings
- Chathams
- Snares
- Bounty
- Antipodes
- Aucklands
- Campbell

Map 6 Collection localities, *Anoteropsis blesti*.

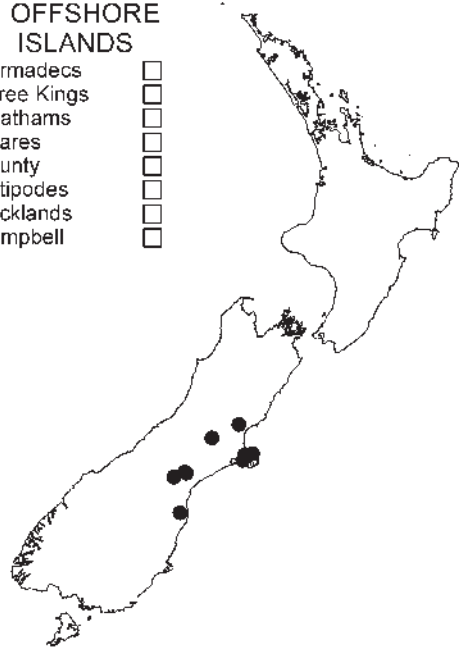
## OFFSHORE ISLANDS

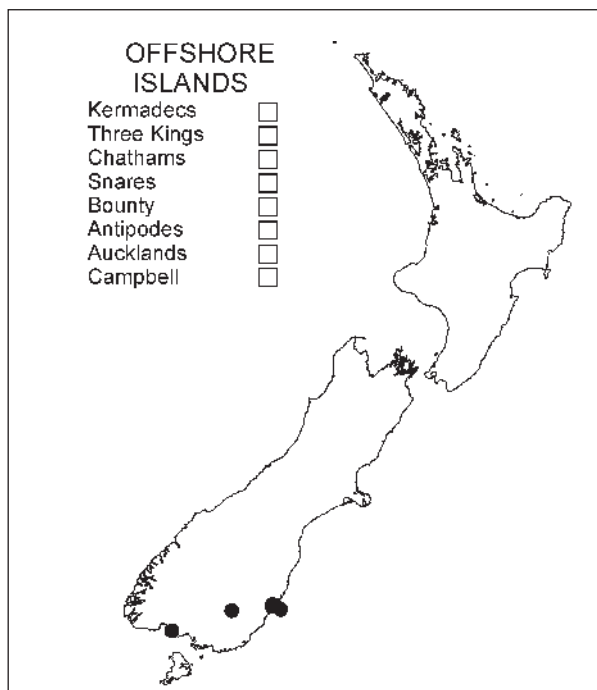
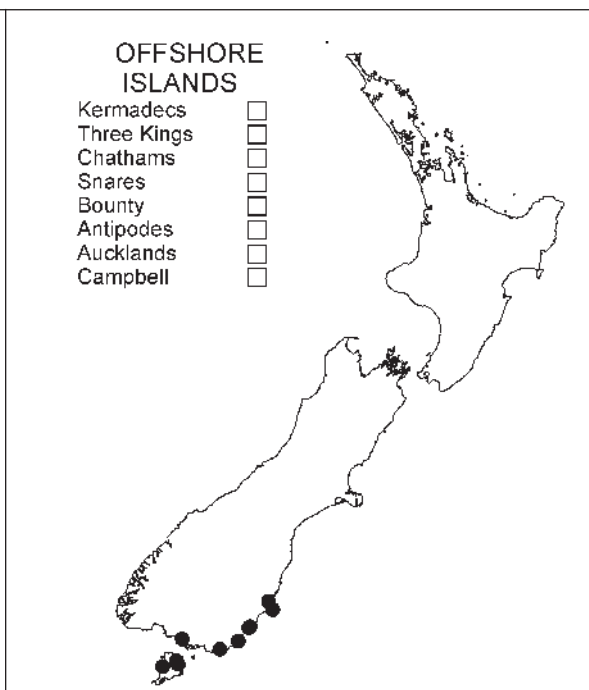
