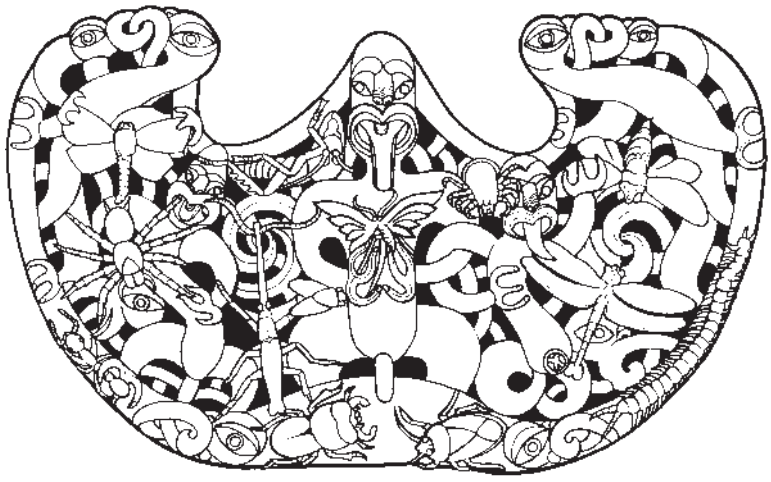

Fauna of New Zealand

Ko te Aitanga Pepeke o Aotearoa

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Alysiinae

(Insecta: Hymenoptera: Braconidae)

J. A. Berry
Landcare Research, Private Bag 92170, Auckland, New Zealand

Present address: Policy and Risk Directorate, MAF Biosecurity New Zealand
25 The Terrace, Wellington, New Zealand
Jo.Berry@maf.govt.nz

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POPULAR SUMMARY — HE WHAKARĀPOPOTOTANGA

Class **Insecta**

Order **Hymenoptera**

Superfamily **Ichneumonoidea**

Family **Braconidae**

Subfamily **Alysiinae**

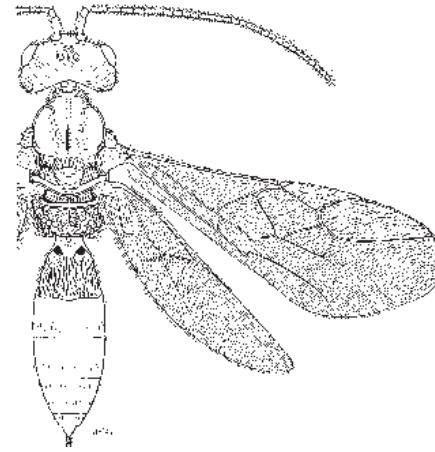

Illustration / Whakaahua: *Asobara ajbelli* sp.n. (Illustrator / Kaiwhakaahua: D. W. Helmore).

Alysiines

Alysiines are small braconid wasps that occur throughout the world. The subfamily is quite distinctive, and can be recognised by their large, outwardly-directed and non-overlapping mandibles, which they use to escape from the puparium (cocoon) of their host.

All alysiines are endoparasitoids (internal parasitoids) of flies. The adult female lays her eggs into the egg or larva of the host fly, and her progeny emerge from the host puparium. Alysiines can play an important role in the regulation of pest insects, and one species has been deliberately introduced for the biological control of blowflies.

Twenty-two species of alysiines are recorded. Of these, 13 are new species and four are described species from other countries that have not previously been recorded from New Zealand. About three-quarters of the species are endemic, that is, known from nowhere else in the world. The first alysiine braconid reported from New Zealand was *Alysia stramineipes*, which was described from the South Island in 1898, but this species has now been reclassified in a different braconid subfamily (Helconinae). Therefore the first true alysiine described from New Zealand was *Phaenocarpa antipoda*, described from the Chatham Islands in 1900.

The subfamily is divided into two tribes, the Dacnusini and the Alysiini. Almost all Dacnusini are parasitoids of leaf and stem mining dipterans, usually Agromyzidae, but Alysiini attack a wide range of dipteran hosts from at least 20 different families.

The New Zealand dacnusine fauna is depauperate, consisting of five species in three genera; one of which is introduced. The Alysiini are more speciose: 16 species in

(continued overleaf)

Alysiines

He wāpi iti, he pirinoa (braconid) ngā alysiines ka kitea i ngā tōpito katoa o te ao. He whānau iti motuhake tonu. E mōhiotia ai nā ō rātou kauae nui, ka toro whakawaho, kāore i noho inaki. Mā ēnei rātou e puta ake ai i te kōpaki o tō rātou rauropi papa.

Katoa ngā alysiines he pirinoa noho i roto (endoparasitoids) i te ngaro. Ka whānau te uwha pakeke i ana hua ki roto i te hua, i te torongū rānei a te ngaro ā, kua noho hei rauropi papa mōna. Ko āna uri kē ka puta mai i te kōpaki a te rauropi papa. He mahi nui ka tareka e ngā alysiines hei whakatina i ngā pepeke riha. Kua āta whakaurua mai tētahi momo hei whakatina koiora i te ngaro (blowflies).

Ko tōna rua tekau mā tahi nei ngā momo kua tuhia he kōrero. Tekau mā toru o ēnei, he momo hōu, e whā ko ngā momo kua whakaahuatia nō whenua kē, kāore he kōrero mō rātou i Aotearoa i mua mai. Āhua toru hauwhā nei o ngā momo nō konei ake, arā kāore e mōhiotia i ētahi atu wāhi o te ao. Ko te *Alysia stramineipes* te alysiine braconid i pūrongotia tuatahitia nō Aotearoa. I whakaahuatia ā-tuhi mai i Te Waipounamu i te tau 1898 engari kua whakarōpūtia ki tētahi whānau iti braconid rerekē hei Helconinae i nāianei. Nō reira ko te alysiine tūturu tuatahi i whakaahuatia ā-tuhi i Aotearoa mai i Wharekauri i te tau 1900, ko *Phaenocarpa antipoda*.

Ka wehea te whānau iti ki ngā iwi e rua, ko te Dacnusini me te Alysiini. Tata ko te katoa o ngā Dacnusini he pirinoa o ngā dipterans tomo rau, tomo tātā tipu, arā ko ngā

(haere tonu)

five genera are recorded, the majority of which (11 species) are not known outside of New Zealand. The European species *Alysia manducator* was introduced into New Zealand in 1926 for the control of blowflies. It attacks six species of calliphorids in New Zealand, including two endemic species. The other five introduced Alysiini are either European species, which probably came into New Zealand accidentally, along with their hosts; or in one case an Australian species.

Contributor **Jocelyn Berry** was born in India. She completed an MSc in Zoology at Auckland University in 1983 and a PhD in Systematic Entomology at Australian National University, Canberra, in 1993. She has worked for Lincoln University, Entomology Division DSIR, and until 2007 was employed as a scientist with Landcare Research, specialising in Hymenoptera. Jo has a special interest in biological control and was responsible for the Hymenoptera section of the New Zealand Arthropod Collection, as well as for the voucher collection arthropods introduced into New Zealand for biological control. She is now employed by Biosecurity New Zealand as Senior Advisor in the Plant Risk Analysis team.

Agromyzidae rawa atu. Engari anō ngā alysiini ka tahuri atu ki te maha noa atu o ngā rauropi papa dipteran mai i ngā whānau 20 ia nei.

He hūtoitoi te ao kararehe dacnusine o Aotearoa, e rima ngā momo i roto i ngā puninga e toru; kotahi he mea whakauru mai, he rāwaho. He kanorau ake ngā Alysiini: 16 ngā momo o ngā puninga e rima kua tuhia ngā kōrero, te nuinga o rātou (11 ngā momo) kāore e mōhiotia ana i waho o Aotearoa. Ko ngā momo *Alysia manducator* o Ūropi he mea whakauru mai ki Aotearoa i te tau 1926 hei whakatina i ngā ngaro (blowflies). E ono ngā momo o ngā calliphorids i Aotearoa ka whakaekea e rātou, me ngā momo toiwhenua e rua hoki. Ko ērā atu Alysiini e rima he rāwaho he momo rānei nō Ūropi, i tūpono noa mai pea ki Aotearoa me ō rātou rauropi papa; kotahi rānei i mōhiotia he momo nō Ahitereiria.

I whānau mai te kaituhi a **Jocelyn Berry** i Īnia. I tutuki tana MSc Zoology i Te Whare Wānanga o Tāmaki Makaurau i te tau 1983 me te PhD Systematic Entomology i Te Whare Wānanga ā-motu o Ahitereiria, i Kānapera, i te tau 1993. Kua mahi ia i Te Whare Wānanga o Lincoln, i te Wāhanga Mātai Pepeke (Entomology Division DSIR). Atu ki te tau 2007 he mātanga pūtaiao ia i Manaaki Whenua, ko ngā Hymenoptera te tino arotahinga. He aronga nui tōna ki te whakatina koiora. I riro ki a ia te wāhanga Hymenoptera o te Aitanga Pepeke o Aotearoa (New Zealand Arthropod Collection), me te kohikohinga angawaho i whakaurua mai ki Aotearoa mā te tīkiti, mō te kaupapa whakatina koiora. E mahi ana ia hei kaitohutohu matua i Whakamaru Koiora Aotearoa (Biosecurity New Zealand) i roto i te rōpū Tātari Mōreatanga Tipu (Plant Risk Analysis).125

Kupu Āwhina

hūtoitoi	depauperate
kanorau	speciose
kōpaki	puparium
rauropi papa	host
toiwhenua	endemic
Whānau iti	subfamily

Translation by **W. Te Rakihawea**
Ngaruawahia

ABSTRACT

Eight genera and 21 species of alysiine braconids are recorded from New Zealand. 13 are new species and 4 are described species not previously recorded from New Zealand. The 4 species previously known from New Zealand are: *Alysia manducator* (Panzer, 1799), *Aphaereta aotea* Hughes & Woolcock, *Asobara antipoda* Ashmead, and *Dacnusa areolaris* (Nees). *Alysia stramineipes* Cameron was excluded from Alysiinae by Wharton. The 13 new species are: *Asobara ajbelli*, *A. albiclava*, *Aspilota albertica, A. angusta*, *A. parecur*, *A. villosa*, *Chaenusa helmorei*, *Chorebus paranigricapitis*, *C. rodericki*, *C. thorpei*, *Dinotrema barrattae*, *D. longworthi*, and *D. philipi.* The 4 newly recorded adventive species are: *Aphaereta pallipes* (Say), *Asobara persimilis* (Prince), and *A. tabida* (Nees von Esenbeck). *Aspilota andyaustini* Wharton, a species described from Australia, is newly recorded from New Zealand. Each species treatment includes a full synonymy or reference to a full synonymy, a regional bibliography, a diagnosis, list of material examined, collection localities, list of known hosts, and bionomics. Appendices include host–parasitoid and parasitoid–host lists for New Zealand records, maps of collection localities, and details of all non-type material examined in this study

Keywords. Insecta, Hymenoptera, Braconidae, Alysiinae, New Zealand, classification, distribution, biology, fauna.

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CHECKLIST OF TAXA

CONTENTS

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INTRODUCTION

The hymenopteran fauna of the New Zealand biogeographic region is poorly known. Berry (2005) recorded approximately 670 described species and a further 900 or so undescribed or undetermined species based on material in collections and publications. Even though the general level of resolution is low to patchy, several hymenopteran families stand out as being particularly poorly documented — one of these is the ichneumonoid family Braconidae. A scant 100 or so species in the following fifteen subfamilies have been recognised: Agathidinae, Alysiinae, Aphidiinae, Betylobraconinae, Blacinae, Braconinae, Cheloninae, Doryctinae, Euphorinae, Helconinae, Hormiinae, Macrocentrinae, Opiinae, Rhyssalinae, and Rogadinae. This compares to a world total of 29 to 45 subfamilies, depending on the classification used (Wharton *et al.* 1997). Only one subfamily-level revision for New Zealand Braconidae has previously been published, that of the chelonines by Walker & Huddleston (1987). The nearest continental braconid fauna, that of Australia, is also patchily known (Austin *et al.* 2004).

The subfamily Alysiinae is a monophyletic group, easily recognised by their broad exodont, or outwardly directed, non-overlapping mandibles, which are used to assist in escape from the host puparium (Wharton 1984). The alysiines are the only parasitic Hymenoptera in New Zealand known to possess this character state, so placement to subfamily level is not problematic. In other biogeographic regions only a few relatively rare taxa outside the Alysiinae have exodont mandibles, for example, the eulophid genus *Exodontomphale* Bouèek, known from Australia and the Southern USA (Bouèek 1988), the proctotrupoid family Vanhorniidae, the ichneumonid genus *Idiogramma* Förster, and a few other Braconidae (Wharton & Austin 1991).

The subfamily is traditionally divided into two tribes, the Alysiini and the Dacnusini, which can be distinguished by the presence or absence, respectively, of the 2nd cubital cross-vein (r-m) (Wharton 2002). The placement of brachypterous or apterous genera can be difficult (Wharton 1980). However, the New Zealand fauna appears, unusually, to contain very few reduced-wing alysiine species, or even individuals (see discussion under *Asobara antipoda*). The New Zealand dacnusine fauna is depauperate, consisting of 5 species in 3 genera; 1 of which is introduced. The alysiines are more speciose: 16 species in 5 genera are treated in this publication, the majority of which (11 species) are not known outside of New Zealand.

History of New Zealand Alysiinae

In their 1991 catalogue, Valentine & Walker recorded just 5 alysiine species in 4 genera from New Zealand: *Alysia manducator* (Panzer), *A. stramineipes* Cameron, *Aphaereta aotea* Hughes & Woolcock, *Dacnusa areolaris* (Nees), and *Asobara antipoda* Ashmead (as *Phaenocarpa antipoda*).

Alysia stramineipes was described from the South Island in 1898, but according to Wharton (1986, p.455) the male holotype (the only specimen the description was based on), is a helconine (Braconidae: Helconinae: Diospilini). Thus the first alysiine described from New Zealand was *Asobara antipoda*, from the Chatham Islands in 1900. *Dacnusa areolaris* is an accidentally introduced species; the earliest collection year is 1921. *Alysia manducator* was introduced from the United Kingdom in the summer of 1926/1927 for the control of blow flies (Heath & Bishop 1989; see comments under species treatment). *Aphaereta aotea* was described from the North Island much later in 1976.

Berry (2005) recorded an additional 13 species in the following genera: *Alysia* Latreille, *Aphaereta* Förster, *Asobara* Förster, *Aspilota* Förster, *Chorebus* Haliday, *Chaenusa* Haliday, and *Dinotrema* Förster.

BIOLOGY

Alysiine braconids are endoparasitoids of cyclorrhapous dipterans, with oviposition into the egg or larva of the host and emergence from the host puparium. Wharton (2002) used this character, along with the possession of exodont mandibles, to define the subfamily. Almost all Dacnusini are parasitoids of leaf- and stem-mining dipterans, usually Agromyzidae (Wharton 2002), but Alysiini attack a wide range of dipteran hosts from at least 20 different families (Wharton 1980).

Table 1 summarises host records for alysiine braconids, excluding adventive species outside New Zealand (see Appendices 2–3 for details). Adventive parasitoids have been reared from both endemic and adventive hosts. Very little is known of the biology of endemic species. The intentionally introduced biological control agent *Alysia manducator* has been recorded from six calliphorid species in New Zealand, including two endemics.

FAUNAL RELATIONS

Twenty-one species in 8 genera of alysiine braconids are recorded from New Zealand in this revision. Of these, 15 species (around 70%) are not known outside New Zealand. None of the genera are endemic; the newly described *Chorebus rodericki* is difficult to place at the generic level, but is not placed in a new genus (for discussion see remarks under species treatment).

One species, *Aspilota andyaustini*, is shared with Australia. The remaining 5 species are adventive: 1 was deliberately introduced as a biological control agent (*Alysia manducator*, for the control of blowflies), and 4 were accidentally introduced (*Aphaereta pallipes*, *Asobara persimilis*, *A. tabida*, and *Dacnusa areolaris*).

Table 1: Host records and host and parasitoid biostatus for New Zealand Alysiinae (Hymenoptera: Braconidae). Biostatus: E= endemic; A=adventive; CB=biological control agent; Ex=extralimital record. Authorities for dipteran names given in text and in Appendices 2 and 3.

Alysiini	
Alysia manducator (CB)	
Calliphora quadrimaculata (E)	Calliphoridae
Calliphora stygia (A)	Calliphoridae
Calliphora vicina (A)	Calliphoridae
Chrysomya rufifacies (A)	Calliphoridae
Lucilia sericata (A)	Calliphoridae
Xenocalliphora hortona (E)	Calliphoridae
Aphaereta aotea (E)	
Lamprolonchaea brouniana (Ex)	Lonchaeidae
Musca domestica (Ex)	Muscidae
Musca fergusoni (Ex)	Muscidae
Musca vetustissima (Ex)	Muscidae
Neomyia australis (Ex)	Muscidae
Neomyia lauta (Ex)	Muscidae
Oxysarcodexia varia (A)	Sarcophagidae
Tricharaea brevicornis (Ex)	Sarcophagidae
Parasarcophaga misera (Ex)	Sarcophagidae
Asobara ajbelli (E)	
Indet. fanniid puparium	Fanniidae
Asobara antipoda (E)	
Calliphora hilli (A)	Calliphoridae
Calliphora stygia (A)	Calliphoridae
Asobara persimilis (A)	
Drosophila melanogaster (A)	Drosophilidae
Scaptomyza flava (A)	Drosophilidae
Asobara tabida (A)	
Drosophila neozelandica (E)	Drosophilidae
Dacnusini	
Chorebus rodericki (E)	
Ephydrella sp.	Ephydridae
Dacnusa areolaris (A)	
Chromatomyia syngenesiae (A)	Agromyzidae

MATERIALS AND METHODS

Format of descriptions

A generic diagnosis is given for each genus, with references. Species descriptions conform to the following format:

Name: Current valid name with authority; figure(s) and distribution map; original name and either a full synonymy or, for northern hemisphere species, a reference to a full synonymy; references to important works.

Holotype details: Sex and deposition are stated. If the type specimen has not been seen this is explicitly stated.

For new species, label details are quoted verbatim. All information on one label is enclosed by quotation marks, and the information on each line of the label is separated by a slash (/). Publication details are given for described species.

Paratypes: The number, sex, and deposition of all paratypes of newly described species are given. All label data are given for paratype specimens, in abbreviated form, including collector(s), date of collection, and hosts.

Non-type specimens: label data are given for non-type material, in abbreviated form, in Appendix 3.

Female: Females for all species are described or redescribed in the same format. Unless otherwise stated (e.g., n=4), 10 specimens were measured for quantitative characters. Microsculpture terms follow Harris (1979).

Male: Only character states which differ from those found in the female are listed.

Diagnosis: diagnostic character states for the species are given.

Material examined: the number of male and female specimens examined and details of their deposition are listed.

Collection localities: all specimens examined are grouped geographically by area code. Details of the New Zealand system of area codes are given in Crosby *et al*. (1998). Areas are cited geographically, i.e., north to south, for the North Island, South Island, offshore islands, and any extralimital material. The order of citation is as follows:

North Island: ND, AK, CL, WO, BP, TK, TO, HB, GB, RI, WI, WN, WA.

South Island: SD, NN, MB, KA, BR, WD, NC, MC, SC, MK, OL, CO, DN, FD, SL.

Offshore islands: KE, TH, CH, SN, BO, AN, AU, CA.

Biology: Data are given for the months of the year adults have been collected and the earliest recorded collection date. All host records are given.

Remarks: Any remaining points of interest are noted, along with derivation of the species epithet for newly described species.

Taxonomic features

Morphological terms generally follow Sharkey & Wharton (1997). The major anatomical terms used are defined briefly below and illustrated in Figures 1–4.

Head

Vertex: top of head.

Occiput: area between vertex and foramen.

Temple: upper part of gena posteriad the eye (measured in dorsal view).

OOL: (ocular-ocellar line) shortest distance between posterior ocelli and eye.

Face: front of head, merging dorsally with vertex and delimited ventrally by clypeal margin and genal carina.

Frons: part of the face between the median ocellus and the antennal sockets.

Face length: length from vertex to genal carina with head in full facial view.

Face width: measured at widest point with head in full facial view.

Clypeus: medial sclerite of the head lying immediately above the labrum.

Malar space: minimum distance between eye and mouth margin.

Anterior tentorial pits: pair of pits at lateral edges of clypeus, may extend all the way to eye margin. Wharton (1985, 2002) provides a thorough discussion of this and associated characters.

Malar groove: more or less vertical groove running from lower margin of eye to mouth margin.

Genal carina: carina delimiting postgena posterior to base of mandible.

Subocular sulcus: oblique groove running below eye.

Antennal toruli: antennal insertions or sockets, distance between toruli and clypeal margin is measured from ventral margin of torulus.

Antennal scrobes: more or less depressed area above toruli; may be margined dorsally by a weak or strong carina.

Antennae

Sensilla: sense organs occurring on some or all flagellar segments.

Antennal scape: 1st antennal segment, jointed in the socket (torulus) by the radicula (not counted as a segment).

Pedicel: 2nd antennal segment.

Flagellum: remaining segments of antenna; F1 = 1st flagellar segment (i.e. 3rd antennal segment). Number of antennal segments quoted in the descriptions includes the scape and pedicel.

Mesosoma (median part of the body, including the propodeum)

Pronotum: tergum of the prothorax.

Mesonotum: divided into several parts: anterior to transcutal line is the mesoscutum, in turn subdivided into a middle lobe and two lateral scapulae by the notauli, when present. Posterior to transcutal line are the scutellum and laterally the axillae.

Metanotum: divided into a medial dorsellum and dorsellar fovea and a lateral metanotal furrow.

Mesopleuron: lateral sclerite of the mesosoma.

Sternaulus: groove running from near the anterior margin of the mesopleuron to the ventral-posterior cornery; may be sculptured or smooth. Some workers do not accept the homology of this structure in ichneumonids and braconids, or even within different groups of braconids, and refer to this structure as the precoxal sulcus (Wharton 2002).

Propodeum: 1st segment of the abdomen, incorporated into mesosoma.

Wings

The terminology used for wing veins and cells in this work is a modified Comstock–Needham system, followed by Sharkey & Wharton (1997). Veins and cells are illustrated and labeled in figures 2–4.

Legs

From the base, the legs are made up of the coxa, the trochanter, the trochantellus, the femur, the tibia, and the tarsus.

Metasoma (all abdominal segments excluding the first (propodeum)

T1: 1st dorsal segment (tergite) of metasoma.

S1: 1st ventral segment (sternite) of metasoma.

Genitalia: the length of the ovipositor is measured from the end of the hypopygium.

INSTITUTIONS

AMNZ Auckland Museum, Auckland, New Zealand
BMNH The Natural History Museum, London, England
MONZ Museum of New Zealand, Te Papa Tongarewa, Wellington, New Zealand
NZAC New Zealand Arthropod Collection, Auckland, New Zealand
RMNH Nationaal Natuurhistorisch Museum, Leiden, Netherlands
TAMU Texas A&M University Insect Collection, College Station, Texas, U.S.A.

DIAGNOSIS OF BRACONIDAE (after Wahl & Sharkey 1993)

Vein 2m-cu of forewing nearly always absent (nearly always present in Ichneumonidae); vein 1RS+M of forewing often present (always absent in Ichneumonidae); vein 1r-m of hindwing usually basal to separation of R1 and Rs (opposite or apical in Ichneumonidae); metasomal tergite 2 fused with 3, though 2ndarily flexible in Aphidiinae (most Ichneumonidae with flexible suture).

DIAGNOSIS OF ALYSIINAE (after Wahl & Sharkey 1993)

Alysiines are cyclostome braconids, that is, the ventral portion of the clypeus is recessed, and together with the concave labrum, forms a rounded depression above the mandibles. The condition of the mandibles is exodont, or outwardly directed and non-overlapping. The epicnemial and occipital carinae are absent; hind wing vein 2m-cu is often present.

Key to genera of Alysiinae occurring in New Zealand

1 Forewing with 3 submarginal cells (Fig. 2, 13, 30, 59) . ...Alysiini… 2

—Forewing with 2 submarginal cells (Fig. 74, 82) .... …Dacnusini… 6

2(1) 1st submarginal cell confluent with 1st discal cell ((RS+M)a absent) (Fig. 13, 19)...(p. 13)… ***Aphaereta***

—1st submarginal cell separated from 1st discal cell ((RS+M)a present) (Fig. 2, 30, 59) 3

3(2) F1 shorter than F2 (Fig. 36) .... …(p. 16)... ***Asobara***

—F1 equal to or longer than F2 (Fig. 5) 4

4(3) Forewing stigma broad, well developed (Fig. 2) .... …(p. 12)… ***Alysia***

—Forewing stigma linear (Fig. 52, 87) ..... … 5

5(4) Anterior tentorial pit extended to eye (Fig. 60–61) . ..... …(p. 21)… ***Aspilota***

—Anterior tentorial pit not extended to eye (Fig. 91, 98) ..... …(p. 33)… ***Dinotrema***

6(2) Radius arising from extreme base of forewing stigma (Fig. 82) ..... …(p. 32)… ***Dacnusa***

—Radius arising near middle of forewing stigma (Fig. 74) ..... … 7

7(6) Eyes bare (Fig. 75) ..... …(p. 29)… ***Chorebus***

—Eyes setose (Fig. 72) ..... …(p. 28)… ***Chaenusa***

Alysia Latreille, 1804

Type species: *Ichneumon manducator* Panzer, 1799, by monotypy

Generic diagnosis. 1st flagellomere equal to or longer than 2nd (Wharton 1986, p.459 states the 1st flagellomere is shorter than the 2nd); mandible with 3 well-defined teeth; sternaulus sculptured; propodeal sculpture difficult to define and somewhat variable within species; forewing r-m present (3 submarginal cells, 2nd submarginal cell short), 2RS and (RS+M)a both present, r arising from or distad middle of broad discrete stigma, 1m-cu arising basad (antefurcal) or distad (postfurcal) 2RS, rarely interstitial, (RS+M)b present or absent, 1st subdiscal cell open or closed; tergites 2 and 3 unsculptured (after Wharton 1984, 1986, 1997).

Remarks. Most species of *Alysia* occur in the northern part of the Northern Hemisphere (Wharton 1986). Wharton (1986) revised the genus *Alysia*, including 42 species, which he divided into 7 species-groups in 2 subgenera, *A.* (*Alysia*) and *A*. (*Anarcha*). *A.* (*Alysia*) has a dorsal subapical notch on the ovipositor. The *manducator* species-group, in the subgenus *A*. (*Alysia*), is defined by possessing an enlarged propodeal spiracle (diameter more than 0.2× the distance between spiracle and anterior margin of propodeum) and having the total length of the ovipositor less than or equal to the length of the mesosoma.

Alysia (*Alysia*) *manducator* (Panzer)

Fig. 2, 5–11, Map p. 85.

Ichneumon manducator Panzer, 1799: 72
Alysia stercoraria Latreille, 1805: 177 (syn. Latreille 1805)
Alysia apicalis Curtis, 1826: 141 (syn. Curtis 1837)
Alysia similis Curtis, 1826: 141 (syn. Curtis 1837)
Alysia curtungula Thomson, 1895: 2292 (syn. Wharton 1986)
Alysia bucephala Marshall, 1898: 242 (syn. Wharton 1986)
Alysia manducator: Marshall (1894: 375–376): redescription. Shenefelt (1974: 947–949): literature. Wharton (1986: 498–499): diagnosis and literature. Miller (1927a, b): regional introduction and establishment. Heath & Bishop (1989: 381–386): regional history and biology.

Description. **Female**.

Forewing length 2.9–5.4 mm.

Colour. Scape medium to dark brown, pedicel and base of F1 light to medium brown, rest of antennae dark brown to black; head dark brown to black; mandibles medium to dark brown, apices of teeth dark brown; mesosoma, propodeum and metasoma very dark brown to black; coxae and legs orange-brown, legs darkening apically; wings hyaline, tegulae dark orange-brown.

Antennae inserted about centre of face; F1 1.2× length of F2; 22–32 antennal segments (n=10); antennal sockets separated by a distance greater than their own diameter.

Head (Fig. 6). Temple about as long as eye in dorsal view; face broader than long, eye in lateral view convex. Eye longer than wide, with very short setae, much shorter than one ommatidium. Vertex smooth, with scattered short setae; face rugose below and immediately above antennal sockets, smooth above; lower face with close, moderately long setae, longer in malar area and on clypeus, mandibles basally covered in dense close setae. Clypeus protruding, wider than long. Mandibles short (Fig. 7), around 1.4× longer than apical width, wider at apex than at base; teeth 1 and 3 same length, 1 slightly smaller than 3; tooth 1 bluntly pointed and not acute, tooth 3 slightly rounded; ventral ridge well developed, diagonal ridges weak, slightly stronger on tooth 3; tooth 2 long and wide, with a protuberance on upper surface; outer surface medially rugose and covered by longish even setae. Anterior tentorial pits reaching about 0.4× distance from clypeal edge to eye. Malar space tiny, much smaller than basal width of mandible.

Mesosoma (Fig. 8). Pronotum sculptured; mesoscutum smooth except rugose at bases of notaulices; notauli present and deep for about anterior 1/3, sculptured; mesoscutum with well-defined, elongate midpit; sternaulus complete, wide anteriorly and narrow posteriorly, sculptured; scutellum flattish, scutellar fovea 2-pitted, deep and sculptured; metanotum smooth, not produced. Mesoscutum with patches of short setae anteriorly at bases of notauli, medially and posteriorly with several pairs of short setae; scutellum covered in close short setae posteriorly, anteriorly paired; all setae short. Propodeum (Fig. 9) with longitudinal medial carina present only anteriorly, raised and keel-like in lateral view; anterior transverse carina present medially; sculpture heavily rugose; spiracles large, diameter of opening about 0.4× distance from anterior margin; setose laterally, setae short.

Legs. Hind coxae setose on ventral surface, bare dorsally except for a basal patch.

Wings (Fig. 2). Forewing stigma broad, about 1/2 maximum length of marginal cell, r arising slightly distad middle; marginal cell short, 3RSb ending basad wing tip; 1CU 1.5–1.6× longer than 1m-cu; 1m-cu antefurcal, (RS+M)b spectral; RS+M present; 2nd submarginal cell short (higher than wide), 2RS 1.2–1.4× length of 3RSa; 1st subdiscal cell present, closed. Hindwing subbasal cell slightly more than 1/2 length of basal cell (M+CU about as long as 1M).

Metasoma (Fig. 10, 11). 7 visible tergites, with setae arranged in rows at posterior of tergite. T1 slightly longer than apical width; longitudinally striate, with 2 longitudi-

nal carinae anteriorly, merging medially and defining a raised medial area which is slightly rugose posteriorly (Fig. 10); deep dorsope at anterior margin of T1; ovipositor short, not extending much past end of metasoma in dorsal view; sheaths with regularly spaced, moderately long setae along the ventral surface.

Male. Forewing length 2.7–5.1 mm. Similar to female; antennae longer, 32–39 segments (n=10); setae on flagellar segments shorter but denser. Gaster narrower and more cylindrical.

Diagnosis. The combination of the following character states distinguishes *Alysia manducator* from any other alysiine braconid known from New Zealand: 2RS and (RS+M)a both present, r arising from or distad middle of broad discrete stigma; 1st flagellomere longer than 2nd, relatively large propodeal spiracle.

Material examined. 136 specimens (77♀, 59♂; NZAC) plus 3♀, 1♂ (AK, TK, WN, SL; MONZ); 2♀ (CL, TK; AMNZ) — see Appendix 3 for details of specimens examined.

Collection localities. North Island: AK, WO, TO, HB, WI, WN. South Island: SD, NN, KA, MC, MK, DN, SL. England.

Biology. Adults have been collected throughout the year; the earliest collection year seen is 1927 (label data "New Zealand"), the earliest collection year with regional data is 1928 (Nelson). Wharton (1984), in a critical review of alysiine host records, cites confirmed records of *Alysia manducator* from calliphorids, muscids, and sarcophagids in carrion.

Specimens of *A. manducator* in NZAC have been reared from pupae of *Calliphora vicina* Robineau-Desvoidy (as *C. erythrocephala* Meigen), *C. quadrimaculata* (Swederus), and *Xenocalliphora hortona* (Walker). Miller (1927a) also records the following hosts: *Calliphora stygia* (Fab.) (as *C. laemica* White), *Chrysomya rufifacies* (Macquart), and *Lucilia sericata* (Meigen). The recorded hosts of *A. manducator* in New Zealand are all calliphorids, although Heath & Bishop (1989, p.383) stated, apparently wrongly, that Valentine (1967) recorded muscid and sarcophagid hosts from New Zealand. *Calliphora quadrimaculata* and *X. hortona* are both endemic, the remaining species are either Australian or cosmopolitan.

Remarks. *Alysia manducator* was introduced into New Zealand from England in 1926 for the control of blowflies (Miller 1927b), and was well established by the mid 1930s (Heath & Bishop 1989). The consignments which were imported were found to attack larvae of three adventive calliphorid species: *Lucilia sericata*, *Calliphora stygia*, and *Chrysomya rufifacies* (Miller 1927b). *Alysia manducator* established readily and, in addition to the 3 hosts recorded by Miller, has been reared from the adventive *Calliphora vicina* and the 2 endemic species *C. quadrimaculata* and *Xenocalliphora hortona*. Heath & Bishop (unpublished) carried out a flystrike survey based on random collections, and the results suggested that *A. manducator* is not a common calliphorid parasitoid, but its impact on calliphorid populations has not been systematically researched (Heath & Bishop 1989).

Alysia manducator is distributed throughout the Palaearctic, reaching North Africa, Mongolia, China, and Taiwan (Wharton 1986) and also in Uruguay, South Africa, Australia, and New Zealand (Valentine & Walker 1991). The specimens collected in Britain are paler in colour than New Zealand-collected specimens, particularly the wings and antennae; I attribute these differences to post-mortem changes, as the specimens have the appearance of ethanol-stored material. Wharton (1986) pointed out that the 3rd and 4th flagellomeres of *A. manducator* have only 2 rows of hairs in lateral view. I have found this to vary somewhat.

"*Alysia*" *stramineipes* Cameron

Alysia stramineipes Cameron, 1898: 39

Holotype: male, BR, nr. Greymouth; BMNH.

This species is excluded from *Alysia*, indeed from the subfamily, by Wharton (1986), who states (p.455) "*Alysia stramineipes* Cameron, holotype ♂ in BMNH, belongs to the Diospilini" (Subfamily Helconinae).

Aphaereta Förster, 1862

Type species: *Alysia cephalotes* Haliday, 1833 by monotypy and original designation

Generic diagnosis. 2nd flagellomere distinctly longer than 1st. Mandible hairy, with 3 well-developed teeth, ventral and diagonal ridge strong. Sternaulus present but variable. Propodeal spiracle minute. Stigma of forewing narrow, merging imperceptibly with R1 in most species; forewing RS+M absent; 2RS may be absent (extralimital species), if present shorter than 3RSa; 1st subdiscal cell open, with most of 2-1A and 2cu-a missing; 2CU interstitial or nearly so. Hind wing with m-cu absent; when cu-a present, r-m and M+CU much shorter than 1M. Ovipositor sheath with moderately long setae (after Wharton (1977, 2002)).

Key to the species of *Aphaereta* from New Zealand (females and males)

1 T1 same colour as rest of metasoma, not contrasting markedly; antennae not more than 1.2× length of head and body combined .... …(p. 14)… ***aotea*** Hughes & Woolcock

—T1 lighter in colour than and contrasting with rest of metasoma, from orange-brown to orange-yellow; antennae more than 1.3× length of head and body combined ..... …(p. 15)… ***pallipes*** (Say)

Aphaereta aotea Hughes & Woolcock

Fig. 12–18; Map p. 85

Aphaereta aotea Hughes & Woolcock, 1976: 191

Type data. **Holotype**: female. Label details: "New Zealand/ Auckland/ 12.3.73" and "*Aphaereta aotea*/ Hughes & Woolcock" and "HOLOTYPE" and "NZAC04000298" and "NZAC04000404" (NZAC). **Allotype**: male. Label details: "New Zealand/ Auckland/ 12.3.73" and "*Aphaereta aotea*/ Hughes & Woolcock" and "ALLOTYPE" (NZAC).

Description. **Female**.

Forewing length 1.8–2.8 mm.

Colour. Antennal scape and pedicel yellow-brown, flagellum medium brown; head dark brown, mandibles light orange-brown, apices of teeth dark brown; mesosoma, propodeum, and T1 very dark red-brown to black, darker specimens with contrasting yellow coxae; coxae yellow to yellow-brown, legs slightly darker, darkening apically; rest of metasoma from same colour as T1 to mid brown; wings hyaline, tegulae brown.

Antennae. Short, shorter than combined length of head and body; 16–20 antennal segments (n=10); F1 0.6–0.7× length of F2; setae on flagellar segments longer than width of segment; antennal sockets separated by a distance greater than their own diameter.

Head (Fig. 14). Marked dimple in middle of ocellar triangle; temple short, eye in dorsal view longer than or equal to temple; face broader than long, eye in lateral view convex. Eye wider than long, with moderately long setae, longer than one ommatidium; vertex bare; face, clypeus, and mandible with long scattered setae, longer and denser on clypeus. Clypeus wider than long. Mandibles (Fig. 15) nearly twice as long as apical width and slightly wider at apex than at base; ventral ridge strong; teeth 1 and 3 about same length, both bluntly pointed, tooth 1 slightly larger; diagonal ridge present on tooth 3; tooth 2 long and acutely pointed. Surface weakly rugose medially, base smooth; a few setae medially and a row ventrally. Malar space tiny. Anterior tentorial pits reaching about 0.4× distance from clypeal edge to eye.

Mesosoma (Fig. 16). Notauli present, sculptured; mesoscutum without a midpit; sternaulus present, sculptured but incomplete; scutellum convex, scutellar fovea 2-pitted. Mesoscutum with patches of short setae anteriorly at bases of notauli, medially and posteriorly with 1 to 2 pairs of setae; scutellum with several pairs of long setae. Metanotum with midrib. Propodeum (Fig. 17) with longitudinal medial carina present, weakly diverging posteriorly to form small narrow areola; anterior transverse carina present in larger specimens, absent in smaller specimens; sculpture variable from rugose posteriorly to reasonably smooth, anterior field usually smooth; smaller specimens tend to be markedly less sculptured. Propodeal spiracle small, diameter of opening about 0.15× distance from anterior margin.

Legs. Hind tibiae setose on inner surface; tibial claws long and slender; hind coxae without dorsal setal crest.

Wings (Fig. 13). Forewing stigma grading into R1; 1CU shorter than 1m-cu; RS+M absent; 2nd submarginal cell wider than high, longer and thinner in smaller specimens; 2RS slightly less than 0.5× length of 3RSa; 1st subdiscal cell not closed. Hindwing subbasal cell indistinct; M+CU and 1M faint; setal fringe along posterior margin of hindwing basally longer than maximum width of wing.

Metasoma. Sculpture of T1 (Fig. 18) rugose to striate to bicarinate with some rugosity inside carinae but otherwise fairly smooth; sparsely setose; deep dorsope at anterior margin of T1. Ovipositor long, longer than metasoma; sheaths with offset, regularly spaced long setae along most of length.

Male. Forewing length 1.2–2.0 mm. Similar to female; 21–25 antennal segments (n=9); antennae distally lighter.

Diagnosis. T1 same colour as mesosoma, not contrasting markedly with rest of metasoma; antennae not more than 1.2× length of head and body combined.

Material examined. 972 specimens (956♀, 16♂; NZAC); plus 10♀ (CL, BP/WO; AMNZ); 15♀, 1♂ (CL, TK, WI; MONZ) — see Appendix 3 for details of specimens examined.

Collection localities. North Island. ND, AK, BP, CL, WO, TO, GB, HB, TK, WI, WN. South Island: SD, NN, BR, MB, WD, MC, CO, OL.

Biology. Adults (both sexes) have been collected in all months except August; the earliest collection year seen is 1969. *Aphaereta aotea* was introduced from New Zealand to Australia in 1975 to control dung-breeding flies (Hughes & Woolcock 1976) and became established (Hughes & Woolcock 1978, Wharton 2002). It is odd that there are no

specimens in NZAC collected prior to 1969, particularly since it is a relatively commonly collected species, with almost 1,000 mounted specimens in NZAC alone. *Aphaereta aotea* is gregarious and specimens in NZAC have been reared from larvae and pupae of *Oxysarcodexia varia* (Walker) (as *Sarcophaga milleri* Walker, *Tricholioproctia milleri* (Johnston & Tiegs), and *Hypopygia varia* (Walker)) (Sarcophagidae). Less specific records are from maggots on fly-blown lamb and from larvae in cattle faeces.

Literature records (Table 2) are mainly extralimital from Australia, where *A. aotea* was introduced in 1975 to control *Musca vetustissima* Walker. The results were not encouraging (Heath & Bishop 1989).

Table 2: Extralimital host records for *Aphaereta aotea* taken from literature. F= field record; L=laboratory record. Authorities for dipteran names given in text and in Appendices 2 and 3.