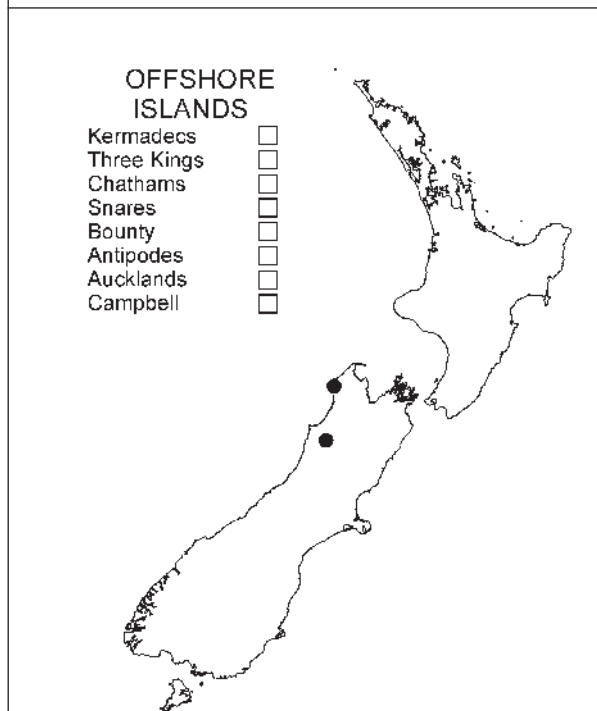
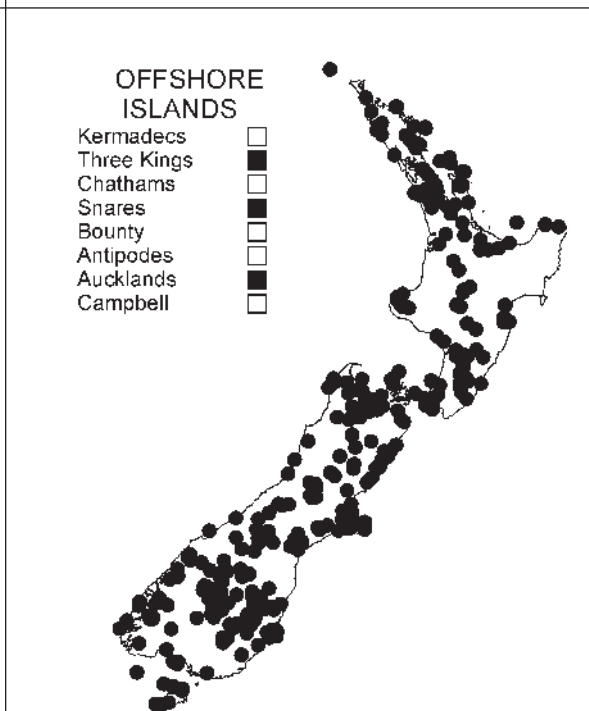
- Kermadecs
- Three Kings
- Chathams
- Snares
- Bounty
- Antipodes
- Aucklands
- Campbell

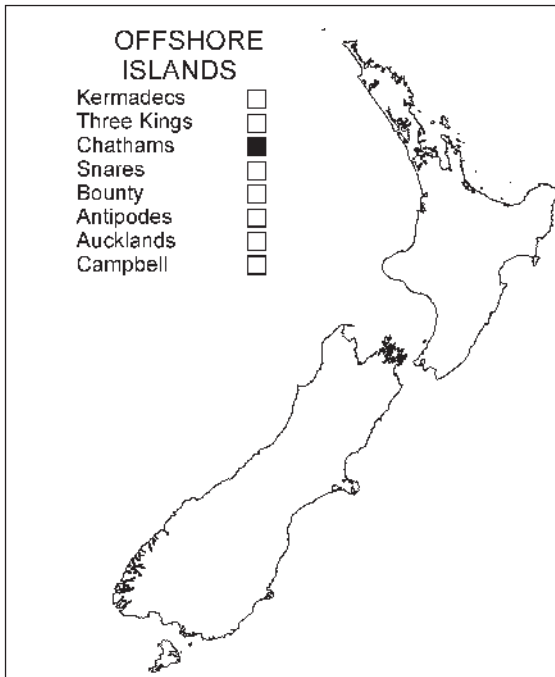
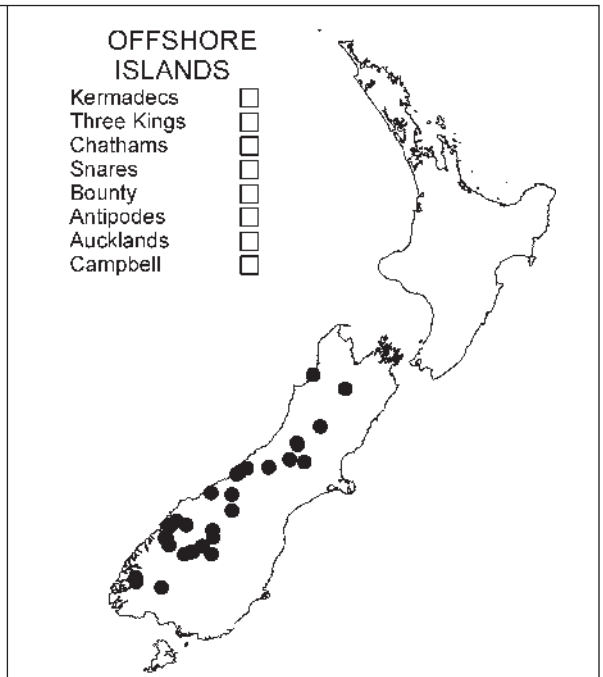