Host Species	Family	Field/Lab records
Lamprolonchaea brouniana	Lonchaeidae	L
Musca domestica	Muscidae	L
Musca fergusoni	Muscidae	L
Musca vetustissima	Muscidae	F, L
Neomyia australis (as *Orthellia*)	Muscidae	F
Neomyia lauta (as *Orthellia*)	Muscidae	L
Tricharaea brevicornis	Sarcophagidae	F, L
Parasarcophaga misera (as *knabi* (Parker))	Sarcophagidae	L

Aphaereta pallipes (Say)

Fig. 19–21; Map p. 85

Alysia pallipes Say, 1829: 77

Aphaereta pallipes: Cresson 1887: 231. Shenefelt (1974: 960–962): complete synonymy, literature.

Description. **Female**.

Forewing length 1.9–2.7 mm.

Colour. Antennal scape and pedicel yellow, flagellum medium brown; head dark brown, mandibles light to dark orange-brown, apices of teeth dark brown; mesosoma and propodeum dark red-brown; coxae pale to yellow, legs yellow; T1 yellow to yellow-brown, contrasting with dark brown metasoma; wings hyaline, tegulae light brown.

Antennae. Long, longer than head and body; 21–25 antennal segments (n=9); F1 0.63–0.70× length of F2; setae on flagellar segments longer than width of segment; antennal sockets separated by a distance slightly greater than their own diameter.

Head (Fig. 20). Marked dimple in middle of ocellar triangle; temple short, eye in dorsal view longer than temple; face broader than long, eye in lateral view convex. Eye wider than high, with moderately long setae, longer than one ommatidium; vertex bare, face, clypeus and mandible with long scattered setae, denser on clypeus. Clypeus wider than high. Mandibles almost twice as long as apical width and slightly wider at apex than at base; ventral ridge strong; teeth 1 and 3 about same length, tooth 1 slightly larger and bluntly rounded; tooth 3 bluntly pointed and with a strong diagonal ridge; tooth 2 long and acutely pointed; surface weakly rugose, teeth smooth. Malar space tiny. Anterior tentorial pits reaching about 0.3× distance from clypeal edge to eye.

Mesosoma. Notauli present only very anteriorly, sculptured; mesoscutum without a midpit; sternaulus present, sculptured but incomplete; scutellum convex, scutellar fovea 2-pitted. Mesoscutum with patches of short setae anteriorly at bases of notauli, medially and posteriorly with 1–2 pairs of setae; scutellum with 1 pair of long setae. Metanotum with midrib, indistinct on small specimens. Propodeum with longitudinal medial carina present, weakly diverging posteriorly; anterior transverse carina present medially; sculpture mostly smooth.

Legs. Hind tibiae setose on inner surface; tibial claws long and slender; hind coxae without dorsal setal crest.

Wings (Fig. 19). Forewing stigma grading into R1; 1CU shorter than 1m-cu; RS+M absent; 2nd submarginal cell wider than high, 2RS slightly less than 1/2 length of 3RSa; 1st subdiscal cell not closed. Hindwing subbasal cell indistinct; M+CU and 1M faint; setal fringe along posterior margin of hindwing basally longer than maximum width of wing.

Metasoma. T1 bicarinate (Fig. 21), rugose medially; sparsely setose; deep dorsope at anterior margin of T1. Ovipositor long, longer than metasoma; sheaths with offset, regularly spaced long setae along most of length.

Male. Forewing length 1.8–2.2 mm Similar to female; 24 antennal segments (n=1); F1 0.75× length of F2; antennae distally lighter.

Diagnosis. T1 lighter in colour than mesosoma, from orange-brown to orange-yellow; contrasting with rest of metasoma; antennae more than 1.3× length of head and body combined.

Material examined. 26 specimens (24♀, 2♂; NZAC; 1♀ AMNZ) — see Appendix 3 for details of specimens examined.

Collection localities. *A. pallipes* has been collected from three localities in Auckland. The 1st known specimens were collected over the summer of 1980/81, in the months of October, December, January, February, and March. One more female specimen (deposited in AMNZ) has been collected by Stephen Thorpe from Tahuna Torea Reserve on the Tamaki River in April 2005, suggesting that the species has persisted for 25 years and is established.

Biology. Wharton (1984) cites confirmed records of *Aphaereta pallipes* from the dipteran families Anthomyiidae, Chloropidae, Muscidae, Otitidae, Sarcophagidae, Scathophagidae, Sciomyzidae, and Tephritidae (rare) as well as from Orthoptera and Lepidoptera via dipteran primary hosts. Host habitats include plant roots, dung, dead molluscs, fruit, and bulbs. Specimens in NZAC collected in Vanuatu are labelled as reared from pupae of the fruit-piercing moth, *Eudocima fullonia* (Clerck) (as *Othreis fullonia*) (Noctuidae). This may be a case of facultative hyperparasitism via a sarcophagid, as discussed by Wharton (2002: 25). There are no host records for New Zealand. Wharton (2002) notes an Australian species with an orange petiole, which he says is essentially identical to *A. pallipes* but verification needs further study.

Asobara Förster, 1862

Type species: *Alysia tabida* Nees von Esenbeck, 1834, by monotypy and original designation

Generic diagnosis. 2nd flagellomere distinctly longer than 1st. Malar space short; mandibles simple, with 3 well-developed teeth, ventral and diagonal ridges well-developed. Sternaulus long, extending beyond middle of mesopleuron; crenulate. Forewing: r-m present, 2RS and RS+M both present, stigma narrow, merging imperceptibly with R1; 2RS shorter than 3RSa; 1m-cu arising basad (antefurcal) 2RS, rarely interstitial; 1st subdiscal cell broadly open, 2cu-a and most of 2-1A absent; tergites 2 and 3 unsculptured. Hind wing with m-cu absent; r-m and M+CU much shorter than 1M. Ovipositor longer than hind tibia, sheath sparsely setose over whole length (after Wharton 1980, 2002).

Remarks. *Asobara* is one of the most commonly collected alysiine genera in Australia, after *Aspilota* and *Dinotrema* (Wharton 2002). It is similarly common in New Zealand, though apparently not as speciose as *Aspilota*. The only species of *Asobara* recorded from New Zealand prior to this study was *Asobara antipoda* Ashmead, as *Phaenocarpa antipoda* by Valentine & Walker (1991). Two introduced species, *A. persimilis* Prince and *A. tabida* Nees are newly recorded from New Zealand and two new species (*A. ajbelli* and *A. albiclava*) are described.

Key to the species of *Asobara* from New Zealand (females and males)

1 Propodeal spiracles greatly enlarged, diameter greater than distance to anterior edge of propodeum (Fig. 40) (mesoscutal midpit present) ....(p. 18)… ***antipoda*** (Ashmead)

—Propodeal spiracles not greatly enlarged, diameter several times less than distance to anterior edge of propodeum (Fig. 27, 34, 45, 50) 2

2(1) Mesoscutal midpit absent (Fig. 44) ....(p. 19)… ***persimilis*** Prince

—Mesoscutal midpit present (Fig. 26, 33) 3

3(2) Propodeum with complete anterior transverse carina (Fig. 50) .... …(p. 20)… ***tabida*** (Nees von Esenbeck)

—Propodeum without complete anterior transverse carina (Fig. 27, 34) 4

4(3) Apical antennal segments pale or white, in contrast with rest of flagellum .... …(p. 17)… ***albiclava*** sp.n.

—Apical antennal segments broadly concolorous with rest of flagellum ..... …(p. 16)… ***ajbelli*** sp.n.

Asobara ajbelli sp.n.

Fig. 22–29; Map p. 85

Type data. **Holotype**: female. Label details: "NEW ZEALAND ND/ Poor Knights Is/ Aorangi I/ Crater Bay/ 11-16 Nov 1981" and "J.S. Dugdale/ Malaise trap in/ coastal scrub" and "HOLOTYPE/ Asobara/ ajbelli/ Berry" and "NZAC04010214". **Paratypes** (44♀, 3♂, NZAC; 2♀, RMNH): **ND**: 43♀, Poor Knights Is, Aorangi I, Crater Bay, 11–16 Nov 1981, J. S. Dugdale, Malaise trap in coastal scrub; 1♀, Poor Knights Is, Aorangi, Crater Bay, 11 Nov 1981, J. C. Watt; 1♀, Poor Knights Is, Tawhiti Rahi, Dec 1980, C. F. Butcher, sweeping; 1♀, Poor Knights Is, Aorangi, Crater Bay, 16 Nov 1981, J. C. Watt, nest of *Eudyptula minor*, 81/135; 1♂, Poor Knights, Tawhiti Rahi, 2–10 Dec 1980, M. F. Tocker, Pan trap in native bush; 1♂, Waipoua SF, Te Matua Ngahere, 4 Feb 1975, A. K. Walker, sweeping undergrowth in *Agathis* forest; 1♂, Chicken Is, Whatupuke I, 28 Oct 1968, J. C. Watt, Litter 68/155.

Description. **Female**.

Forewing length 1.80–3.12 mm.

Colour. Antennal scape and pedicel yellow-brown, flagellum medium brown, excepting sometimes basal segments paler; face medium brown, vertex dark red brown, genae yellow-brown, and mandibles yellow-brown with apices of teeth dark brown; mesoscutal disc orange to dark brown, with yellow to rich brown notaular or lateral areas; scutellum rich brown laterally, may be darker medially; propodeum rich to dark brown, propleuron and anterior lateral pronotum medium brown, remaining lateral mesosoma dark brown; T1 yellow to medium brown, rest of gaster medium to dark brown; coxae very pale to pale yellow, legs yellow-brown; wings hyaline, tegulae pale.

Antennae. Length variable, 20–25 antennal segments (n=10); F1 0.5–0.6× length of F2; area between antennal insertions and top of compound eye smooth or striate; setae on flagellar segments longer than width of segment; antennal sockets separated by a distance about equal to their own diameter.

Head (Fig. 24). Eye with scattered setae, longer than 1 ommatidium; face, clypeus, and mandible with scattered long setae. Mandibles (Fig. 25) about 1.8× longer than apical width, about the same width at apex as base; ventral ridge strong; tooth 1 slightly larger than tooth 3, right angled with rounded point; diagonal ridges present on teeth 1 and 3, stronger on tooth 3; tooth 2 long and bluntly to acutely pointed; tooth 3 slightly more pointed than tooth 1; surface smooth at base and sculptured medially to sculptured over whole surface. Anterior tentorial pits reaching about 0.3–0.4× distance from clypeal edge to eye; lateral margin of pit extended slightly under eye (Fig. 25).

Mesosoma (Fig. 26). Notauli present, not reaching tegulae, sculptured; mesoscutum with elongate teardrop-shaped midpit; disc sparsely setose anteriorly and with 2–5 pairs of setae along notaular traces posterior of notauli. Scutellum slightly convex, scutellar fovea 2-pitted, smooth to sculptured; metanotum weakly sculptured medially. Propodeum (Fig. 27) with anterior transverse carina present anteriorly, diverging weakly to form narrow areolet, which may be broken or obscured by coarse rugosity, anterior transverse carina weak to absent; spiracles not enlarged, surrounded by rugose carina which extends to posterior boundary.

Wings (Fig. 23). Forewing stigma grading into R1; 1CU slightly shorter or slightly longer than 1m-cu; 1m-cu antefurcal, (RS+ M)b depigmented; 2nd submarginal cell wider than high, parallel-sided to somewhat narrowed distally (cf. Fig. 22 to Fig. 23), 2RS around 0.4–0.5× length of 3RSa; 1st subdiscal cell incomplete, 2cu-a absent, 2-1A incomplete. Hindwing subbasal cell 0.2–0.3× length of basal cell.

Metasoma. T1 bicarinate anteriorly, with deep dorsope, about 1.4× longer than apical width, medially smooth to rugose, with additional longitudinal carinae and other longitudinal sculpture, posteriorly smooth to rugose (Fig. 28–29). Ovipositor variable in length, from shorter than metasoma to longer; sheaths with long, regularly spaced setae.

Male. Forewing length 1.78–3 mm. Antennae longer than female, 22–25 (n=10) antennal segments. Gaster more cylindrical than in female; sculpture on T1 less rugose.

Diagnosis. *Asobara ajbelli* is distinguished from other New Zealand species of *Asobara* by the combination of mesonotal midpit, brown apical flagellar segments, and reduced propodeal carination.

Material examined. Type specimens plus 97 specimens (60♀, 37♂; NZAC); plus 1♀ (NN; MONZ) — see Appendix 3 for details of non-type specimens examined.

Collection localities. North Island: ND, AK, CL, BP, GB, TO, HB, WI, WN. South Island: SD, NN, BR, MC, WD, OL, FD, SI.

Biology. Adults have been collected in all months except August; the earliest collection year seen is 1922. *A. ajbelli* has been reared from a fanniid puparium in *Mystacina* (New Zealand short-tailed bat) guano.

Remarks. As interpreted here this species shows a large amount of variation in several character states, including sculpture of the mandibles, scutellar pits, lateral T1, area around antennal insertions, and area under tegulae; ovipositor length, and colour of antennae. A series of over 40 females from the Poor Knights vary less than the remaining material and may represent a species in itself. The type series has been restricted to this material plus another few specimens from Northland.

Etymology. This species is named for New Zealand musician A. J. Bell.

Asobara albiclava sp.n.

Fig. 30–35; Map p. 85

Type data. **Holotype**: female. Label details: "NEW ZEALAND AK/ Lynfield/ 19 Oct 1980/ G. Kuschel" and "Malaise trap/ 5" and "HOLOTYPE/ Asobara/ albiclava/ Berry" and "NZAC04014427" (NZAC). **Paratypes** (49♀, 35♂; NZAC; 2♀, 2♂; RMNH): **AK**: 3♀ 1♂, Lynfield, 4 Dec 1974 (2♀), 7 Dec 1974 (1♀), Nov 1979 (1♂), G. Kuschel; 3♀, Lynfield, 1 Mar 1981 (1♀), 29 Mar 1981 (2♀), G. Kuschel, Malaise trap; 1♀, Lynfield, Wattle Bay, 22 Feb 1981, G. Kuschel, in rotten *Melicytus;* 3♀, 1♂, Lynfield, 9 Nov 1980 (1♀), 8 Mar 1981 (1♂), 22 Mar 1981 (1♀ RMNH), 7 Jun 1981 (1♀), G. Kuschel, Malaise trap 5; 1♀, Lynfield, 6 July 1974, G. Kuschel, litter 74/39; 20♀, 35♂, Waitakere Ra, 20 Sep–21 Sep 1980 (1♀, 1♂ RMNH), Nov 1980 (7♀, 17♂), Dec 1980 (1♀, 9♂), Jan 1981 (11♀, 8♂ RMNH, 1♂), J. Noyes; 2♀, Bethells, Matuku Res., 4 Jul–26 Sep 1991, Malaise trap below tree platform; 1♀, Kawau I., 27 Mar–13 Apr 1992, D. Williams, Malaise trap; 4♀, Titirangi, Oct 1980 (2♀), Nov 1980 (1♀), Dec 1980 (1♀) P. A. Maddison, Malaise trap in garden; 2♀ (1 RMNH), Walker Bush Track, 5 Nov 1976, A. K. Walker, sweeping; 2♀, Huia, Nov 1980 (1♀), Mar 1981 (1♀), B. M. May, Malaise trap in bush; 10♀, Birkenhead, Nov 1980 (1♀), Dec 1980 (1♀), Jan 1981 (4♀), Feb 1981 (2♀), Mar 1981 (2♀), J. F. Longworth, Malaise trap in second growth bush.

Description. **Female**.

Forewing length 1.75–2.60 mm.

Colour. Antennal scape, pedicel and F1 yellow-brown, remaining flagellar segments red-brown, except last 3–6, which are pale; face medium brown, vertex dark brown, clypeus and mandibles medium brown, apices of teeth dark brown; mesosoma and metasoma medium brown, darker laterally, T1 varying to orange brown; coxae pale, legs yellow-brown; wings hyaline, tegulae yellow.

Antennae. 17–22 antennal segments (n=10); F1 0.48–0.60× length of F2; setae on flagellar segments longer than width of segment; antennal sockets separated by a distance less than their own diameter.

Head (Fig. 31). Eye with sparse moderately long setae, each longer than 1 ommatidium; face, clypeus and mandible with scattered long setae. Mandibles (Fig. 32) over 2× longer than apical width, very slightly broader at base than apex; ventral ridge strong; tooth 1 larger than tooth 3, both teeth bluntly pointed, tooth 3 more acutely pointed; diagonal ridges present on teeth 1 and 3, stronger on tooth 3; tooth 2 long and acutely pointed; surface smooth to weakly sculptured. Anterior tentorial pits reaching about 0.3× distance from clypeal edge to eye; lateral margin of pit extended slightly under eye.

Mesosoma (Fig. 33). Notauli present, longer than in *persimilis*, extending almost to bases of tegulae; mesoscutum with small midpit near scutellar boundary; disc sparsely setose anteriorly and with paired setae along notaular traces posterior of notauli. Scutellum slightly convex, scutellar fovea smooth, 2-pitted; metanotum lightly sculptured. Propodeum (Fig. 34) with longitudinal medial carina present anteriorly, diverging posteriorly to form narrow, almost complete areola; anterior transverse carina extended slightly beyond areola but absent laterally; sculpture coarsely rugose; spiracles not enlarged.

Wings (Fig. 30). Forewing stigma grading into R1, less than 1/2 maximum length of marginal cell; 1CU longer than 1m-cu; 1m-cu antefurcal, (RS+ M)b distinct; 2nd submarginal cell from 2.5–4 times longer than wide, tending to be narrower in smaller specimens, 2RS 0.3–0.4× length of 3RSa ; 1st subdiscal cell incomplete, 2cu-a absent, 2-1A incomplete. Hindwing subbasal cell around 0.3× length of basal cell.

Metasoma. T1 about 1.3× longer than apical width; bicarinate anteriorly with deep dorsope (Fig. 35), rugose medially; with additional longitudinal carinae and other longitudinal sculpture. Ovipositor shorter than metasoma, about as long as metasoma excluding T1; setae on sheaths long, regularly spaced.

Male. Forewing length 1.7–2.4 mm. Similar to female except: 18–23 antennal segments (n=10); last 3–6 segments pale; gaster dark and cylindrical.

Diagnosis. The possession of a mesonotal midpit in combination with white apical flagellar segments (females and males) distinguishes *A. albiclava* from all other species of *Asobara* in New Zealand.

Material examined. Type series plus 169 specimens (103♀, 66♂; NZAC), plus 1♀ (TK; MONZ); 7♀ (AK, CL; AMNZ) — see Appendix 3 for details of non-type specimens examined.

Collection localities. North Island: ND, AK, CL, BP, TK, TO, GB, HB, RI, WI, WN. South Island: SD, NN, WD.

Biology. Adults have been collected in all months of the year; the earliest collection year seen is 1923. No host data is available although over 250 specimens of this species have been examined.

Etymology. The species epithet "*albiclava*" is a noun in apposition derived from Latin, referring to the white apical flagellar segments.

Asobara antipoda Ashmead

Fig. 36–41; Map p. 85

Asobara antipoda Ashmead, 1900: 625. Wharton (2002, p.40): refers to as *Asobara antipoda* Ashmead.

Phaenocarpa antipoda (Ashmead): Szépligeti (1904, p.211). Gourlay (1930, p.5): host record. Valentine & Walker (1991, p.7): list, host records.

Type data. **Holotype**: not seen (lost?). Publication details: "Hab. –Chatham Island. Described from one female specimen."

Description. **Female**.

Forewing length 1.75–4.30 mm.

Colour. Antennal scape and pedicel light orange-brown, flagellum medium to dark brown, paler apically; head yellow-brown to orange-brown, variably with vertex darker and genae lighter, mandibles light orange-brown with apices of teeth dark brown; mesosoma and propodeum light orange to dark brown, often with notaular traces lighter; coxae and legs orange-brown; T1 orange-brown, rest of metasoma dark orange to dark brown; wings hyaline, tegulae yellow.

Antennae. 19–25 antennal segments (n=10), several specimens noted with different numbers of segments on left and right antennae; F1 0.57–0.62× length of F2; F2 slightly emarginate; setae on flagellar segments longer than width of segment; antennal sockets separated by a distance less than their own diameter.

Head (Fig. 38). Eye minutely setose, face, clypeus, and mandible with scattered long setae, vertex mainly bare. Anterior margin of clypeus straight. Mandibles large, nearly twice as long as apical width and about as broad at apex as at base; ventral ridge strong; teeth 1 and 3 about same length, both bluntly pointed, tooth 1 slightly larger; diagonal ridges present on both teeth but stronger on tooth 3; tooth 2 longer but smaller and acutely pointed; surface matte to weakly rugose, base smooth. Anterior tentorial pits reaching about 0.3–0.4× distance from clypeal edge to eye; lateral margin of pit extended slightly under eye.

Mesosoma (Fig. 39). Notauli incomplete, sculptured; mesoscutum with elongate, slit-like midpit; disc sparsely setose anteriorly and with 1–3 pairs of short setae posterior of notauli. Scutellum convex, scutellar fovea smooth, 2-pitted; metanotum smooth. Propodeum (Fig. 40) with longitudinal medial carina present anteriorly, weakly diverging posteriorly either very narrowly or more widely to form narrow, poorly-defined areola; sculpture mostly smooth; spiracles greatly enlarged, outer diameter the same as distance to anterior edge of propodeum.

Wings (Fig. 37). Forewing stigma grading into R1, less than 1/2 maximum length of marginal cell; 1CU about same length as 1m-cu; 1m-cu antefurcal, (RS+ M)b spectral; 2nd submarginal cell wider than high, 2RS about 1/2 length of 3RSa; 1st subdiscal cell almost complete (cf *Asobara* s.s.) but not quite closed, 2cu-a indistinct, 2-1A incomplete. Hindwing subbasal cell around 0.4× length of basal cell.

Metasoma. T1 bicarinate anteriorly (Fig. 41), rugose medially and otherwise longitudinally striate, dorsope deep, spiracle enlarged; spiracles on other metasomal tergites prominent. Ovipositor almost as long as hind femur; sheaths with sparse, long setae, mostly in apical quarter, 1–2 pairs medially, several short setae apically.

Male. Brachypterous and macropterous. 21–25 antennal segments (n=9); F1 0.5–0.7× length of F2; one brachypter with F1 broadened. Propodeal spiracles more enlarged than in female (though sample size much smaller).

Brachypterous male, forewing length about 1.4 mm long, not reaching gastral tergite 3. Macropterous male, forewing length 2.2–2.7 mm.

Diagnosis. The greatly enlarged propodeal spiracles distinguish *A. antipoda* from all other New Zealand species of *Asobara.*

Material examined. 203 specimens (176♀, 10♂; NZAC) plus 2♀ (ND, AK; MONZ), 14♀, 1♂ (CL; AMNZ) — see Appendix 3 for details of specimens examined.

Collection localities. North Island: ND, AK, BP, CL, WO, TO, GB, HB, WI, WN. South Island: SD, NN, MC, OL, SL, SI. Offshore Islands: AU, CH. Note that one female specimen is labelled "bred from consignment *Alysia* collected in England", with a note by E. S. Gourlay that the locality details are incorrect.

Biology. Adults have been collected in all months of the year except July; the earliest collection year seen is 1921. *A. antipoda* is a parasitoid of calliphorids associated with carrion. It has been reared from *Calliphora hilli* Patton puparia and *C. stygia* (Fabricius) (=*Pollenia stygia*) (stage not recorded).

Remarks. *Asobara* is distinguished from *Phaenocarpa* by having the 1st subdiscal cell of the forewing broadly open, 2cu-a and most of 2-1A absent (Wharton 1997, 2002). In *A. antipoda*, the 1st subdiscal cell is not closed, but is not "broadly open" 2cu-a is absent and the distal 1/2 of 2-1A is indistinct. Wharton (2002, p.40) remarks that he has not seen any species in Australia in either genus (*Asobara* or *Phaenocarpa*) which posseses the unusually large propodeal and petiolar spiracles of *A. antipoda*.

Wing reduction is well documented among the Alysiini (Wharton 2002), but surprisingly few reduced wing forms are known from New Zealand, especially given the generally high level of wing reduction known in New Zealand hymenopterans (Berry 1995, p.14). *Asobara antipoda* therefore is unusual in having both macropterous and brachypterous males, whereas females are not known to have reduced wings. The few reduced wing males are from Stewart Island and from series containing macropterous females. Naumann (1988) found that reduced wing males of the variably wing-reduced ambositrine *Diphoropria sinuosa* Naumann were known only from the southwest of the South Island, and that in general wing-reduced ambositrines were more numerous on the South Island, and speculated that extremes of wing reduction are favoured by the extreme moist, cool conditions of the southwest. While Naumann (1988) found that male ambositrines are less commonly wing-reduced than females, Wharton (2002, p.18) comments that in the alysiine genera *Phaenocarpa* and *Idiasta* (both belonging to the *Phaenocarpa*-complex, which includes *Asobara*) wing reduction is usually more strongly developed in males than in females.

Asobara persimilis (Prince)

Fig. 42–46; Map p. 85

Phaenocarpa persimilis Prince, 1976: 250. Description, Australian hosts.

Phaenocarpa (*Asobara*) *persimilis*: Papp (1977): description. Short (1979): larva.

Asobara persimilis: Wharton (2002): redescription.

Type data. **Holotype**: female. Victoria, Australia (ANIC). Not seen.

Description. **Female**.

Forewing length 1.74–2.20 mm.

Colour. Body brown or dark red to blackish-brown except: antennal scape, pedicel, and base of F1 yellow-brown, rest of flagellar segments medium brown except last 3–5, which are pale (last 1–2 segments occasionally dark); clypeus yellow-brown, mandibles yellow with apices of teeth dark brown; propleuron and anterior lateral pronotum yellow-brown; coxae pale yellow, legs yellow-brown; T1 orange-brown, contrasting with rest of dark brown metasoma; wings hyaline, tegulae yellow.

Antennae. 19–23 antennal segments (n=10) (17–22 in literature); F1 0.50–0.57× length of F2; setae on flagellar segments slightly longer than width of segment; antennal sockets separated by a distance about equal to their own diameter.

Head. Eye setose, setae moderately long, at least as long as 1 ommatidium; face, clypeus, and mandible with long setae. Mandibles (Fig. 43) about 1.8× longer than apical width, slightly broader at apex than at base; ventral ridge strong; tooth 1 slightly longer and larger than tooth 3, both teeth bluntly pointed, with diagonal ridges present, stronger on tooth 3; tooth 2 long and acutely pointed; surface weakly sculptured and setose medially. Anterior tentorial pits reaching about 0.25–0.30× distance from clypeal edge to eye; lateral margin of pit extended slightly under eye.

Mesosoma (Fig. 44). Only very anterior vestiges of notauli present; mesoscutum without midpit; disc sparsely setose anteriorly and with 1–3 pairs of short setae posterior of notauli. Scutellum convex, scutellar fovea smooth, 2-pitted, pits smooth; metanotum more or less smooth. Propodeum (Fig. 45) with longitudinal medial carina present, diverging weakly posteriorly to form areola, smooth elsewhere; anterior transverse carina present only medially; sculpture rugose within areola and around spiracles, mainly smooth elsewhere; spiracles not enlarged.

Wings (Fig. 42). Forewing stigma grading into R1; 1CU subequal to 1m-cu in length; 1m-cu antefurcal, (RS+ M)b distinct; 2nd submarginal cell wider than high, 2RS about 0.3× length of 3RSa; 1st subdiscal cell incomplete, 2cu-a indistinct, 2-1A incomplete. Hindwing subbasal cell around 0.4× length of basal cell.

Metasoma. T1 bicarinate (Fig. 46), with additional longitudinal carinae, surface lightly rugose within carinae, mainly smooth elsewhere. Ovipositor at least as long as metasoma; sheaths with long, regularly spaced setae.

Male. Forewing length 1.46–2.30 mm. Similar to female except last flagellar segments not or hardly pale; 21–24 antennal segments (n=10); propodeal areolet less defined than that of female.

Diagnosis. *A. persimilis* is the only species of *Asobara* known from New Zealand which lacks a mesoscutal midpit.

Material examined. 269 specimens (143♀, 126♂; NZAC) plus 1♀, 1♂ (AK, CL; AMNZ) — see Appendix 3 for details of specimens examined.

Collection localities. North Island: TH, ND, AK, CL, WO, HB. South Island: NN, MC.

Biology. Adults have been collected in all months except May and August; the earliest collection year seen is 1941. *Asobara persimilis* is a parasitoid of drosophilids in rotting fruit (Wharton 1984). In New Zealand it has been reared from the introduced drosophilids *Drosophila melanogaster* Meigen and *Scaptomyza flava* (Fallén). Prince (1976) described the biology of *A. persimilis*, and recorded several cosmopolitan and native Australian drosophilid hosts. The cosmopolitan species were: *Drosophila busckii* Coquillett, *D. hydei* Sturtevant, *D. melanogaster*, and *D. similans*. The native Australian species were *D. fumida* Mather, *D. nitidithorax* Malloch, and *Scaptomyza australis* Malloch.

Remarks. The correct authority for *Asobara persimilis* is Prince, 1976. Prince clearly did not intend to become the authority for the species by predating Papp's (1977) description, as he refers to Papp's description as "1975" and "in press". However under Article 13 of the ICZN the criterion of availability is satisfied by Prince's description, since though brief, it is accompanied by the reference to Papp's full description (R. L. Palma, pers. comm.).

Asobara tabida (Nees von Esenbeck)

Fig. 47–51; Map p. 85

Alysia tabida Nees von Esenbeck, 1834: 252
Phaenocarpa tabida: Marshall 1894: 527.
Asobara tabida: Förster 1862: 267. Shenefelt (1974, p.965–966): complete synonymy, literature.

Type data. **Holotype**: lost.

Description. **Female**.

Forewing length 1.70–2.28 mm.

Colour. Antennal scape, pedicel, and base of F1 yellow-brown, rest of flagellar segments medium brown; face and vertex dark brown, clypeus yellow-brown, mandibles yellow with apices of teeth dark brown; mesosoma dark brown, except propodeum varying from dark brown to yellow-brown; propleuron and anterior lateral pronotum yellow-brown; coxae and legs yellow; T1 yellow-brown, rest of metasoma medium to dark brown; wings hyaline, tegulae brown.

Antennae. Short, 18–20 antennal segments (n=10); F1 0.71–0.85× length of F2; setae on flagellar segments longer than width of segment; antennal sockets separated by a distance about equal to their own diameter.

Head (Fig. 48). Eye with moderately long setae, at least as long as 1 ommatidium; face, clypeus, and mandible with scattered long setae. Mandibles nearly twice as long as apical width, about as broad at apex as at base; ventral ridge strong; tooth 1 slightly smaller than tooth 3, more or less right angled with a blunt point; tooth 3 more acute, with strong diagonal ridge; tooth 2 long and acutely pointed; surface weakly rugulose. Anterior tentorial pits reaching about 0.3–0.4× distance from clypeal edge to eye; lateral margin of pit extended slightly under eye.

Mesosoma (Fig. 49). Only anterior vestiges of notauli present, heavily sculptured; mesoscutum with small inconspicuous midpit. Scutellum convex, scutellar fovea 2-pitted; metanotum lightly sculptured; dorsellum smooth. Propodeum (Fig. 50) smooth anteriorly, rugose posteriorly; with longitudinal medial carina present anteriorly, diverging weakly posteriorly to form incomplete or weak areolet; anterior transverse carina complete; spiracles not enlarged.

Wings (Fig. 47). Forewing stigma grading into R1; 1CU around 1.5× longer than 1m-cu; 1m-cu antefurcal, (RS+M)b distinct; 2nd submarginal cell wider than high, 2RS around 0.6× length of 3RSa; 1st subdiscal cell incomplete, 2cu-a absent, 2-1A incomplete. Hindwing subbasal cell around 0.3× length of basal cell.

Metasoma. T1 wide, bicarinate anteriorly and with deep dorsope (Fig. 51), without additional longitudinal carinae, surface rugose between carinae. Ovipositor slightly shorter than metasoma; setae on sheaths long, regularly spaced.

Male. Forewing length around 1.7 mm. Similar to female, antennae with 21–23 segments (n=2).

Diagnosis. In New Zealand *Asobara tabida* is recognisable by its distinctive propodeal carination, being the only species of *Asobara* with a complete anterior transverse carina.

Material examined. 71♀, 2♂, NZAC; 1♀ RMNH — see Appendix 3 for details of specimens examined.

Collection localities. South Island: MC.

Biology. Adults have been collected in November, December, and February through April; the earliest collection year seen is 1996, indicating that *Asobara tabida* is a recent immigrant. *Asobara tabida* is a parasitoid of drosophilids in rotting fruit (Wharton 1984). The only host record for New Zealand is from the endemic drosophilid *Drosophila neozelandica* Harrison (Diptera: Drosophilidae). Berry & Walker (2004) discuss other examples of exotic parasitoids that have broadened their host ranges to include endemic species in New Zealand.

Remarks. *Asobara tabida* is morphologically close to *A. rufescens* (Förster) and the two species are often confused (C. van Achterberg, pers. comm., 2005). Both species are parasitoids of drosophilids in decaying organic matter (not dung). Like *Asobara persimilis*, *A. tabida* is a parasitoid of *Drosophila* species in decaying fruit, while *A. rufescens* parasitises *Scaptomyza* species in decaying leaves (Vet *et al*. 1984).

Aspilota Förster, 1862

Type species: *Alysia ruficornis* Nees von Esenbeck, 1834, by monotypy and original designation

Generic status. The *Aspilota*-complex, based on linear reduction of the stigma and elongation of the 2nd submarginal cell, contains the most speciose genera in the tribe. Wharton (1980) included the genera *Pterusa* Fischer, *Prosapha* Förster, *Orthostigma* Ratzeburg, *Aspilota* Förster, *Carinthilota* Fischer, and *Dinostigma* Fischer in the complex. *Dinotrema* Förster was treated, as by other authors, as a synonym of *Aspilota sensu lato.* Van Achterberg & Bin (1981) and van Achterberg (1988), however, have treated *Aspilota* and *Dinotrema* as separate genera. Wharton (1985) discussed the 16 character states used by van Achterberg and Bin (1981) to diagnose *Dinotrema*, pointing out that 13 of these were shared by *A. ruficornis*, the type species of *Aspilota*. The remaining 3 continuous character states (size of anterior tentorial pits, length of 2CUa relative to 2cu-a, and form of submalar depression) were analysed, a diagnosis of *Aspilota s.l.* was presented, and several species placed in *Aspilota* by van Achterberg & Bin (1981) were returned to *Dinotrema*.

The classification proposed by van Achterberg (1988) resulted in the transfer of most species formerly included in *Aspilota* into *Dinotrema*. Wharton (1985, 2002) regarded this separation as difficult, leaving *Dinotrema* as it does without a clear-cut apomorphy to define the genus. Nevertheless he accepted it provisionally on the basis of the form of the anterior tentorial pits. The generic diagnosis below follows Wharton (2002).

Generic diagnosis. Mandibles relatively unsculptured, diagonal ridge usually, and ventral ridge often, poorly developed to absent. Anterior tentorial pits enlarged, extending to the ventral margin of the eye or nearly so. Most species with propodeum areolate or largely rugose (*Aspilota andyaustini* is exceptional). Forewing: narrow linear stigma, grading into R1; m-cu strongly postfurcal, entering 2nd submarginal cell; 2RS present in most species, absent in a few (including at least 1 from Australasia), 2RS shorter than 3RSa; subdiscal cell closed (2cu-a meeting 2-1A).

Van Achterberg (1988) notes that members of the *Aspilota*-complex have the apical 1/3 of ovipositor sheath (sub)glabrous and the apex obtuse.

Members of the genus *Aspilota* appear to be the most commonly collected Alysiini in New Zealand, though, world-wide, *Dinotrema* is the largest genus (Wharton 2002).

Species groups. Wharton (2002) recognised 3 species-groups from the Australian fauna:

1. *andyaustini*-group, characterised by the propodeal sculpture consisting of a single median longitudinal carina;

2. *storeyi*-group, characterised by bidentate mandibles and a clearly defined eye-antennal sulcus;

3. remaining species, which are a combination of the *ruficornis* and *globiceps* groups of van Achterberg.

Wharton (2002) rejected van Achterberg's *globiceps*-group, which was based on the absence of forewing vein 2RS, opining that this loss has occurred more than once within the genus (*s.s.*).

The *andyaustini*-group is represented in New Zealand only by *Aspilota andyaustini* (but see remarks under species treatment), which appears to be very rare. The *storeyi*-group of Wharton (very distinct eye-antennal sulcus and bidentate mandibles) does not appear to be represented in New Zealand, although some species have a shallow or incomplete eye-antennal sulcus and varying degrees of reduction in tooth 1 of the mandible. Most of the New Zealand material appears to fall within Wharton's third group, *ruficornis* + *globiceps*. Within this group the most definitive division is between the new species *parecur* and the remaining species or species-complexes. *A. parecur* is distinctive and easily recognised by the indistinct malar sulcus and short subocular sulcus combined with the long distally narrowed 2nd submarginal cell.

Variation. Within the New Zealand *Aspilota* material, 2 distinctive species are present: *A. parecur* and *A. andyaustini*. Amongst the remaining material, recognition of morphological species is difficult due to excessive variation in diagnostic character states. Several characters used by Wharton (2002) in his key to Australian *Aspilota* species proved extremely difficult to segregate into discrete states in New Zealand material, for example:

Mesoscutal midpit: this may be completely absent, or present as a distinct rounded or elongate pit. However, states inbetween are difficult to quantify, including a slight inflection of the surface, visible only under certain light conditions.

Sculpture of the propodeum: *A. andyaustini* has a distinctive and unusual form of propodeal carination within *Aspilota s.s.*, the median longitudinal carina being complete and the propodeum otherwise unsculptured, or nearly so. *A. angusta* has a complete but narrow areola; some specimens close to *A. angusta* have a weak or incomplete median longitudinal carina on the propodeum in addition to the narrow areola and others have the anterior transverse carinae effaced and the remaining longitudinal carinae close together, raising the possibility of a transition series to the form of propodeal sculpture seen in *A. andyaustini*. Likewise there appear to be no discrete states between the more or less complete areola shown in *A. parecur*, though those species which show a discernible areola somewhat obscured by rugose sculpture such as *A. albertica* and a more rugose carination such as *A. villosa*.

Size of the propodeal spiracle: this feature appeared to be almost continuous and extremely hard to confine to discrete states. There do not apear to be any species with the spiracle enlarged as much as in the Australian *A. johnbrackeni* Wharton.

Wing reduction: Almost all *Aspilota* specimens examined in this study were macropterous (aptery and wing reduction are rare in the New Zealand Alysiinae in general). The exceptions are the brachypterous males of *A. albertica* and one unplaced brachypterous female from Fiordland.

Biology. Members of the *Aspilota*-group are almost exclusively endoparasitoids of phorid larvae in decaying organic material, and sometimes of platypezids in mushrooms (van Achterberg 1988). There are no host records from New Zealand.

Key to species of *Aspilota* (females and males)

1 Propodeum with complete median longitudinal carina, otherwise mainly smooth (see Fig. 63, p.47, Wharton 2002) ..... …(p. 23)… ***andyaustini*** Wharton

—Propodeum without a complete median longitudinal carina; sculpture of some other form (Fig. 56, 63, 70) 2

2(1) Malar sulcus indistinct (Fig. 60–61); forewing with distally narrowed 2nd submarginal cell (Fig. 59) [short subocular sulcus present] 3

—Malar sulcus clearly present (Fig. 53–54, 66); submarginal cell of forewing not distally narrowed (Fig. 52) 4

3(2) Larger species (forewing length 1.3–2.1 mm); T1 with median longitudinal carina (Fig. 64); males macropterous ..... …(p. 25)… ***parecur*** sp. n.

—Small dark species (forewing length 1.1–1.4 mm); T1 without median longitudinal carina; males brachypterous (Fig. 58) .... …(p. 23)… ***albertica*** sp.n.

4(2) Mesoscutal disc with 5 to 6 pairs of setae posterior of notauli (Fig. 69); propodeum with areola effaced by rugose sculpture (Fig. 70) .. …(p. 27)… ***villosa*** sp.n.

—Mesoscutal disc with less than 4 pairs of setae (Fig. 55); propodeal areola more or less complete but narrow, higher than wide (Fig. 56) …(p. 24)… ***angusta*** sp. n.

Aspilota albertica sp.n.

Fig. 58; Map p. 85

Type data. **Holotype**: female. Label details: "NEW ZEALAND AK/ Auckland City/ Albert park/ 4.vii.2005/ SE Thorpe" and "tussocks under/ Ficus rubiginosa/ at night" and "HOLOTYPE/ Aspilota/ albertica ♀/ Berry" (AMNZ). **Paratypes** (1♀, 35♂; AMNZ; NZAC). **AK**: 1♀, same data as holotype except 30 Jun 2005, tussocks at night; 35♂, Auckland City, Albert Park, leaf litter, 7 Jun 2005 (2♂), 8 Jun 2005 (1♂), 9 Jun 2005 (2♂), 10 Jun 2005 (1♂), 13 Jun 2005 (2♂), 14 Jun 2005 (2♂); on long grass above leaf litter at night, 19 Jun 2005 (4♂), 20 Jun 2005 (7♂), 21 Jun 2005 (2♂), 22 Jun 2005 (4♂), 26 Jun 2005 (3♂), 27 Jun 2005 (2♂), 28 Jun 2005 (2♂); tussocks at night, 10 Jul 2005 (1♂), S.E. Thorpe.