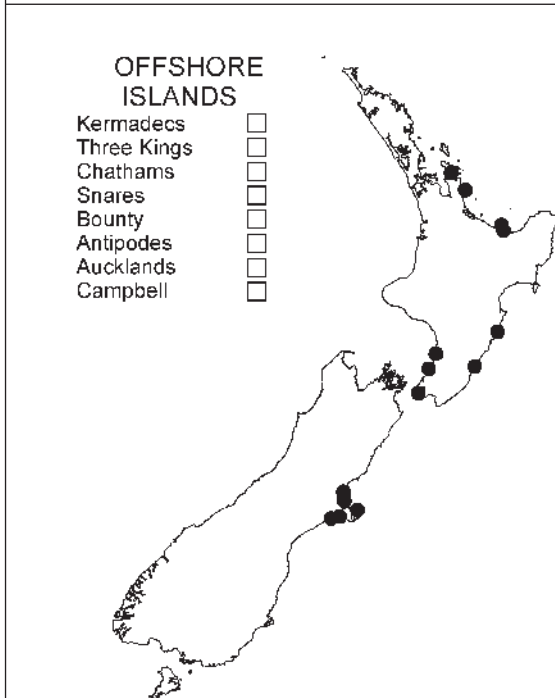
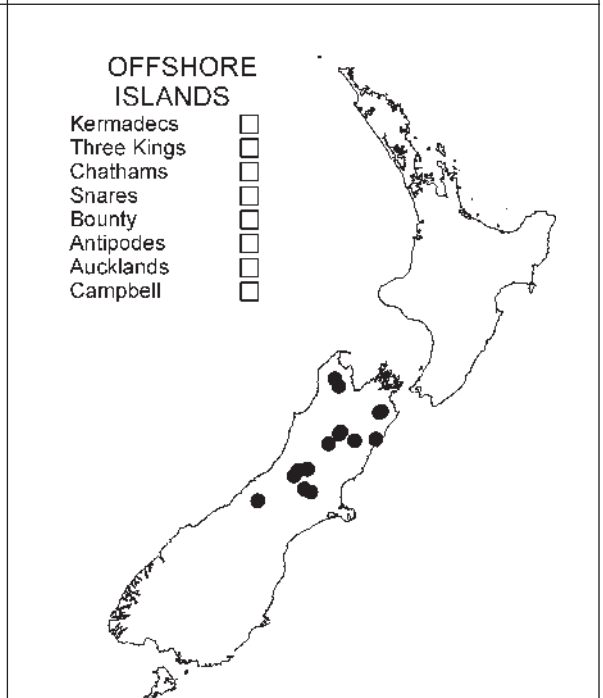
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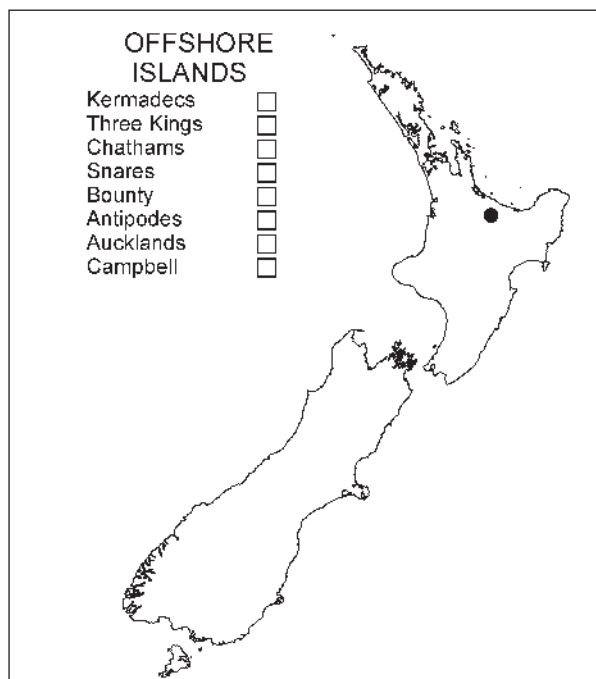
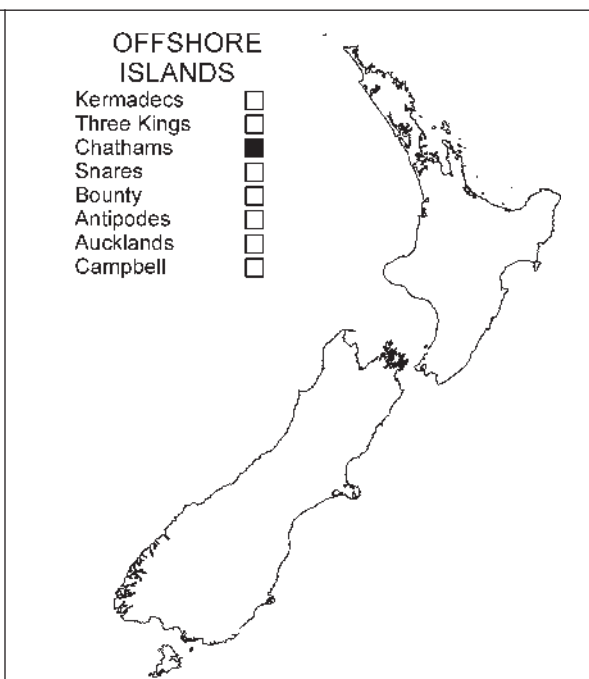
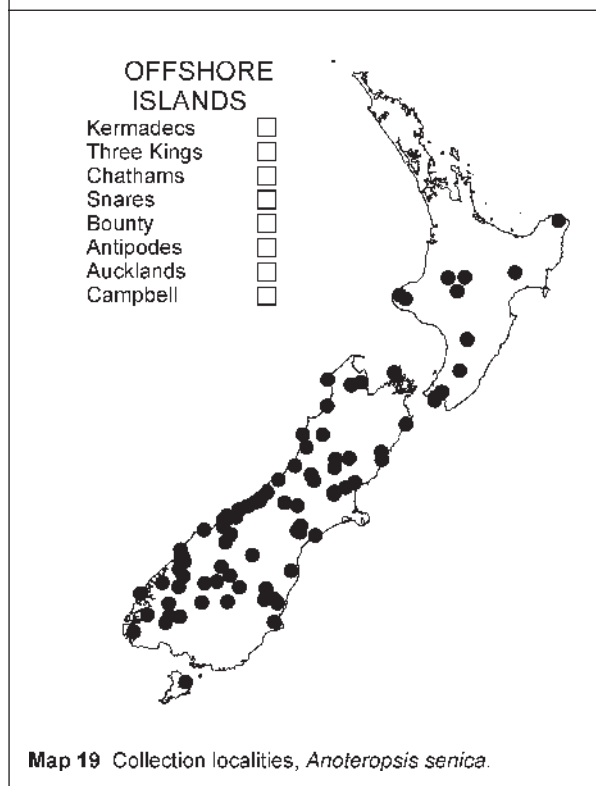