Description. **Female**.

Forewing length 1.1–1.4 mm.

Colour. Head and body entirely dark brown/black, excepting mandibles, which are yellow-brown with dark brown apices and medium brown pedicel; wings hyaline.

Antennae. Short; 13–14 antennal segments (n=2); setae on flagellar segments longer than width of segments; antennal sockets close together, separated by a distance less than their own diameter.

Head. Temple length about 1.5× longer than eye in dorsal view, slightly swollen; face broader than long; eyes with sparse, short scattered setae (inconspicuous except under high magnification), not converging below; eye-antennal sulcus absent. Frons sparsely setose, with scattered upwardly-directed setae below antennal sockets, otherwise bare apart from several downwardly-directed setae at upper inner eye and along anterior tentorial pit, vertex with scattered long setae, clypeus almost bare; anterior margin of clypeus slightly concave, posterior margin semicircular, deeply impressed. Mandible short, about as long as apical width, slightly wider at apex than at base; tooth 1 smaller than tooth 3; both broadly rounded; diagonal ridge absent; tooth 2 pointed; outer mandibular surface smooth. Anterior tentorial pits strongly narrowed basally. Malar space shorter than basal width of mandible; subocular sulcus present; malar sulcus indistinct.

Mesosoma. Notauli almost entirely absent; mesoscutum without midpit; disc with 5–6 pairs of setae along notaular traces. Sternaulus very short. Scutellum convex, fovea with 2 more or less smooth pits; metanotum smooth. Propodeum with median longitudinal carina present anteriorly (long); diverging posteriorly to form short areola; surface smooth to weakly rugose posteriorly. Propodeal spiracle enlarged, diameter of opening about 0.7× distance between spiracle and anterior propodeal margin.

Legs. Hind coxae sparsely setose.

Wings. 1CU about 2× as long as 1m-cu; all veins distal to (RS+ M)b depigmented, excluding proximal part of stigma and r; 2nd submarginal cell short, not strongly narrowed distally, 2RS less than 0.5× length of 3RSa; 1cu-a postfurcal by more than its own length; 1st subdiscal cell complete, base of 2CUb obscure. Hindwing subbasal cell more than 1/2 length of basal cell.

Metasoma laterally compressed; T1 about 2× as long as apical width; surface coarsely longitudinally striate. Ovipositor short, barely protruding from gaster in dorsal view; sheath with inconspicuous setae.

Male. Brachypterous (Fig. 58). Forewing length 1.2 mm, almost semi-circular in shape; not reaching end of gaster. Forewing R1 extremely heavily thickened; 1CU, 1m-cu, r, 3RS, and 2M also thickened but not to same extent. 2nd submarginal cell strongly narrowed distally; setae along C+S+R long. Hindwing also reduced, wedge-shaped; veins also heavily thickened, especially C+S+R, SC+R, 1r-m, R and 2A. Antennae with 14–17 segments (n=20).

Variation. Only 2 females are known; in one of these R1a and the distal half of 3RSb are pigmented; in the other these veins are depigmented. Males show some variation in colour of mandibles and coxae.

Diagnosis. Ovipositor short, malar groove absent; male brachypterous.

Material examined. Type series only.

Collection localities. North Island: AK.

Biology. Adults have been collected in June and July (at night only); the earliest collection year is 2005. No hosts are known, all specimens were collected in an urban park in leaf litter.

Remarks. *Aspilota albertica* is very close to *A. parecur*; both share the indistinct malar sulcus and developed subocular sulcus. However in *albertica* the body colour is very dark and the long inwardly curved seta on tooth 3 of the mandible is lacking; additionally males of *albertica* are brachypterous with very heavily developed R1 and RS veins.

Etymology. The species epithet "*albertica*" refers to the collection locality of the type series, Albert Park in central Auckland.

Aspilota andyaustini Wharton

Map p. 86

Aspilota andyaustini Wharton 2002: 36

Description. **Female**.

Forewing length 1.7–1.8 mm.

Colour. Antennae brown; head and body dark red-brown, including clypeus. Mandibles yellow-brown with apices of teeth dark brown; coxae and legs red-brown, lighter distally; tegulae brown; ovipositor sheaths dark brown.

Antennae short and compact; 15–16 antennal segments (n=2); most setae on flagellar segments shorter than width of segments, but apical setae longer; antennal sockets separated by a distance greater than their own diameter.

Head. Temple in dorsal view subequal in length to eye, slightly swollen; face slightly broader than long; eyes bare, not converging below; eye-antennal sulcus absent. Frons with long setae evenly distributed, vertex mainly bare; anterior margin of clypeus very slightly concave. Mandible 1.4× longer than apical width, slightly wider at apex than at base; teeth 1 and 3 rounded and curved outwards, of similar size, diagonal ridge of tooth 1 absent, tooth 3 with short curved setae along lower margin of inner surface, tooth 2 acutely pointed; surface unsculptured. Anterior tentorial pits roughly rectangular. Malar space distinct, shorter than basal width of mandible. Malar sulcus and short subocular sulcus both present.

Mesosoma. Notauli present only anteriorly; mesoscutum with clearly defined midpit; disc sparsely setose at base and with 3 or 4 pairs of setae posterior of notauli. Sternaulus sculptured, incomplete; scutellar fovea with 2 more or less smooth pits and extra longitudinal carinae; metanotum smooth. Propodeum with complete median longitudinal carina, this with some very short branches giving a crenulate appearance, otherwise unsculptured; spiracle small, diameter about 0.3× distance between spiracle and anterior propodeal margin.

Legs. Hind coxae with scattered setae over ventral surface and several dorsal setae.

Wings. 1CU longer than 1m-cu; (RS+ M)b and most of 2RS depigmented, (RS+ M)a almost completely pigmented; 2nd submarginal cell longer than high, not narrowed distally, 2RS shorter than 3RSa; 1cu-a almost interstitial; 1st subdiscal cell complete; 2CUb arising below middle of 1st subdiscal cell, 2cu-a slightly angled. Hindwing subbasal cell more than 1/2 length of basal cell; posterodistal corner of basal cell rounded.

Metasoma: T1 bicarinate, carinae strong anteriorly and becoming weaker posteriorly; some rugose sculpture medially, othewise mainly smooth; dorsope deep. Ovipositor about as long as hind femur; sheath with setae at apex very short and sparse, longer towards base.

Male. No specimens seen.

Diagnosis. Complete median longitudinal carina of propodeum, short subocular sulcus and malar sulcus.

Material examined. Paratype ♀ (S. Australia, Mt. Barker, Dec 1985, AD Austin, *Acacia* scrub; TAMU) plus 2♀ (NZAC) — see Appendix 3 for details of specimens examined.

Collection localities. South Island: NN.

Biology. *A. andyaustini* has been collected in March and April and the earliest collection date is 1926.

Remarks. I have compared the specimens examined with a paratype of *A. andyaustini* and believe them to be conspecific although the median longitudinal carina of the propodeum is rather sculptured, whereas that of the paratype is simple; additionally, the legs of the New Zealand specimens are darker. See further remarks on propodeal sculpture under *Aspilota angusta*.

Two specimens that are close to *A. andyaustini* are deposited in NZAC. Both have complete median longitudinal carina of propodeum, but are lighter in colour, probably as a result of long-term ethanol storage. However the coxae are much paler than the mesosoma. Wharton (2002) notes that he has seen undescribed species of *Aspilota* with pale coxae and *andyaustini*-type propodeal carination from Australia. The Farewell Spit specimen has an unusually long and pronounced subocular sulcus, and the Little River specimen has a shorter and wider mandible.

Aspilota angusta sp.n.

Fig. 52–57; Map p. 86

Type data. **Holotype**: female. Label details: "NEW ZEALAND OL/ Lake Wakatipu/ Bobs Cove/ 23 Jan 1981/ J.S. Noyes and" and "E. W. Valentine/ sweeping/ Nothofagus" and "HOLOTYPE/ Aspilota/ angusta/ Berry" and "NZAC04015540" (NZAC). **Paratypes** (11♀, 29♂; NZAC). **OL**: 4♀ 18♂, Lake Wakatipu, Bob's Cove, 23 Jan 1981, J. S. Noyes & E. W. Valentine, sweeping *Nothofagus*; 3♀, 9♂, Glenorchy State Forest, Dart River, 21 Jan 1981, sweeping; 1♀, 1♂, Lake Makarora, 18 Jan 1981, sweeping *Nothofagus*; 3♀, 1♂, Mt Aspiring NP, Makarora, 25 Jan 1981, sweeping *Nothofagus/Podocarpus*.

Description. **Female**.

Forewing length 1.46–2.10 mm.

Colour. Scape and pedicel, occasionally F1 and F2, yellow-brown, contrasting with brown antennae; head and body medium to dark brown, mesosoma may be lighter. Clypeus and mandibles yellow-brown, apices of teeth dark brown; coxae yellow-brown to pale brown, paler than mesosoma; legs yellow to yellow-brown, darker dorsally and also apically; wings hyaline, tegulae yellow; ovipositor sheaths dark brown.

Antennae. 14–17 antennal segments (n=10); setae on flagellar segments longer than width of segments; antennal sockets close together, separated by a distance less than

their own diameter.

Head (Fig. 53). Temple length subequal to that of eye in dorsal view, slightly swollen; face broader than long; eyes bare, not converging below; eye-antennal sulcus absent. Frons with a medial patch of long, upwardly and laterally directed setae below antennal sockets, otherwise bare apart from several downwardly-directed setae at upper inner eye and along anterior tentorial pit, vertex bare apart from a few short setae, clypeus with scattered setae; anterior margin of clypeus straight, posterior margin semicircular, deeply impressed. Mandible (Fig. 54) about 2.2× longer than apical width, narrower at apex than at base; tooth 1 slightly shorter and smaller than tooth 3, which is more broadly rounded, diagonal ridge absent; tooth 2 acutely pointed; outer mandibular surface smooth, with scattered setae. Anterior tentorial pits slightly narrowed basally. Malar space shorter than basal width of mandible; subocular sulcus short, indistinct; malar sulcus present.

Mesosoma (Fig. 55). Notauli present only anteriorly; mesoscutum without or with barely discernible midpit; disc sparsely setose at base and with 1–2 pairs of setae posterior of notauli. Sternaulus sculptured, short; scutellar fovea with 2 more or less smooth pits; metanotum smooth. Propodeum (Fig. 56) with median longitudinal carina present anteriorly; areola narrow (longer than wide); anterior transverse carinae weak, interrupted or missing; otherwise surface mainly smooth. Propodeal spiracle not enlarged, diameter of opening about 0.2× distance between spiracle and anterior propodeal margin.

Legs. Hind coxae setose ventrally, scattered setae on dorsal surface.

Wings (Fig. 52). 1CU about 2× as long as 1m-cu; (RS+M)b and most to all of 2RS depigmented; 2nd submarginal cell short, not distally narrowed, 2RS shorter than 3RSa; 1cu-a postfurcal by more than its own length; 1st subdiscal cell complete, narrowed anteriorly; 2CUb arising at middle of 1st subdiscal cell; 2cu-a almost vertical. Hindwing subbasal cell more than 1/2 length of basal cell; posterodistal corner of basal cell rounded.

Metasoma laterally compressed; T1 (Fig. 57) more than 2× as long as apical width, narrowed medially; bicarinate anteriorly; with anterior area between carinae pitted and rest of dorsal surface weakly sculptured; dorsope deep; spiracles prominent. Ovipositor about as long as hind femur; sheath with mid-length setae irregularly spaced to 0.8 distance from base, apically with very short setae.

Male. Forewing length 1.38–2.60 mm. As female except with longer antenna, 17–18 segments (n=10); coxae may be darker; gaster more elongate.

Diagnosis. Propodeal areola narrow (longer than wide); T1 more than 2× as long as apical width, narrowed medially; coxae paler than mesosoma.

Material examined. Type series plus 22 specimens (10♀, 12♂; NZAC) — see Appendix 3 for details of specimens examined.

Collection localities. North Island: ND, AK, GB, WN. South Island: SD, NN, BR, MC, OL, FD.

Biology. Adults have been collected from October to March and in May; the earliest collection year is 1924.

Remarks. This species has been limited to specimens with a more or less complete and narrow areola of the propodeum, however the variation around this character is very difficult to interpret. Some specimens close to (but excluded from) *A. angusta* have a weak or incomplete median longitudinal carina on the propodeum, and there are others with the transverse carinae effaced and the remaining longitudinal carinae close together.

Etymology. The species epithet "*angusta*" is a noun in apposition derived from Latin, referring to the narrow areola of the propodeum.

Aspilota parecur sp.n.

Fig. 59–64; Map p. 86

Type data. **Holotype**: female. Label details: "NEW ZEALAND OL/ Coronet Pk/ 13 Jan 1996/ BIP Barratt/ Malaise trap" and "HOLOTYPE/ Aspilota/ parecur/ Berry" and "NZAC04015736" (NZAC). **Paratypes** (58♀, 9♂; NZAC). **ND**: 1♀, Redhill, 23 Oct 1975, Biological Control Survey, Swept near kikuyu pasture; 1♂, Tangowahine, 17 Dec 1975, Biological Control Survey, swept over ryegrass/clover pasture. **AK**: 3♀, Birkenhead, Dec 1980 (1♀), Jan 1981 (1♀), Mar 1981 (1♀), J. F. Longworth, Malaise trap in second growth bush; 1♂, Auckland, Mt Albert, 17 Jan 1976, A. K. Walker, sweeping flowering clover. **BP**: 1♀, Te Koau, 243 m, 31 Jan 1993–15 Mar 1993, J. S. Dugdale, Malaise trap; 1♀, Rereauira Swamp, 26 Jan 1993–9 Mar 1993, J. S. Dugdale, Malaise trap. **WA**: 1♀, Aorangi Mts, Hautangi, 490 m, 2 Sep 1965, J. I. Townsend, moss from open grassy area, 65/463. **SD**: 1♂, Havelock, 16 Apr 1964, J. G. Brown, swept from pasture. **NN**: 7♀, Kongahu, Dec 1980 (1♀), Jan 1981 (1♀), Mar 1981 (5♀), J. Jones, Malaise trap near swamp; 5♀, Pretty Bridge Val., 6 Feb 1966 (1♀), 8 Jun 1966 (1♀), 3 Jul 1966 (1♀), 26 Oct 1966 (1♀), 30 Nov 1966 (1♀), G. Hitchings, pit trap in pasture; 2♀, Bullivants Is, Mapua Estuary, Jun 1987, A. K. Walker, Malaise trap in coastal scrub; 1♀, Canaan, 9 Feb 1964, J. G. M. Brown; 1♂, Nelson, Maitai V., 15 Jan 1976, A. K. Walker, sweeping *Trifolium*. **MC**: 16♀, Banks Peninsula, Prices Valley, Oct 1980 (1♀), Dec 1980 (3♀), Jan 1981

(2♀), Feb 1981 (4♀), Mar 1981 (4♀), Apr 1981 (2♀), R. P. Macfarlane, Malaise trap, edge of native bush. **MK**: 1♀, Lake Tekapo, Dec 1980, P. Quinn, Malaise trap in tussock near pine plantation. **CO**: 1♀, Alexandra, Oct–Nov 1982, A. K. Walker, Malaise trap in grassland in gully; 1♀, Alexandra, Nov 1982, A. K. Walker, Malaise trap in grassland; 2♀, Alexandra, 6 Feb 1985, G. F. McLaren, ex wrapper under crate of nectarines; 3♀, Waipori, 520 m, 29 Mar–13 Apr 1979, B. I. P. Barratt, pit trap in tussock o'sown clover; 3♀, Waipori, 520 m, 28 Dec 1978–14 Mar 1979, B. I. P. Barratt, pit trap in tussock; 1♀, Waipori, 520 m, 29 Mar–13 Apr 1979, B. I. P. Barratt, pit trap in tussock, SEM specimen; 1♀, Rocklands Station, 800 m, 29 Mar–13 Apr 1979, B. I. P. Barratt, pit trap in tussock; 1♀, Dunstan Mt, Bendigo Mines, 17 Jan 1981, J. S. Noyes, E. W. Valentine, sweeping grasses; 1♀, Earnscleugh Stn, Aldinga Cons. Area, 360 m, 24 May 1997, B. I. P. Barratt, Malaise 1; 1♂, Kawarau Gorge, 12 Jan 1981, J. S. Noyes, E. W. Valentine, sweeping grasses & tussock; 2♂, Dunstan Mt, Bendigo mines, 17 Jan 1981, J. S. Noyes, E. W. Valentine, sweeping. **OL**: 1♀, Coronet Pk., 1640 m, 19 Jan 1981, J. S. Noyes, E. W. Valentine, sweeping tussock alpine plants; 4♀, Coronet Pk, 1640 m, 26 Jan 1981, J. S. Noyes, E. W. Valentine, ex tussock alpine plants; 2♂, Coronet Pk, 1640 m, 26 Jan 1981, J. S. Noyes, E. W. Valentine, ex tussock alpine shrubs.

Description. **Female**.

Forewing length 1.3–2.1 mm.

Colour. Scape and pedicel yellow-brown to brown, antennae brown; head and body dark red-brown to black-brown. Mandibles yellow-brown, apices of teeth dark brown; coxae and legs yellow-brown, often darker dorsally, to dark orange-brown; tegulae brown; ovipositor sheaths dark brown.

Antennae. F1 slightly longer than scape and F2; 13–16 antennal segments (n=11); setae on flagellar segments longer than width of segments, setae at apices of flagellar segments longer than other flagellar setae; antennal sockets separated by a distance less than their own diameter.

Head (Fig. 60–61). Temple slightly longer than eye in dorsal view; face broader than long; eyes bare, not converging below; eye-antennal sulcus very weakly developed, or not complete. Frons with a sparse medial patch of long, upwardly-directed setae below antennal sockets, otherwise bare apart from a line of downwardly-directed setae along inner margin of eye, vertex mainly bare apart from a few long setae, clypeus with long scattered setae; anterior margin of clypeus slightly concave or medially indented, posterior margin semicircular, deeply impressed. Mandible around 1.5× longer than apical width, broader at apex than base, slightly narrowed medially; all teeth curved outwards. Tooth 3 largest, broadly rounded except ventral corner produced and acute, with 1 long inwardly curved seta and several shorter ones, these not so conspicuously curved; tooth 1 shorter and rounded, diagonal ridge absent; tooth 2 acutely pointed; outer mandibular surface mostly smooth, slightly sculptured at base of teeth. Anterior tentorial pits narrowed basally and expanded distally. Malar space over 1/2 apical width of mandible; subocular sulcus present, malar sulcus very fine/indistinct (Fig. 61).

Mesosoma (Fig. 62). Notauli present only anteriorly; mesoscutum without a midpit; disc sparsely setose at base and with 2– 4 pairs setae posterior of notauli. Sternaulus sculptured, short; scutellar fovea with 2 more or less smooth pits; metanotum slightly rugose. Propodeum (Fig. 63) with median carina present anteriorly; areolate, usually with anterior field smooth but otherwise with some rugosity, ranging from very weak to quite strong, but with areola still discernible; areola longer than or as long as wide. Propodeal spiracle not enlarged, diameter less than 0.5× distance between spiracle and anterior propodeal margin.

Legs. Hind coxae setose ventrally, with only one, or a few, long setae dorsally.

Wings (Fig. 59): 1CU more than 2× as long as 1m-cu; (RS+ M)b and most of 2RS depigmented, (RS+ M)a almost completely pigmented; 2nd submarginal cell more than 3× longer than high, and narrowed distally, 2RS shorter than 3RSa; 1cu-a far postfurcal (more than its own length); 1st subdiscal cell complete, narrowed anteriorly; 2CUb arising slightly above middle of 1st subdiscal cell. Hindwing subbasal cell more than 1/2 length of basal cell; posterodistal corner of basal cell rounded to distinctly angulate.

Metasoma laterally compressed; T1 almost 2× as long as apical width; bicarinate anteriorly, with a median longitudinal carina extending most of length of tergite, this usually prominant but may be weak; otherwise with some rugosity and with or without other longituginal striation; dorsal pits present (Fig. 64). Ovipositor shorter than hind femur; sheath with mid-length setae to 2/3 distance from base, apically with very short setae.

Male. Forewing length 1.74–2.04 mm. Similar to female except with 16–19 antennal segments (n=7); stigma, R1 and RS darker and heavier than in female.

Diagnosis. Malar groove indistinct; tooth 3 of mandible with 1 long inwardly curved seta and several shorter ones; median longitudinal carina on T1 and areolate propodeum.

Material examined. Type series only.

Collection localities. North Island: ND, AK, BP, WA. South Island: SD, NN, MC, MK, OL, SL.

Biology. Adults have been collected in all months of the year excluding August, the earliest collection year is 1964.

Remarks. Several character states vary in this material. The colour of the coxae ranges from yellow-brown, darker dorsally, to dark orange-brown; larger specimens tend to have a distinctly contrasting pattern of dark body colour and yellower legs, whereas smaller specimens tend towards being uniformly brown. The sculpture of the propodeum and 1st tergite are likewise variable; in smaller specimens the propodeum tends to be simply areolate, while larger specimens tend to show some additional rugosity, although with the areola still discernible. The variation appears to be continuous and independent.

Aspilota parecur is close to *A. ecur* Wharton, particularly those variants without extra rugosity on the propodeum. It differs in the sculpture of T1, which is strigose in *A. ecur*. The flagellar segments of *A. ecur* are longer and more numerous than in *A. parecur*, and the eye-antennal sulcus is more pronounced in *A. ecur*.

Etymology. The species epithet "*parecur*" reflects the similarity of these species.

Aspilota villosa sp.n.

Fig. 65–71; Map p. 86

Type data. **Holotype**: female. Label details: "NEW ZEALAND AK/ Titirangi/ Sep 1980" and "G.W. Ramsay/ Malaise trap/ in garden" and "HOLOTYPE/ Aspilota/ villosa/ Berry" and "NZAC04015511" (NZAC). **Paratypes** (24♀, 8♂; NZAC). **ND**: 1♂, Waipoua SF, Te Matua Ngahere, 4 Feb 1975, A. K. Walker, sweeping undergrowth in *Agathis* forest; 1♂, Waipoua SF, Te Matua Ngahere, 19 Sep 1977, L. L. Deitz, sweeping. **AK**: 8♀, Titirangi, Sep 1980 (1♀), Oct 1980 (6♀), Nov (1♀), G. W. Ramsay, Malaise trap in garden; 1♀, Titirangi, Oct 1980, R. H. Kleinpaste, Malaise trap in native bush; 1♀, 1♂, Birkenhead, Dec 1980, J. F. Longworth, Malaise trap in 2nd growth bush; 4♀, 2♂, Waitakere Ra, 20 Sep–21 Sep 1980 (1♀), Nov 1980 (1♂), Dec 1980 (1♀, 1♂), Jan 1980 (2♀), J. S. Noyes. **BP**: 1♀, Rotorua, SE Okataina Lodge, 21 May 1982, H. Oliver, Malaise trap in cut over bush. **TO**: 1♀, Omoho Stm, 27 Mar 1969, H. A. Oliver, Malaise trap. **NN**: 1♀, Pelorus Bridge Scenic Reserve, near Havelock, 19 Nov 1977, E. Schlinger; 1♀, 1♂, Nelson, 10 Dec 1926, E. S. Gourlay. **MC**: 6♀, Banks Peninsula, Prices Valley, Mar 1981 (4♀), Jan 1981 (2♀), R. P. Macfarlane, Malaise trap, edge of native bush. **CH**: 1♂, Chatham Is, Waitangi, 24 Feb 1967, E. W. Valentine, *Juncus*, close-grazed; 1♂, Chatham Is, Waitangi, 4 Mar 1967, E. W. Valentine, ryegrass.

Description. **Female**.

Forewing length 1.8–2.4 mm.

Colour. Scape and pedicel yellow-brown, contrasting with brown antennae; head and body dark brown. Clypeus and mandibles yellow-brown, apices of teeth dark brown; coxae yellow-brown, darker dorsally; legs yellow-brown, darker dorsally and also apically; wings hyaline, tegulae pale brown; ovipositor sheaths dark brown.

Antennae. F1 longer than scape and F2; 16–19 antennal segments (n= 10); setae on flagellar segments longer than width of segments; antennal sockets close together, separated by a distance less than their own diameter.

Head (Fig. 66). Temple length subequal to that of eye in dorsal view, slightly swollen; face broader than long; eyes bare, not converging below; eye-antennal sulcus absent. Frons with sparse, long, upwardly directed setae below antennal sockets and a line of downwardly-directed setae at inner eye and along anterior tentorial pit; vertex bare apart from a few short setae, clypeus with scattered setae; anterior margin of clypeus straight, posterior margin semicircular, deeply impressed. Mandible (Fig. 67) about 1.8× as long as apical width, slightly wider at apex than at base; tooth 1 slightly shorter and smaller than tooth 3, tooth 3 more broadly rounded, diagonal ridge absent; tooth 2 acutely pointed; outer mandibular surface smooth with scattered short setae. Anterior tentorial pits slightly narrowed basally. Malar space about equal to basal width of mandible; subocular sulcus indistinct, malar sulcus present.

Mesosoma (Fig. 68). Notauli present only anteriorly; mesoscutum without a midpit; disc setose at base and with 5–6 pairs of setae posterior of notauli (Fig. 69). Sternaulus sculptured, short; scutellar fovea with 2 more or less smooth pits; metanotum smooth. Propodeum (Fig. 70) with median carina present anteriorly; anterior field mainly smooth, rest of areola mostly effaced or obscured by rugose sculpture. Propodeal spiracle not enlarged, diameter of opening about 0.1× distance between spiracle and anterior propodeal margin.

Legs. Hind coxae setose ventrally, sparsely setose dorsally.

Wings (Fig. 65). 1CU about 2× as long as 1m-cu; (RS+M)b and most to all of 2RS depigmented; 2nd submarginal cell not distally narrowed, 2RS shorter about 2/3 length of 3RSa; 1cu-a postfurcal by less than its own length; 1st subdiscal cell complete, narrowed anteriorly; 2CUb arising above middle of 1st subdiscal cell; 2cu-a almost vertical. Hindwing subbasal cell more than 1/2 length of basal cell; posterodistal corner of basal cell rounded.

Metasoma laterally compressed; T1 (Fig. 71) almost 2× longer than apical width (21×38); bicarinate anteriorly; with anterior area between carinae smooth and rest of dorsal surface longitudinally striate; dorsope deep. Ovipositor shorter than hind femur; sheath with mid-length setae irregularly spaced to 0.75 distance from base, apically with very short setae.

Male. Forewing length 1.70–2.08 mm. Similar to female except with longer antenna, 18–19 segments (n=5).

Diagnosis. Mesosoma with 5–6 pairs of setae posterior of notauli.

Material examined. Type specimens only.

Collection localities. North Island: ND, AK, BP, TO. South Island: NN, MC. Offshore Islands: CH.

Biology. Adults have been collected from September to March and in May; the earliest collection year is 1926.

Etymology. The species epithet "*villosa*" is a noun in apposition derived from Latin, referring to the mesosomal setae.

Chaenusa Haliday, 1839

Type species *Bracon conjungens* Nees von Esenbeck, 1812 by monotypy

Generic diagnosis. Eyes hairy. Mandibles narrow, with 3 or 4 teeth, tooth 2 narrowly elongate. Forewing r-m absent (only 2 submarginal cells), RS+M present or absent, RS and M widely separated, stigma broad, venation reduced in some species (after Wharton & Austin (1991) and Wharton (1997)).

Chaenusa helmorei sp.n.

Fig. 72; Map p. 86

Type data. **Holotype**: female. Label details: "NEW ZEALAND HB/ Puketitiri/ Little Bush/ 27 Dec 1986/ T. H. Davis" and "cyanide/ Malaise trap" and "Illustrated/ D. W. Helmore/ 12.2.01" and "HOLOTYPE/ Chaenusa/ helmorei/ Berry" and "NZAC04014673".

Description. **Female**.

Forewing length 1.84 mm.

Colour. Antennal scape yellow-brown, pedicel medium brown, yellow distally, flagellum medium brown; head dark red-brown, mandibles and clypeus orange-brown with apices of teeth dark brown; mesosoma and propodeum dark red-brown to black; coxae yellow-brown, hind coxa darker basally; legs yellow-brown, darker distally; T1 dark red-brown to black, rest of metasoma red-brown; wings hyaline, tegulae yellow-brown.

Antennae. 21 antennal segments; F1 1.3× length of F2; setae on flagellar segments short, shorter than width of segment.

Head. Temple in dorsal view longer than eye, slightly swollen; face broader than long with weak medial crease from clypeus to antennal insertions. Eyes converging strongly; setose, with individual setae about length of 1 ommatidium. Frons with close medium length, dorsally directed setae plus a row of longer, ventrally directed setae adjacent eye, vertex sparsely setose, not sculptured. Clypeus as wide as high, produced, anterior margin slightly concave. Mandible more or less parallel sided, all teeth curved outwards; tooth 2 long and narrow, acutely pointed. Teeth 1 and 3 more outwardly curved than tooth 2; tooth 1 reduced and tooth 3 large, acutely pointed, deeply incised from tooth 2. Outer mandibular surface sculptured, setose. Anterior tentorial pits large, forming a sulcus distally which attenuates in widening space under eye.

Mesosoma. Pronotum setose laterally, bare dorsally, rugose. Mesonotum with 2 vague longitudinal lines of setae on each side, lateral lobes not particularly setose. Notauli present anteriorly, sculptured; mesoscutum with elongate, shallow midpit; sternaulus complete, sinuous, heavily sculptured. Scutellum flat, scutellar fovea sculptured, 2-pitted. Dorsellum carinate/slightly laminate. Propodeum covered in close short pubescence, with longitudinal medial carina present; otherwise sculpture coarsely rugose; spiracles not enlarged, diameter about 1/5 distance to anterior edge of propodeum.

Legs. Hind coxae with scattered setae, without setal crest; hind tibiae setose on inner surface; tibial claws short and inconspicuous.

Wings. Forewing stigma broad, r arising from middle; 1CU shorter than 1m-cu); 1m-cu narrowly antefurcal; (RS+M)a and part of 2RS depigmented; 2M present, spectral; 1st subdiscal cell not closed, 2cu-a indistinct, 2-1A incomplete; 2CUb arising near middle of 1st subdiscal cell. Hindwing subbasal cell less than 1/2 length of basal cell; posterodistal corner of basal cell rounded.

Metasoma. T1 about 1.3× as long as apical width, longitudinally striate, rugose medially; small dorsope present at anterior margin of T1. Ovipositor short, scarcely extending beyond metasoma in dorsal view; sheaths and hypopygium densely covered in short setae.

Male. Unknown.

Diagnosis. The possession of setose eyes in combination with the lack of the 3rd submarginal cell distinguishes *Chaenusa helmorei* from all other New Zealand alysiines.

Material examined. Holotype only.

Collection localities. North Island. HB.

Biology. The only specimen was collected in December 1986 and nothing is known of its biology.

Remarks. This species is described despite there being only one specimen (the holotype) available because the genus *Chaenusa* has not been recorded from New Zealand previously and the species is distinctive. *Chaenusa helmorei* has not been compared to specimens of the three

Australian species described by Wharton (Wharton & Austin 1991), but differs sufficiently from each description that I am confident it is not conspecific with any of them.

Etymology. This species is named in honour of D. W. Helmore (Landcare Research, Auckland, N.Z.), biological illustrator.

Other material of *Chaenusa*. One female from FD (NZAC) differs from *Chaenusa helmorei* in having the longitudinal medial carina of the propodeum present only anteriorly; having 22 antennal segments, darker coxae, a longer temple, and a wholly striate T1, with no central rugosity and reduced forewing venation. It is not described here as a new species because of the poor condition of the specimen.

Chorebus Haliday, 1833

Type species *Bassus affinis* Nees von Esenbeck *sensu* Haliday, 1833, by monotypy.

Generic Diagnosis. Wharton & Austin (1991) diagnosed *Chorebus* Haliday as follows: Mandible with 4 teeth, the additional tooth often quite small, located between tooth 2 and tooth 3; eyes glabrous in most species (*C. lymphatos* Haliday has hairy eyes); metapleuron usually with dense mat of depressed setae encircling low rounded rugose median protuberance ("metapleural rosette"); sternaulus present, with or without sculpturing. Wharton (1997) used the additional key character of forewing with r arising basad midpoint of stigma.

Remarks. *Chorebus* is the largest and most commonly collected dacnusine genus, and its species are nearly all parasitoids of Agromyzidae and Ephydridae. The known Australian fauna consists of 6 species: *Chorebus nigricapitis* Wharton and a further 5 undetermined species. These species all belong to species-groups where the sculptured sternaulus (common in Holarctic species) is represented by a long, narrow unsculptured groove, and where the metapleural rosette is often greatly reduced (Wharton & Austin 1991). The 3 known New Zealand species all show a sparsely setose metapleural rosette, however the common *Chorebus roderick*i retains the sculptured sternaulus while *Chorebus paranigricapitis* and *C. thorpei* are clearly more closely related to the Australian fauna (see remarks under *C. paranigricapitis*).

Key to the species of *Chorebus* from New Zealand (females and males)

1 Sternaulus heavily sculptured; mandible without 4th tooth on border of tooth 2 (Fig. 75–76) .... …(p. 30)… ***roderick*i** n. sp.

—Sternaulus in form of a long narrow unsculptured groove; mandible with distinct additional tooth on border of tooth 2 (may be difficult to see if specimen not rotated correctly) 2

2(1) Head and mesosoma more or less uniform orange-brown ..... …(p. 31)… ***thorpei*** n. sp.

—Head dark brown-black, contrasting strongly with bright orange-brown mesoscutum .... …(p. 29)… ***paranigricapitis*** sp.n.

Chorebus paranigricapitis sp.n.

Map p. 86

Type data. **Holotype**: male. Label details: "NEW ZEALAND CO/ Dunstan Mt./ Bendigo Mines/ 17 Jan 1981/ J.S.Noyes and" and " E.W.Valentine/ Sweeping/ grasses" and "HOLOTYPE/Chorebus/paranigricapitis/ Berry ♂" and "NZAC04014622" (NZAC).

Description. **Male**.

Forewing length 2.5 mm.

Colour. Antennae dark brown, except scape and pedicel orange; head brown-black except mandibles and clypeus orange; mesosoma bright orange-brown except: metanotum, entire propodeum, and tegulae brown-black; metasoma dark brown-black; all coxae and femora orange, pro- and mid-tibiae brown, meta-tibiae orange, tarsi dark brown; wings hyaline.

Antennae. 30 antennal segments; setae on flagellar segments much shorter than width of segment; dorsally more sparsely setose than ventrally.

Head. Temple about same length as eye in dorsal view and very slightly swollen; face broader than long. Eyes converging weakly below; frons with dense medium length setae. Clypeus with concave anterior margin, setae longer than on face; anterior tentorial pits small. 2nd tooth of mandible long, narrow, and acutely pointed with 4th tooth present as a small lobe on its lower edge; 3rd tooth pointed, directed ventrally. All teeth curved outward. Malar space short, shorter than basal width of mandible. Palp segments 3, 4, and 5 of equal length.

Mesosoma. Notauli present for most of length of mesoscutum, converging into mesoscutal midpit; anteriorly deeply impressed and sculptured, posteriorly weak,

unsculptured impressions; 7 or 8 setae roughly following each notaular line. Sternaulus complete, as a curved, unsculptured impressed line; scutellar fovea 2-pitted, pits more or less smooth; scutellum slightly convex, apex finely transversely striate, and more setose than rest of surface; metanotum with well-developed setose flange. Propodeum rugose over entire surface; covered in long whitish pubescence, sparse enough for sculpture to be seen, laterally pubescence arranged in very weak 'rosette' pattern.

Legs. Hind coxa with dense dorsal setal crest.

Wings. Stigma about 0.6× length of marginal cell; RS+M complete, anterior portion strongly curved; 2M long, non-spectral portion almost 1/2 length of RS; 1m-cu narrowly antefurcal; 2CUb arising below middle of 1st subdiscal cell; hindwing 1st subbasal cell slightly more than 1/2 length of basal cell.

Metasoma. T1 rugose, 1.65× longer than wide, dorsope shallow. Seven tergites visible, each with 1 row of setae, except T2, which has an extra row and T7 setose.

Female. Not known.

Diagnosis. *Chorebus paranigricapitis* is distinguished by the following combination of character states: 2 submarginal cells, 4th tooth on mandible, linear, unsculptured sternaulus, and strongly contrasting head and anterior mesosomal colour.

Material examined. Holotype only.

Collection localities. South Island: CO.

Biology. The only specimen was collected in January 1981 and nothing is known of its biology.

Remarks. This species is very close to *Chorebus nigricapitis* Wharton, as indicated by the species epithet. Although only known from one male specimen, I have described *C. paranigricapitis* to illustrate this close connection with the Australian fauna.

The specimen differs slightly in colour from the two female paratypes of *C. nigricapitis* I have seen (particularly in possessing dark brown tegulae) but this difference falls within the range given in Wharton's description. Otherwise it differs from *C. nigricapitis* in having:

i) a slightly longer and narrower T1;

ii) a sculptured scutellar apex;

iii) more antennal segments and

iv) 2CUb arising below the middle of the 1st subdiscal cell.

I believe these differences justify placing this specimen in a new species; however Wharton & Austin (1991) do note considerable variation in their species *nigricapitis*.

Etymology. This species is very close to *Chorebus nigricapitis* Wharton, as indicated by the species epithet.

Chorebus roderickí sp.n.

Fig. 73–81; Map p. 86

Type data. **Holotype**: female. Label details: "NEW ZEALAND AK/ Titirangi/ Nov 1980" and "P. A. Maddison/ Malaise trap/ in garden" and "HOLOTYPE/ Chorebus/ roderickí/ Berry" and "NZAC04014554" (NZAC). **Paratypes** (77 females, 18 males). **AK**: 3♀, 7♂, Matuku Reserve, 2 Oct 1986, D. Boe, sweeping grass; 1♀, Mangere, 19 Nov 1975, B.A. Holloway, em 11 Dec 1975, ex *Ephydria* pupar. in *Glyceria*; 2♂, Mangere, 29 Oct 1975 (19 Nov 1975), B.A. Holloway, em 10 Dec 1975 (17 Dec 1975), ex mud & *Glyceria*; 69♀ Birkenhead, Sep 1980 (8♀), Oct 1980 (7♀), Nov 1980 (13♀), Dec 1980 (40♀), Mar 1981 (1♀), J. F. Longworth, Malaise trap in 2nd growth bush; 3♂, Birkenhead, Sep 1980 (1♂), Dec 1980 (1♂), Feb 1981 (1♂), J. F. Longworth, Malaise trap in 2nd growth bush. **WA**: 1♀, 4♂, Woodville, Ballantrae, 1 Oct 1980, P. Watts. **MC**: 3♀, Christchurch, Dallington, 28 Oct 1921, 30 Jan 1922, 10 Mar 1922, E. S. Gourlay; 2♂, Christchurch, Dallington, 14 Mar 1922, E. S. Gourlay.

Description. **Female**.

Forewing length 1.5–2.4 mm.

Colour. Antennae brown, except distal pedicel which is yellow-brown; head dark red-brown to very dark brown-black, mandibles yellow-brown to brown; body dark red-brown to black; coxae 1 and 2 yellow-brown, 3 dark brown and yellow apically, or all coxae dark brown; legs ranging from yellow-brown with dark brown tarsus 5, to entirely dark brown; wings hyaline, tegulae mid brown.

Antennae around 1.2× length of forewing; 22–26 antennal segments (n=32); F1 longer than scape, and slightly longer than or subequal to T2; setae on flagellar segments much shorter than width of segment; antennal sockets separated by a distance less than their own diameter.

Head (Fig. 75). Temple wide, longer than eye in dorsal view and slightly swollen; face broader than long; eyes strongly converging below. Frons with scattered long whitish pubesence; anterior margin of clypeus concave. Malar space shorter than basal width of mandible. Mandibles (Fig. 76–77) over 2× as long as basal width; all teeth curved outwards in about the same plane. 1st and 3rd teeth sharply pointed, reduced, especially tooth 1; 2nd tooth long and acutely pointed; border between 1st and 2nd teeth deeply notched adjacent 1st tooth and then broadly swollen to form a long finely serrate flange (best seen in Fig. 77); 4th tooth between 2nd and 3rd absent (best seen in Fig. 76). Outer surface of mandible mostly unsculptured, with scattered long setae mainly confined to sloping upper and lower surfaces; diagonal ridges present on 1st and 3rd teeth.

Mesosoma (Fig. 78). Notauli deeply engraved but present

only very anteriorly; mesoscutum with elongate midpit and with or without a longitudinal median groove (difficult to see in some specimens if lighting is not standard); sternaulus complete, sinuous and sculptured; scutellum convex, sculptured at apex; scutellar fovea 2-pitted, pits longitudinally striate; metanotum wide, with produced medial carina, setose. Setae on mesoscutum and scutellum moderately long, scattered, not paired, not along notaular lines. Propodeum (Fig. 79) rugose over entire surface, with longitudinal medial carina present anteriorly; dorsally and laterally covered in long whitish pubescence, laterally setae arranged in very weak 'rosette' pattern.

Legs. Hind coxa with dense dorsal setal crest of short setae and longer scattered setae ventrally, sparsely setose laterally.