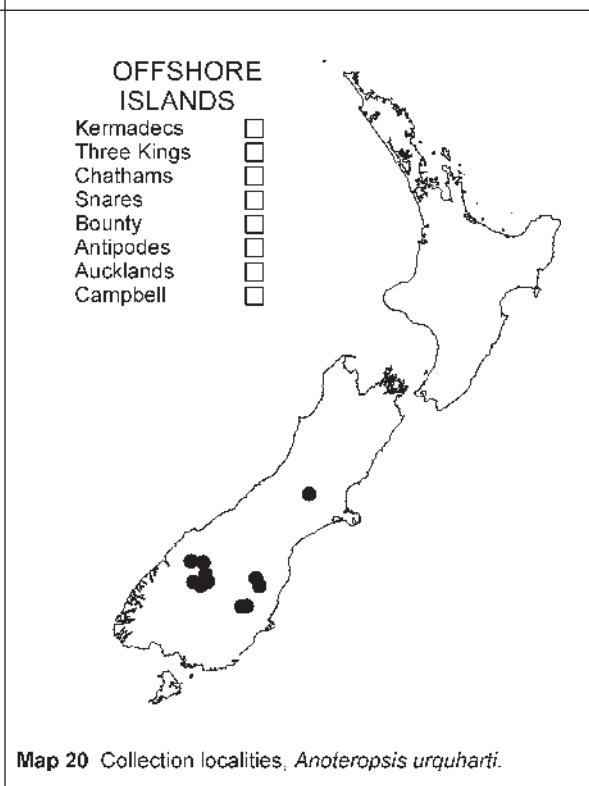
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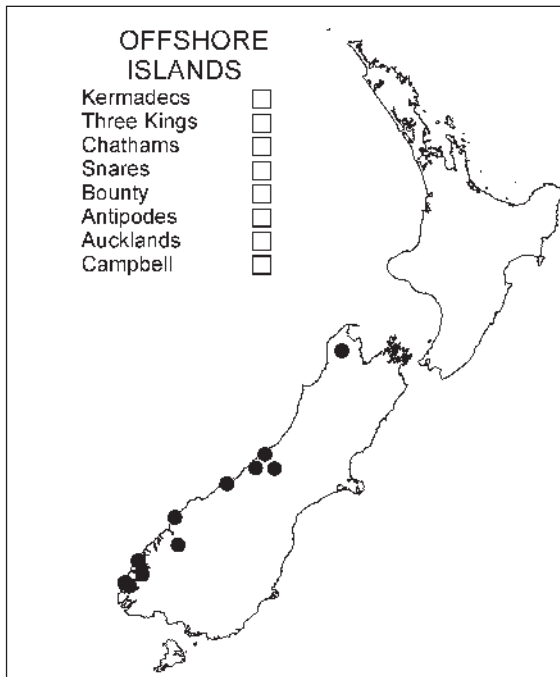
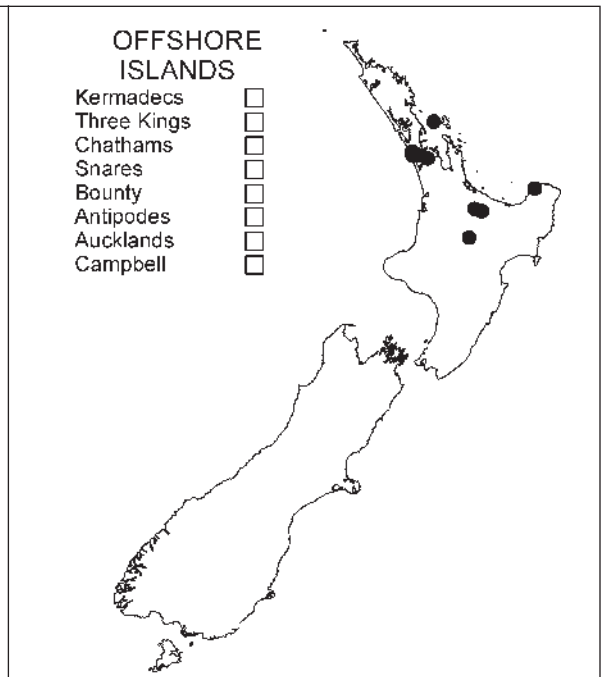
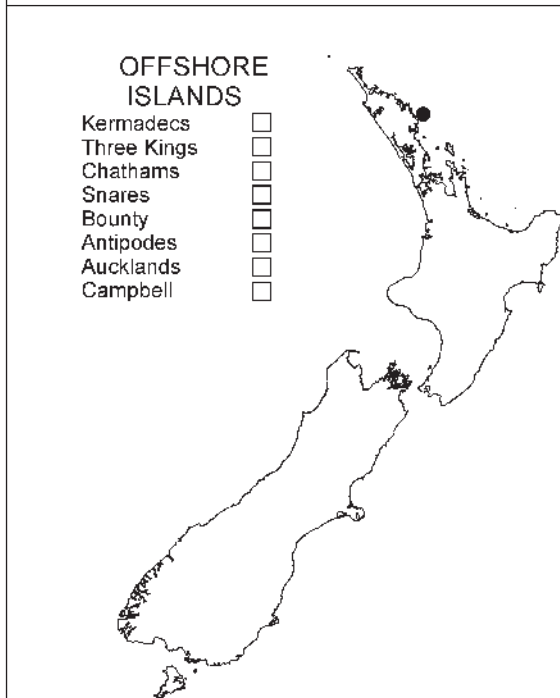
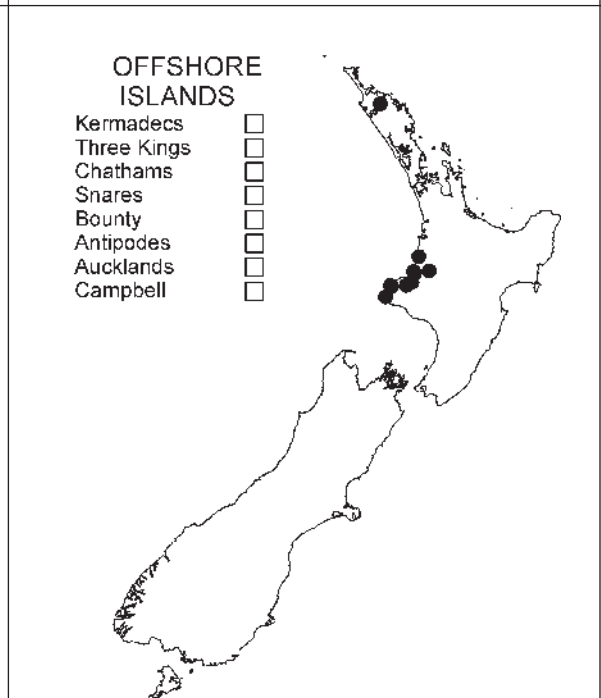
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- Bounty
- Antipodes
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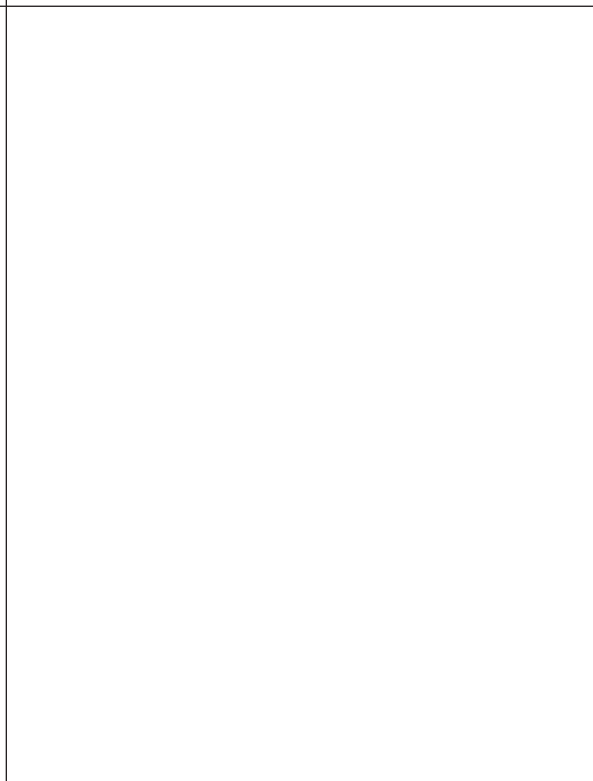
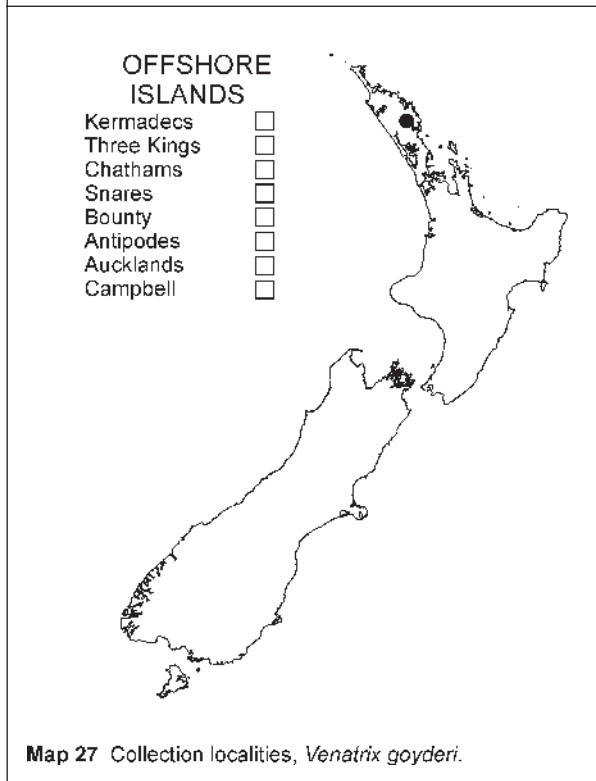
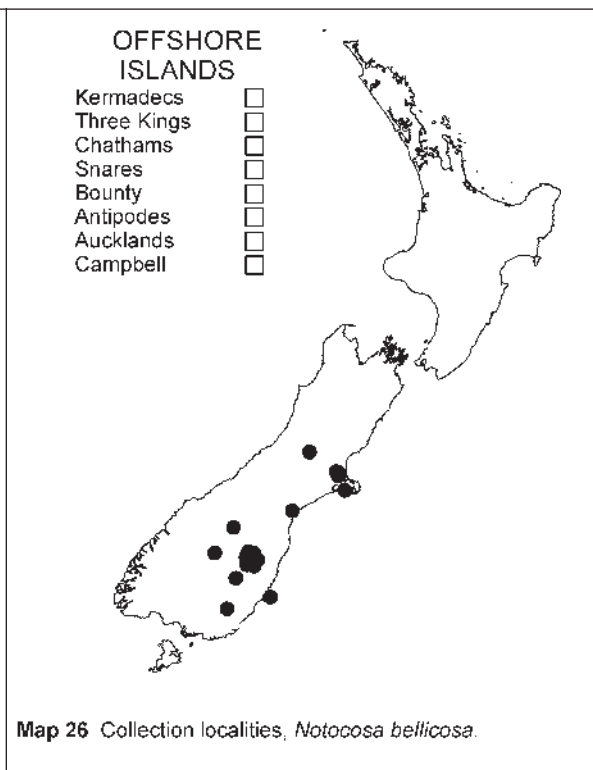