Wings (Fig. 74). Stigma linear, about 0.7× length of marginal cell; RS+M varying from just a stub to partially complete through to almost completely present; 1CU around as long as 1m-cu; 1m-cu antefurcal, long; 2M only present proximally; 1st subdiscal cell more or less complete; 2CUb arising near middle of 1st subdiscal cell; hindwing 1st subbasal cell slightly more than 1/2 length of basal cell.

Metasoma (Fig. 80). Metasoma ovoid, about 2.2× longer than greatest width. T1 (Fig. 81) about 1.2× as long as apical width; longitudinally striate, may or may not be rugose medially. Lateral edge of T1 with around 10 medium length setae at the centre, dorsal surface with a few shorter scattered setae. 7 tergites visible, each with 1 row of setae, except T2 which has an extra row. Ovipositor not or just extending beyond metasoma in dorsal view; sheaths densely setose dorsally and laterally on distal 1/2.

Male. Forewing length 1.9–2.3 mm. Similar to female except antennae longer; 23–27 antennal segments (n= 15); gaster more dorsoventrally flattened.

Diagnosis. *Chorebus roderickci* is distinguishable from all other New Zealand alysiines by the combination of bare eyes, lack of a 3rd submarginal cell, absence of a 4th tooth on the mandible, and possession of a sculptured sternaulus. The material examined shows considerable variation in the following character states (which appear to vary independently of each other):

The sculpture of T1 is basically longitudinally striate but some specimens show more or less rugose sculpture medially. Colour is also variable, particularly of the coxae, legs, and mandibles; forewing vein RS+M is variously present, reduced to a stub, or absent. One specimen is notable by having each wing showing a different state for this character.

Material examined. Type series plus 448 specimens (434♀, 14♂; NZAC) plus 4♀, 1♂ (TK, WN; MONZ) — see Appendix 3 for details of specimens examined.

Collection localities. North Island: ND, AK, BP, CL, WO, HB, TK, WI, WI/RI, WA/RI, WN. South Island: NN, BR, MC, MK, CO, OL, DN, SL.

Biology. Adults have been collected in all months except July and August; the earliest collection year seen is 1921. The only rearing record is from a puparium of *Ephydrella* (=*Ephydria*) sp. (Ephydridae).

Remarks. This species is difficult to place at the generic level (R. Wharton, pers. comm.) due to the ill-defined rosette on the metapleuron, lack of 4th tooth on the border of tooth 2 and the presence or absence of vein RS+M in the forewing. The conservative option followed here is to place it in *Chorebus* rather than to erect a new monotypic genus to contain it, which would in any case not be supportable, defined only by an absence of character states possessed by *Chorebus*. *Chorebus roderickci* is commonly collected .

Etymology. *Chorebus roderickci* named in honour of Dr Roderick Macfarlane, in recognition of the large amount of material he has collected and deposited in NZAC.

Chorebus thorpei sp.n.

Map p. 86

Type data. **Holotype**: female. Label details: "NEW ZEALAND CL/ Great Barrier I./ Little Windy Hill, 200m/ boggy forest clearing/ screen sweep/ 18.ii.2002, J.W. Early" and "HOLOTYPE/ Chorebus// Berry ♀" (AMNZ). **Paratypes** (3♂; AMNZ) **ND**: 3♂, Mt Camel Peninsula, 20 Dec 1982, R. F. Gilbert, marram grass area.

Description. **Female**.

Forewing length 2.6 mm.

Colour. Antennae dark brown, except scape and pedicel orange; head light orange-brown, except mandibles edged with dark brown and palps medium brown; body light orange-brown except propodeum and T1 darker; legs light orange-brown except apical tarsal segments dark brown; ovipositor sheaths dark brown; wings hyaline.

Antennae long, 29 antennal segments; setae on flagellar segments much shorter than width of segment; dorsally more sparsely setose than ventrally.

Head. Temple about same length as eye in dorsal view and very slightly swollen; face broader than long. Eyes converging weakly below; frons with dense short setae. Clypeus with concave anterior margin, setae longer than on face; anterior tentorial pits small. 1st tooth of mandible deeply incised from 2nd, this long, narrow and acutely pointed with 4th tooth present as a distinct lobe on its lower edge; 3rd tooth pointed, directed ventrally. All teeth curved outward. Malar space much shorter than basal width of mandible. Palp segment 3 longest.

Mesosoma. Notauli present for about 1/2 length of mesoscutum, anteriorly deeply impressed and sculptured, posteriorly weak, unsculptured impressions; mesoscutal dimple present; 7 or 8 setae roughly following each notaular line. Sternaulus complete, as a curved, unsculptured impressed line; scutellar fovea 2-pitted, pits somewhat sculptured; scutellum with scattered short setae; metanotum with well-developed setose flange. Propodeum weakly rugose, with median longitudinal carina more or less; covered in short pale pubescence, sparse enough for sculpture to be seen, but more densely setose posteriorly; laterally pubescence arranged in very weak 'rosette' pattern.

Legs. Hind coxa with dorsal setal crest of short setae.

Wings. Stigma indistinct; RS+M complete, anterior portion curved; 2M with non-spectral portion longer than in *C. rodericki*, about 1/3 length of RS; 1m-cu very narrowly antefurcal; 2CUb arising below middle of 1st subdiscal cell; hindwing 1st subbasal cell more than 1/2 length of basal cell.

Metasoma. T1 rugose, less than 2× longer than wide, dorsope shallow. Ovipositor slightly shorter than hind femur; sheaths stout and densely covered with short setae

Male. Forewing length 2.4–2.6 mm. 30–31 antennal segments (n=2). Similar to female but colour of apical tibial segments, propodeum and tergites 1–4 darker.

Diagnosis. *Chorebus thorpei* is distinguished by the following combination of character states: 2 submarginal cells; 4th tooth on mandible; linear, unsculptured sternaulus; long antennae and more or less uniform orange-brown colour.

Material examined. Type series only (AMNZ).

Collection localities. North Island: ND, CL.

Biology. Adults have been collected in December and February; the earliest collection year seen is 1982. There is no host information.

Etymology. This species is named for Stephen Thorpe (Auckland, N.Z.).

Other species of *Chorebus*. One male specimen, in poor condition, of a species close to *C. paranigricapitis* has been seen (NZAC). This specimen differs in colour from *C. paranigricapitis* as follows: mandibles and clypeus dark yellow-brown; mesosoma dark red-brown. Antenna 29-segmented. Due to its condition, this specimen is not described as a new species.

Dacnusa Haliday, 1833

Type species: *Bracon areolaris* Nees von Esenbeck, 1812 by subsequent designation

Generic diagnosis. Eyes bare. Mandible 3-toothed. Metapleural pubesence often dense, but directed downwardly, not in the form of a rosette. Female metasoma dorsoventrally depressed; tergite 2 unsculptured (both sexes). Forewing: r-m absent (only 2 submarginal cells); RS+M present; RS and M widely separated; stigma elongate, narrow, though broader and darker in the male (though the dimorphism is less noticeable in the *areolaris* group); 1m-cu arising basad 2RS (antefurcal); 1st subdiscal cell closed (2cu-a present) (after Griffiths (1964), Wharton (1997)).

Remarks. *Dacnusa* is a moderately large genus with approximately 87 Holarctic species (Docavo & Tormos 1997). There appear to be no native species of the genus in New Zealand (or Australia according to Wharton & Austin (1991)). The only species recorded from both countries to date is the Palearctic *D. areolaris*; establishment most probably resulted from accidental introductions in both countries.

Dacnusa areolaris (Nees von Esenbeck)

Fig. 1, 82–86; Map p. 87

Bracon areolaris Nees von Esenbeck, 1812: 20
Bassus areolaris: Nees von Esenbeck, (1812) 1814: 210
Alysia areolaris: Nees von Esenbeck, 1834: 262
Rhizarcha areolaris: Förster 1862: 275
Dacnusa lysias Goureau 1851:150. Syn Rondani 1876.
Dacnusa areolaris: Thomson 1895: 2321; Kelsey, 1937 (regional biology); Griffiths 1964 (taxonomy), 1966 (hosts). Shenefelt (1974, p.1084–1086): complete synonymy, literature.

Description. **Female**.

Forewing length 1.7–2.6 mm.

Colour. Antennae mid to dark brown, except scape and pedicel, which are lighter: head and mesosoma very dark brown to black, mandibles yellow-brown; T1 very dark brown/black, rest of metasoma dark brown; coxae 1 and 2 yellow to medium brown, 3 medium brown; legs yellow-brown; wings hyaline, tegulae mid brown; pubescence silvery-white.

Antennae. 21–23 antennal segments (n=10) (the literature records a range of 19–23 segments, Priore & Tremblay 1993); F1 1.2× length of F2; setae on flagellar segments short, shorter than width of segment, close; antennal sockets separated by a distance slightly less than their own diameter.

Head (Fig. 83). Temple wide, longer than eye in dorsal view; face broader than long; eye straight in lateral view. Eye small, longer than wide, bare; frons closely setose,

setae short. Clypeus about 2.6× wider than high, anterior margin slightly concave, setae long; anterior tentorial pits small. Mandibles with tooth 1 and 3 rounded, 2 long and acutely pointed. Malar space tiny.

Mesosoma (Fig. 84). Pronotum reduced; notauli present only very anteriorly; mesoscutum with midpit; sternaulus very weak, unsculptured; scutellum convex, scutellar sulcus narrow, longitudinally striate; metanotum not produced. Setae on mesoscutum and scutellum short, close and unpaired, absent along notaular lines on mesoscutum. Propodeal surface (Fig. 85) not carinate, obscured by long setae, on lateral surface these are directed backwards, towards hind coxa.

Legs. Hind coxa setose over surface, no setal crest.

Wings (Fig. 82). Stigma distinctly wider than R1, about 0.7× length of marginal cell, r arising from extreme base of stigma; 1CU longer than 1m-cu; 1m-cu spectral; 2M present; 1st subdiscal cell complete; 2CUb arising near middle of 1st subdiscal cell; hindwing 1st subbasal cell slightly more than 1/2 length of basal cell.

Metasoma (Fig. 86). 7 tergites visible, T1 obscured by close whitish pubescence; T2 setose anteriorly, posteriorly with 1 row of setae; all other tergites with 1 row of setae except T7 which is closely setose. Ovipositor not or just extending beyond metasoma in dorsal view; sheath densely setose; curved upwards.

Male. Forewing length 1.6–2.5 mm. Similar to female; 20–24 antennal segments (n=10); forewing stigma darker than in female.

Variation. The sculpture of T1 is basically longitudinally striate but some specimens show more or less rugose sculpture medially. Colour is also variable, particularly of the coxae, legs, and mandibles. Forewing vein RS+M is variously present, reduced to a stub or absent. One specimen is noted in which each wing showed a different state for this character. These characters appear to vary independently of each other; no consistent pattern could be detected.

Material examined. 404 specimens (247♀, 157♂; NZAC) plus 7♀, 6♂ (TK, NN; MONZ) — see Appendix 3 for details of specimens examined.

Collection localities. North Island: ND, AK, BP, TK, WO, WI, WN. South Island: SD, NN, WD, MC, SL. Offshore Islands: TH, CH, AN. Australia.

Biology. Adults (both sexes) have been collected in all months except April, May, and June; the earliest collection year seen is 1921 for females and 1940 for males.

The only host recorded for *D. areolaris* in New Zealand is *Chromatomyia syngenesiae* (Hardy) (Agromyzidae) (larvae and pupae), as *Phytomyza syngenesiae, P. atricornis* Meigen, and *Phytomyza albiceps* Meigen. *Chromatomyia syngenesiae* is also the only host recorded for *D. areolaris* from Australia (as *P. atricornis*) (Wharton & Austin 1991). Griffiths (1966) regarded the only valid host records for this species to be *Chromatomyia syngenesiae* (as *P. atricornis*), *Chromatomyia asteris* (Hendel) (as *Phytomyza asteris* Hendel), and *Chromatomyia nigra* (Meigen) (as *Phytomyza nigra* Meigen). Priore & Tremblay (1993) recorded *D. areolaris* from *Chromatomyia horticola* (Goureau) mines in *Sonchus asper* (Italy). Since only the first of these four agromyzid species is known from New Zealand, *Dacnusa areolaris* is probably effectively monophagous in this country. Less specific rearing records include: leaf miners, agromyzid flies, agromyzid leaf mines, associated with *Chromatomyia syngenesiae* and *Scaptomyza* sp.

Genus *Dinotrema* Förster

Dinotrema Förster, 1862: 268. Type species *Dinotrema erythropa* Förster, by monotypy and original designation.

Leptotrema van Achterberg, 1988: 42. Type species *Aspilota dentifemur* Stelfox, 1943, by monotypy and original designation. Synonymy by Wharton 2002.

Eudinostigma Tobias, 1986: 152. Type species *Eudinostigma fischeri* Tobias, 1986, by monotypy and original designation. Synonymy by Wharton 2002.

Generic diagnosis. 1st flagellomere equal to or longer than 2nd. Anterior tentorial pit not reaching eye; mandible with 3 simple teeth; subocular sulcus nearly always well developed. Sternaulus usually sculptured. T2 and T3 unsculptured. Forewing: r-m present; (RS+M)a present; 2RS usually present, when present shorter than 3RSa; r distinct, arising basad of elongate to linear stigma; 1m-cu arising distad 2RS (strongly postfurcal); 1st subdiscal cell open or closed; 2CUb arising slightly below the middle of 1st subdiscal cell to well above the middle. Ovipositor sheath sparsely setose (see further remarks under *Aspilota*).

Key to New Zealand species of *Dinotrema* Förster (females and males)

1 Mesoscutal midpit present (Fig. 93); hindwing subbasal cell at least 1/2 length of basal cell (Fig. 89) .... …(p. 34)… ***longworthi*** sp.n.

—Mesoscutal midpit absent (Fig. 99); hindwing subbasal cell ca. 1/3 length of basal cell (Fig. 87, 96) 2

2(1) All coxae pale compared to mesosoma; median longitudinal carina of propodeum more or less complete, anterior transverse carina present medially (Fig. 99–100) ..... …(p. 35)… ***philipi*** sp.n.

—At least hind coxae similar in colour to mesosoma; median longitudinal carina and anterior transverse carina of propodeum replaced by oval rugose area .... …(p. 34)… ***barrattae*** sp.n.

Dinotrema barrattae sp.n.

Fig. 87; Map p. 87

Type data. **Holotype**: female. Label details: "NEW ZEALAND SL/ Blue Mts. N. 900 m/ 5–27 Jan 85/ B.I.P. Barrratt" and "wing/ mounted" and "HOLOTYPE/ Dinotrema/ barrattae/ Berry" and "NZAC04015231" (NZAC). **Paratypes** (4♀, NZAC): **MC**. 1♀, Quail I, Banks Peninsula, 11 Jan 2000, M. H. Bowie, Malaise trap (NZAC04015224); 1♀, Lincoln, 3 Apr 1997, M. Bowie, pitfalls under macrocarpa hedge (NZAC04015233); 1♀, Lincoln University Orchard, IFP block, 2 Feb 1996, A. R. Gibb, Malaise trap (NZAC04015246); 1♀, Banks Peninsula, Prices Valley, Jan 1981, R. P. Macfarlane, Malaise trap, edge of bush (NZAC04015261).

Description. **Female**.

Forewing length 1.36–1.74 mm.

Colour. Antennal scape and pedicel dark yellow-brown, flagellum brown to dark brown; head yellow-brown with darker vertex to red-brown; body red-brown with dark brown propodeum to dark brown-black. Mandibles yellow-brown with apices of teeth dark brown; coxae and legs yellow-brown to red-brown; wings hyaline, tegulae yellow; ovipositor sheaths brown.

Antennae short and compact; F1 subequal in length to scape, longer than F2; F3 to F6 broader than other flagellar segments; 13–15 antennal segments (n=5); setae on flagellar segments longer than width of segment.

Head. Eye with minute setae; face, clypeus and mandible with long setae, vertex mainly bare. Anterior margin of clypeus straight. Mandible short and broad, broader at apex than base, about 1.1× longer than apical width; teeth widely separated; tooth 1 bluntly rounded, almost pointed, diagonal ridge conspicuous; tooth 2 acutely pointed and smaller; tooth 3 very broadly rounded and slightly larger than tooth 1. All teeth curved slightly outward from plane of mandible; scattered setae on surface. Anterior tentorial pits small, reaching less than 1/2 distance from clypeal edge to eye; oval. Malar space short; short subocular sulcus present, origin indistinct.

Mesosoma. Notauli present only anteriorly; mesoscutum without midpit; disc sparsely setose at base and with 1 or 2 pairs of setae posterior of notauli. Sternaulus sculptured, incomplete; scutellum convex, scutellar fovea smooth, with several longitudinal carinae; metanotum smooth. Propodeum with longitudinal medial carina weakly present to absent; with an oval medial area of rugose sculpture.

Legs. Hind coxae with several long setae on dorsal surface, setose ventrally.

Wings (Fig. 87): 1CU about same length as 1m-cu; 2nd submarginal cell wider than high, 2RS about 2/3 length of 3RSa; 1st subdiscal cell incomplete, 2cu-a absent and 2-1A effaced distally; origin of 2CUb indistinct; setae in marginal fringe moderately long, posterio-distally longer than vein r-m. Hindwing subbasal cell almost complete, cu-a effaced; hindwing subbasal cell about 1/3 length of basal cell; setal fringe along posterior margin of hindwing basally longer than maximum width of wing.

Metasoma. T1 bicarinate, longitudinally striate; dorsal pits deep. Ovipositor about as long as hind femur; sheaths with setae at apex very short and sparse, with longer setae towards base.

Male. Not known.

Diagnosis. Mesoscutal midpit absent; propodeal carination rugose medially

Material examined. Type specimens only (5♀; NZAC).

Collection localities. South Island: MC, SL.

Biology. Adults have been collected in January, February, and April. The earliest collection year seen is 1985. There are no host data for this species.

Etymology. This species is named for Dr Barbara Barratt (AgResearch, N.Z.), in recognition of the large amount of material she has collected and contributed to NZAC.

Dinotrema longworthi sp.n.

Fig. 88–95; Map p. 87

Type data. **Holotype**: female. Label details: "NEW ZEALAND AK/ Birkenhead/ Oct 1980/ J.F. Longworth/ Malaise trap in/ 2nd growth/ bush" and "HOLOTYPE/ Dinotrema/ longworthi/ Berry" and "NZAC04015311" (NZAC). **Paratypes** (33 ♀, 14 ♂; NZAC): **AK**: 6♀, Birkenhead, Jan 1981 (5♀), Mar 1981 (1♀), J. F. Longworth, Malaise trap in 2nd growth bush; 2♀, Lynfield, 16 Nov 1980 (1♀), 8 Feb 1981 (1♀), G. Kuschel, Malaise trap; 1♀, Lynfield, 22 Feb 1981, G. Kuschel, Litter 75/14; 2♀, Lynfield, 9 Nov 1986, B. A. Holloway, in porch; 4♀, Titirangi, Oct 1980 (3♀), Nov 1980 (1♀), G. W. Ramsay, Malaise trap in garden; 1♀, Titirangi, Nov 1980, P. A. Maddison, Malaise trap in garden; 3♂, Birkenhead, Oct 1980 (1♂), Dec 1980 (2♂), J. F. Longworth, Malaise trap in second growth bush; 1♂, Laingholm, 25 Apr 1980, R. H. Kleinpaste; 3♂, Titirangi, Sep 1980 (1♂), Oct 1980 (2♂), G. W. Ramsay, Malaise trap in garden; 1♂, Lynfield, 22 Feb 1975, G. Kuschel, Litter 75/14. **HB**: 1♀, Havelock North, 23 Oct 1984, J. G. Charles, at window. **WI**: 1♀, Palmerston North, Monros Bush, Mar 1981, P. Watts, Malaise trap in bush. **NN**: 2♀, Bullivants I, Mapua Estuary, Apr–May 1987 (1♀), Dec 1987 (1♀), A. K. Walker, Malaise trap in coastal scrub; 2♂, Marsden V, 20 May 1971, G. Kuschel, reared ex *Armillaria mellea*, W71/5, em

14 Sep 1971. **MC**: 3♀, McQueens Valley, 31 Dec 1976, P. Read, hatched in lab, Jan 1977, ex fly larvae on dead *B. terrestris*; 2♀, Christchurch, 10 Feb 1976, R. P. Macfarlane, from *Bombus hortorum* (L.) nest; 1♂, Christchurch, 11 Apr 1922, E. S. Gourlay; 2♂, Christchurch, Dallington, Late Jan 1922, E. S. Gourlay. **MK**: 5♀, Lake Tekapo, Nov 1980 (1♀), Dec 1980 (2♀), Jan 1981(1♀), P. Quinn, Malaise trap in tussock near pine plantation. **CO**: 1♀, Kawarau Gorge, 530 m, 20 Mar 1975, J. C. Watt, Malaise trap. **OL**: 1♂, Lake Hawea, Kirks Bush, 16 Jan 1981, J. S. Noyes & E. W. Valentine, sweeping *Nothofagus*. **SI**: 1♀, Stewart I, Mt Rakeahua, 304–609 m, 21 Feb 1968, J. McBurney, 68/75. **AU**: 1♀, Adams I, Magnetic Cove, 3 Feb 1966, G. Kuschel, reared ex *Pleurophylum* flowerheads, em 3 Mar 1966.