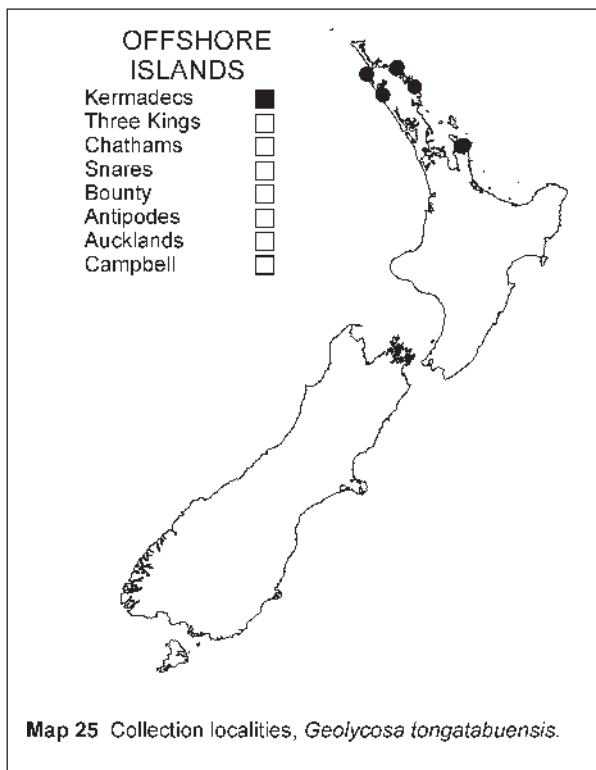
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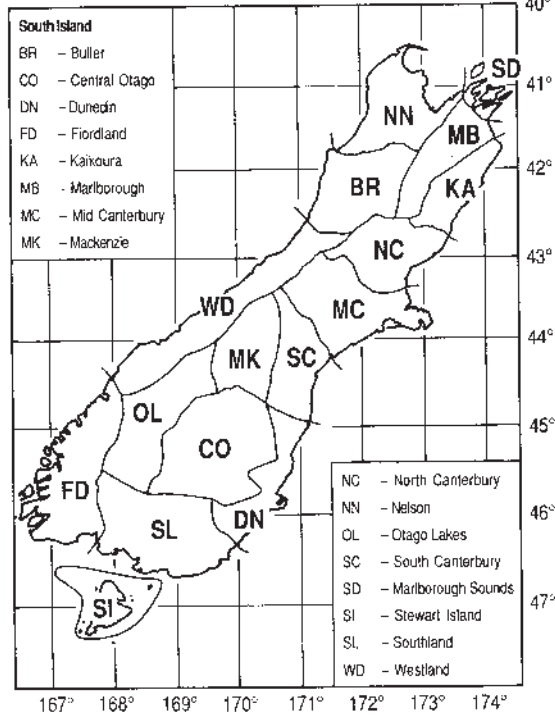
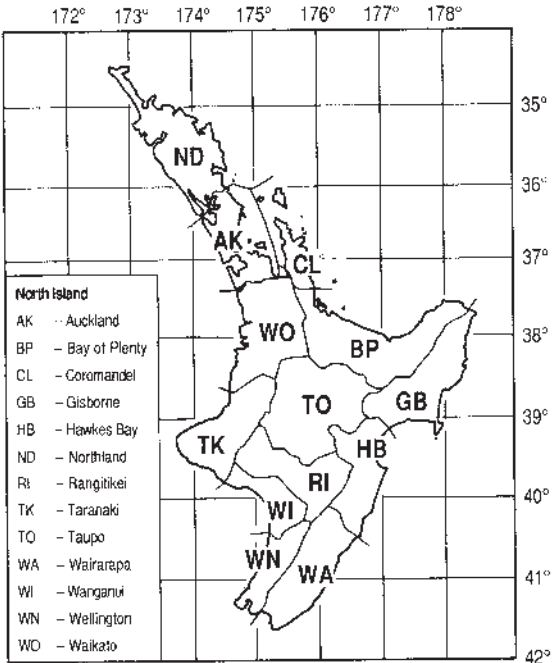
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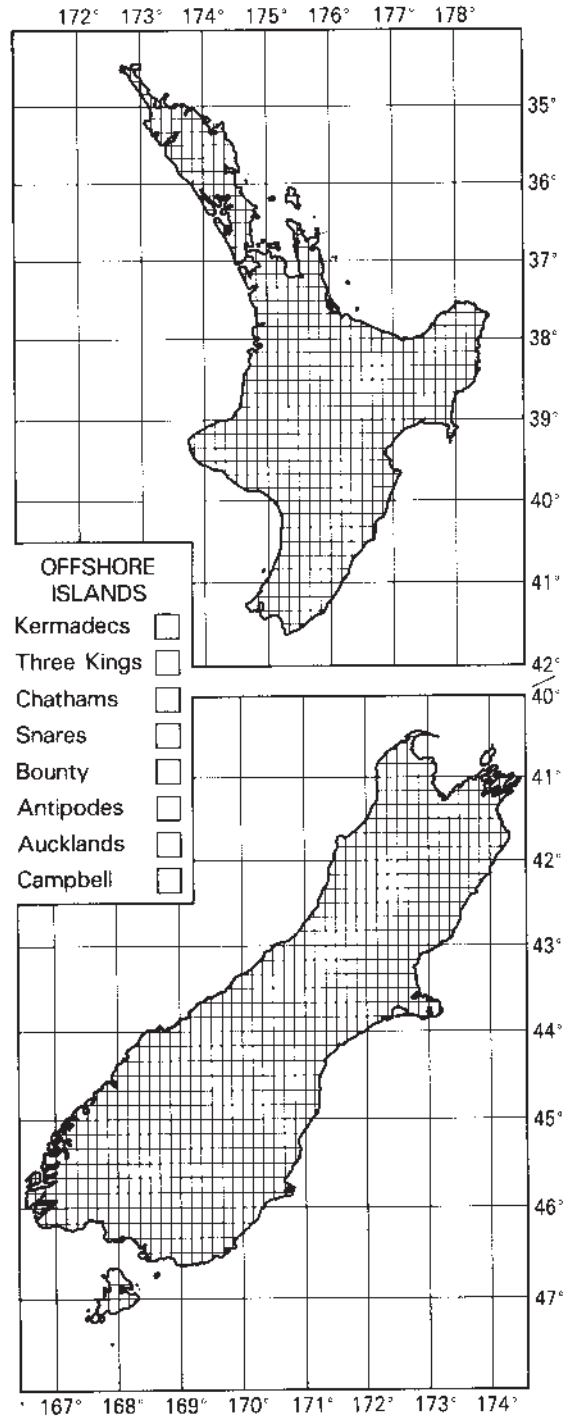
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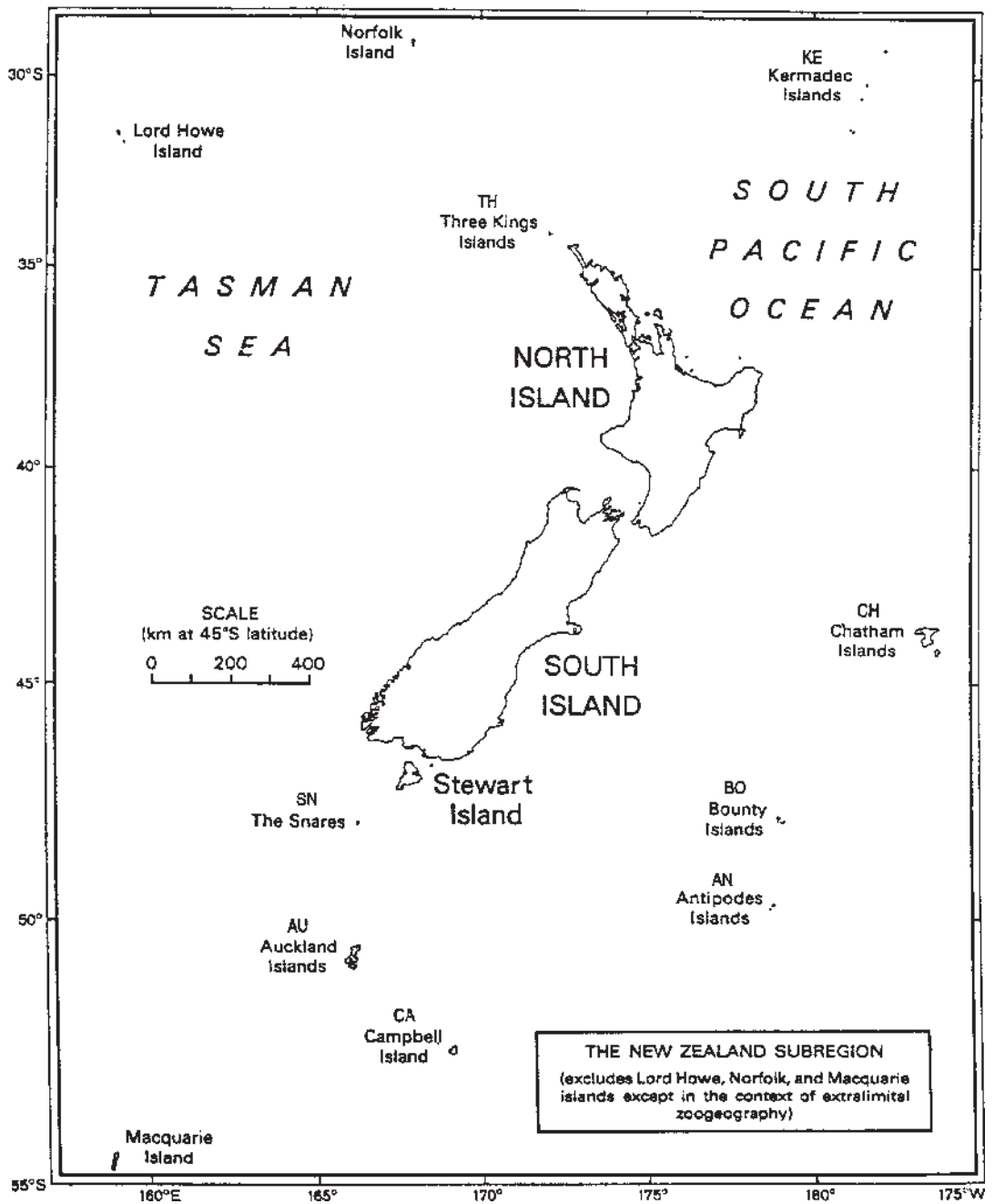
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Area codes and boundaries used to categorise specimen locality data (after Crosby *et al.* 1998)



Base-map for plotting collection localities; this may be photocopied without copyright release



The New Zealand subregion with area codes (from Crosby *et al.* 1998).

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