Description. **Female**.
Forewing length 1.3–2.4 mm.

Colour. Antennal scape and pedicel orange-brown, flagellum brown; head and mesosoma dark reddish-brown including clypeus; T1 brown to dark reddish-brown, rest of metasoma from dark yellow-brown to dark reddish-brown. Mandibles yellow-brown with apices of teeth dark brown to medium brown throughout; legs yellow-brown, hind coxae usually darker at bases; wings hyaline, tegulae yellow-brown; ovipositor sheaths dark brown.

Antennae short and compact; F1 distinctly longer than scape and F2, F3 to F5 broader than other flagellar segments; 15–18 antennal segments (n=10); dense setae on flagellar segments, about as long as width of segments.

Head (Fig. 90–91). Eye with minute setae; face, clypeus, and mandible with long setae, denser than *philipi*, vertex with scattered setae. Anterior margin of clypeus distinctly concave. Mandible (Fig. 92) slightly broader at apex than base, about 1.5× longer than apical width; teeth less widely separated than in *philipi*; tooth 1 rounded, diagonal ridge short and inconspicuous; tooth 2 acutely pointed; tooth 3 rounded, about the same size as tooth 1. All teeth curved outward from plane of mandible; surface with scattered setae. Anterior tentorial pits reaching at least 1/2 distance from clypeal edge to eye, oval. Malar space wider than species 1; subocular sulcus distinct, originating at lower margin of face (Fig. 91; cf Fig 11, Wharton 1985).

Mesosoma (Fig. 93). Notauli present only anteriorly; mesoscutum with midpit; disc with scattered setae in posterior 1/2 and with more or less paired setae along notaular traces posteriorly. Sternaulus sculptured, incomplete; scutellum convex, scutellar fovea with 2 smooth pits or with additional longitudinal carinae; metanotum smooth. Propodeum (Fig. 94) with longitudinal medial carina present anteriorly, weakly areolate, areola sometimes partly effaced by rugose sculpture; spiracle not enlarged.

Legs. Hind coxae setose on ventral surface, otherwise with scattered setae.

Wings (Fig. 89). 1CU longer than 1m-cu; 2nd submarginal cell wider than high, 2RS slightly more than 1/2 length of 3RSa; 1st subdiscal cell almost complete except 2cu-a very narrowly effaced; 2CUb arising near middle of 1st subdiscal cell; setae in marginal fringe short, shorter than vein r-m. Hindwing subbasal cell almost complete, cu-a very narrowly effaced; hindwing subbasal cell about 1/2 length of basal cell; setal fringe along posterior margin of hindwing less than maximum width of wing, even basally.

Metasoma laterally compressed. T1 (Fig. 95) bicarinate anteriorly, carinae fading posteriorly, otherwise rugose with or without additional longitudinal striations; dorsope deep. Ovipositor less than or equal to length of hind femur; sheaths with setae at apex very short and sparse, longer towards base.

Male. Forewing length 1.8–2.6 mm. Similar to female except antenna longer and less compact; 18–23 antennal segments (n=10).

Diagnosis. Mesoscutal midpit present; propodeum more or less areolate, rugose.

Material examined. Type specimens only (34 ♀, 14 ♂; NZAC)

Collection localities. North Island: AK, HB, WI. South Island: NN, MC, MK, OL, CO, SI. Offshore islands: AU.

Biology. Adults have been collected in all months except June, July, and August. The earliest collection year seen is 1922. This species has been reared from *Armillaria mellea* (Vahl: Fr.) Kummer (presumably from dipterans associated with this soil fungus), and has been recorded in the laboratory from fly larvae on dead *Bombus terrestris* (L.) and from a nest of *Bombus hortorum* (L.) (Apidae).

Etymology. This species is named for John F. Longworth, formerly of the Department of Scientific and Industrial Research (Auckland, N.Z.), in recognition of the large amount of material he has collected and contributed to NZAC.

Dinotrema philipi sp.n.

Fig. 96–101; Map p. 87

Type data. **Holotype**: female. Label details: "NEW ZEALAND AK/ Birkenhead/ Mar 1981/ J.F. Longworth/ Malaise trap in/ 2nd growth/ bush" and "HOLOTYPE/ Dinotrema/ philipi/ Berry" and "NZAC04015331" (NZAC). **Paratypes** (51♀, 6♂; NZAC): **ND**: 1♂, Houhora Chalets, 18–20 Oct 1982, CF Butcher, Malaise trap in orchard & manuka. **AK**: 6♀, Titirangi, Nov 1980 (1♀), Jan 1980 (5♀), P. A. Maddison, Malaise trap in garden; 19♀,

Birkenhead, Nov 1980 (1♀), Dec 1980 (3♀), Jan 1981 (8♀), Feb 1981 (2♀), Mar 1981 (5♀), J. F. Longworth, Malaise trap in 2nd growth bush; 5♀, Lynfield, 15 Feb 1981 (1♀), 1 Mar 1981 (1♀), 22 Mar 1981 (1♀), 18 Apr 1981 (1♀), 5 Apr 1981(1♀), G. Kuschel, Malaise trap; 1♀, Huia, Apr 1981, B. M. May, Malaise trap in bush; 2♂, Birkenhead, Dec 1980 (1♂), Jan 1981 (1♂), J. F. Longworth, Malaise trap in second growth bush; 1♂, Huia, 1 Dec 1980, B. M. May, Malaise trap in bush; 1♂, Titirangi, Jan 1981, P. A. Maddison, Malaise trap in garden; 1♂, Mangere, Montgomeries Farm, 19 Nov 1974, N. A. Martin, sweeping pasture. **WO**: 1♀, Rukuhia Moanatuatua Scientific Reserve, 9 Feb 1998, G. M. Barker, Peat bog Transect site 13 S15 187 617, pitfall trap; 1♀, Meremere Island Block Rd, 21 Jan 1998, G. M. Barker, Whangamarino peat bog transect site 2 S13 002 295, pitfall trap. **BP**: 4♀, Rotorua, Forest Research Inst., Nov 1980 (1♀), Feb 1981 (3♀), J. Bain, Malaise trap; 1♀, Orete Forest, Te Puia Hut, 26–28 Apr 1993, G. Hall, pan traps on edge of bush; 1♀, Rereauira Swamp, 26 Jan–9 Mar 1993, J. S. Dugdale, pit traps. **GB**: 1♀, Waimata V, Kaharoa Stn, 22 Nov 1993–10 Jan 1994, G. Hall, pit traps. **HB**: 2♀, Little Bush, Puketitiri, 14 Apr 1986 (1♀), 22 May 1986 (1♀), T. H. & J. M. Davies. **NN**: 7♀, Bullivants I, Mapua Estuary, Apr 1987 (2♀), Jun 1987 (1♀), Aug 1987 (2♀), Oct 1987 (1♀), Dec 1987 (1♀), A. K. Walker, Malaise trap in coastal scrub.

Description. **Female**.

Forewing length 1.4–1.9 mm.

Colour. Antennal scape and pedicel light yellow-brown, flagellum medium brown or entire antenna pale brown; head and body medium to dark brown, excepting: clypeus, posterior propodeum and T1 yellow-brown (in smaller specimens these parts light brown). Mandibles yellow-brown with apices of tooth 1 and tooth 2 dark brown; coxae and legs yellow to pale brown, contrasting with darker body; wings hyaline, tegulae yellow; ovipositor sheaths brown.

Antennae short and compact; scape, F1 and F2 subequal in length, F3 to F5 broader than other flagellar segments; 14–17 antennal segments (n=10); setae on flagellar segments longer than width of segment.

Head (Figs 97–98). Eye with minute setae; face, clypeus and mandible with long setae, vertex mainly bare. Anterior margin of clypeus straight. Mandible short and broad, broader at apex than base, about 1.2× longer than apical width; teeth widely separated; tooth 1 large, bluntly rounded, diagonal ridge present; tooth 2 smaller and acutely pointed; tooth 3 large and broadly rounded. All teeth curved outward from plane of mandible, outer surface with scattered setae. Anterior tentorial pits small, reaching about 0.3× distance from clypeal edge to eye; oval. Malar space short; short subocular sulcus present, origin indistinct.

Mesosoma (Fig. 99). Notauli present only anteriorly; mesoscutum without midpit; disc sparsely setose at base and with 1 or 2 pairs of setae posterior of notauli. Sternaulus sculptured, incomplete; scutellum convex, scutellar fovea smooth, with several longitudinal carinae; metanotum smooth. Propodeum (Fig. 100) with longitudinal medial carina present anteriorly, developed into a shallow flange; posteriorly as a carina, sometimes diverging weakly, more or less crenulate posteriorly; anterior transverse carina present medially; sculpture mostly smooth; spiracle not enlarged.

Legs. Hind coxa with a few long setae dorsally, ventrally setose.

Wings (Fig. 96). 1CU about as long as 1m-cu; 2nd submarginal cell wider than high, 2RS slightly more than 1/2 length of 3RSa (10:18); 1st subdiscal cell almost complete except 2cu-a partly effaced; 2CUb arising above middle of 1st subdiscal cell; setae in marginal fringe long, most longer than vein r-m. Hindwing subbasal cell incomplete, cu-a partly effaced; subbasal cell around one 3rd length of basal cell; setal fringe along posterior margin of hindwing basally as long as maximum width of wing.

Metasoma. T1 (Fig. 101) about 1.4× longer than apical width; bicarinate anteriorly, longitudinally striate; dorsope deep. Ovipositor shorter than hind femur; sheaths delicate, with one long seta subapically and short setae regularly spaced along length.

Male. Forewing length around 1.6 mm Similar to female, except antenna longer and less compact; 16–18 antennal segments (n=6).

Diagnosis. Mesoscutal midpit absent, 1st tooth of mandible large; propodeal carination distinctive, coxae contrasting with mesosoma in colour; hindwing with short subbasal cell.

Material examined. Type specimens plus 2♀, 1♂ (AK; AMNZ); 1♂ (TK; MONZ) — see Appendix 3 for details of specimens examined.

Collection localities. North Island: ND, AK, WO, BP, HB, TK, GB. South Island: NN.

Biology. Adults have been collected in all months except July and September. The earliest collection year seen is 1974. No hosts have been recorded for this species.

Etymology. This species is named for Bruce Philip (Auckland, N.Z.).

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Appendix 1. Host–Parasitoid list for New Zealand alysiine braconids.

Diptera: Agromyzidae
Chromatomyia syngenesiae (Hardy): *Dacnusa areolaris*

Diptera: Calliphoridae
Calliphora hilli Patton: *Asobara antipoda*
Calliphora quadrimaculata (Swederus): *Alysia manducator*
Calliphora stygia (Fabricius): *Alysia manducator*; *Asobara antipoda*
Calliphora vicina Robineau-Desvoidy: *Alysia manducator*
Chrysomya rufifacies (Macquart): *Alysia manducator*
Lucilia sericata (Meigen): *Alysia manducator*
Xenocalliphora hortona (Walker): *Alysia manducator*

Diptera: Drosophilidae
Drosophila melanogaster Meigen: *Asobara persimilis*
Drosophila neozelandica Harrison: *Asobara tabida*
Scaptomyza flava (Fallén): *Asobara persimilis*

Diptera: Ephydridae
Ephydrella sp.: *Chorebus rodericki*

Diptera: Fanniidae
Indet. fanniid puparium: *Asobara ajbelli*

Diptera: Lonchaeidae
Lamprolonchaea brouniana (Bezzi): *Aphaereta aotea* (Ex)

Diptera: Muscidae
Musca domestica L.: *Aphaereta aotea* (Ex)
Musca fergusoni Johnson & Bancroft: *Aphaereta aotea* (Ex)
Musca vetustissima Walker: *Aphaereta aotea* (Ex)
Neomyia australis (Macquart): *Aphaereta aotea* (Ex)
Neomyia lauta (Wiedemann): *Aphaereta aotea* (Ex)

Diptera: Sarcophagidae
Oxysarcodexia varia (Walker): *Aphaereta aotea*
Tricharaea brevicornis (Wiedemann): *Aphaereta aotea* (Ex)
Parasarcophaga misera (Walker): *Aphaereta aotea* (Ex)

Appendix 2. Parasitoid–Host list for New Zealand alysiine braconids.

A: Alysiini
Alysia manducator (Panzer, 1799)
Calliphoridae: *Calliphora quadrimaculata* (Swederus) (Valentine 1967); *Calliphora stygia* (Fab.) (as *C. laemica* White) (Miller 1927); *Calliphora vicina* Robineau-Desvoidy (as *C. erythrocephala* Meigen) (Valentine 1967); *Chrysomya rufifacies* (Macquart) (Miller 1927); *Lucilia sericata* (Meigen) (Miller 1927); *Xenocalliphora hortona* (Walker).

Aphaereta aotea Hughes & Woolcock, 1976
Sarcophagidae: *Oxysarcodexia varia* (Walker) (as *Sarcophaga milleri* Walker, *Tricholioproctia milleri* (Johnston & Tiegs), *Hypopygia varia* (Walker)).
Extralimital: *Lamprolonchaea brouniana* (Bezzi) (Lonchaeidae); *Musca domestica* L., *M. fergusoni* Johnson & Bancroft, *M. vetustissima* Walker, *Neomyia australis* (Macquart), *N. lauta* (Wiedemann) (Muscidae); *Tricharaea brevicornis* (Wiedemann) and *Parasarcophaga misera* (Walker) (Sarcophagidae) (Hughes & Woolcock 1978).

Aphaereta pallipes (Say, 1829)
Extralimital: Noctuidae: *Eudocima fullonia* (Clerck) (=*Othreis fullonia*). See note under species entry.

***Asobara ajbelli* sp.n.**
Fanniidae: indet fanniid puparium in *Mystacina* guano.

Asobara antipoda Ashmead, 1900
Calliphoridae: *Calliphora hilli* Patton; *Calliphora stygia* (F.) (as *Pollenia stygia*).

Asobara persimilis (Papp, 1977)
Drosophilidae: *Drosophila melanogaster* Meigen; *Scaptomyza flava* (Fallén).

Asobara tabida (Nees von Esenbeck, 1834)
Drosophilidae: *Drosophila neozelandica* Harrison.

B: Dacnusini
***Chorebus rodericki* sp.n.**
Ephydridae: *Ephydrella* (as *Ephydria*) sp.

Dacnusa areolaris (Nees, 1812)
Agromyzidae: *Chromatomyia syngenesiae* (Hardy) (as *Phytomyza syngenesiae, P. atricornis* Meigen, and *Phytomyza albiceps* Meigen)

Appendix 3. Non-type material examined

***Alysia manducator* (Panzer)**

Material examined: 136 specimens (77♀, 59♂; NZAC). **North Island: AK**. 1♀, Pt Chevalier, 27 Dec 1987, JA Berry, in garden. 1♀, Mt Albert?, baited cylinder trap. 1♂, Birkenhead, Jan 1981, JF Longworth, Malaise trap in second growth bush. 6 ♂, Lynfield, 24 Sep 1976, BA Holloway, ex puparium *Calliphora vicina* in dead blackbird, em 24 Nov 1976. 5♂, Lynfield, Tropicana Drive, em 10 Nov 1976, BA Holloway, ex *Calliphora vicina* in soil under blackbird died 25 Sep 1976. 3♂, MARC, 30 Oct 1989, JJ Dymock, reared ex puparia of *Xenocalliphora hortona*. 2♂, MARC Forensic Exp., 21 Jul–9 Oct 2000. B Rhode. **WO**. 3♀, 1♂, Limestone Downs, 4 Feb 1990 (1♀, 1♂), 15 Feb 1990 (2♀), T Herman, fly trap. 1♂, Taumatatotara, 1 Oct 1961, BM May, under dead opossum in bush. **TO**. 5♀, Taupo, Lockinver Stream (Lochinver?), 19–26 Jan 1978, M Clarke, ex Massey liver baited trap. **HB**. 1♀, Hawkes Bay, Haumoana, 4 Nov 1979, TH Davies, ex dead cat, pupated 10 Oct 1978, emerged 4 Nov 1979. 1♂, Hawkes Bay, Haumoana, 8 Nov 1979, TH Davies, ex dead cat, pupated 10 Oct 1978, emerged 8 Nov 1979. 1♀, Hawkes Bay, Haumoana, 10 Nov 1979, TH Davies, ex dipteran pupa reared from under dead cat. 2♂, Havelock North, Karamu Ck, 8 Nov 1984, JG Charles. **WI**. 1♂, Foxton (Man.), Oct 1951, RA Cumber. **WN**. 1♀, Wallaceville Animal Research Centre, 27 Oct 1970, A Heath, fly trap in bush. **South Island**. **SD**. 1♀, Ronga Saddle, 304 m, 23 Oct 1950, J Timlin. 2♀, Tennyson Inlet, 9 Nov 1971, D Perrott, taken from *Vespula* trap. **NN**. 1♀, Nelson, 17 Oct 1944, PLR. 1♀, 2♂, Nelson, 20 Oct 1928, ES Gourlay. 1♀, Nelson, 1938, J Jeffreys, 95/51. 1♀ Oct 1958, ES Gourlay, sitting on ESG's trousers. 1♂, Nelson, 21 Feb 1964, ES Gourlay. 2♂,Nelson, 20 Feb 1964, ES Gourlay. 1♂, Nelson, Rough Island, 24 Jan 1976, AK Walker, beating native vegtation. 1♂, Richmond, 27 Oct 1950, AW Parrott, 32/50. **KA**. 1♂, Puhi Puhi Reserve, 3–6 Dec 1957, ES Gourlay. **MC**. 15♀, 10♂, Christchurch, 15 Jun 1971, DS Horning, parasite in blowfly colony. **MK**. 3♀, Lake Tekapo, Dec 1980, P Quinn, Malaise trap in tussock near pine plantation. **DN**. 2♀, Dunedin, Otago Museum yard, 23 Apr 1981, AC Harris, *Calliphora quadrimaculata*. **NEW ZEALAND**. 1♀, 8♂, NZ, Sep 1927 (7♂), Oct 1927 (1♀, 1♂), bred from muscid. **ENGLAND**. 5♀, 6♂, England, Ashen, Essex, Sep–Oct 1926, ex muscid puparia. 4♂, Locality unknown, 2 May 1962, ES Gourlay, ex blowfly pupa.

***Aphaereta aotea* Hughes & Woolcock**

Material examined. 972 specimens (956♀, 16♂; NZAC). **North Island**. **ND**. 1♀, Hikurangi, 2 Mar 1976, Biological Control Survey, swept over *Zea mays*. 1♀, Omahuta Kauri Sanctuary, 9 Mar 1977, JS Dugdale, to light. 1♀, Ruawai, 28 Mar 1976, Biological Control Survey, swept over kumara. 3♀, Tangowahine, 17 Dec 1975, Biological Control Survey, swept over ryegrass/clover pasture. 1♀, Waipapa, 2 Mar 1976, RL Hill, sweeping *Zea mays*. **AK**. 96♀, Birkenhead, Nov 1980 (4♀), Dec 1980 (7♀), Jan 1981 (50♀), Feb 1981 (31♀), Mar 1981 (4♀), JF Longworth, Malaise trap in second growth bush. 16♀, 2♂, Helensville, 1 Apr 1970 (12♀, 2♂), 28 Mar 1973 (4♀), RA Cumber, ex *Sarcophaga milleri*. 2♀, Helensville, 27 Mar 1973, RA Cumber, ex puparia of *Sarcophaga milleri*. 3♀, Huia, Dec 1980 (1♀), Feb 1981 (1♀), Mar 1981 (1♀), BM May, Malaise trap in bush. 2♀, Kawau Island, 27 Mar–13 May 1992, D Williams, Malaise trap. 6♂, Lynfield, 8 Feb 1975, G Kuschel, sheep dung 75/10. 3♀, Lynfield, 7 Sep 1980 (1♀), 18 Jan 1981 (1♀), 1 Feb 1981, G Kuschel, Malaise trap. 1♀, Lynfield, 15 Jan 1985, BA Holloway, in porch. 3♀, Lynfield, Tropicana Drive, 30 Jun 1974, G Kuschel, on fruit. 4♀, Mangere, 11 Feb 1975, em 25 Feb 1975, NA Martin, ex cow dung. 10♀, 3♂, Mangere, 14 Mar 1975, em 1 Apr 1975, NA Martin, ex *Tricholioproctia milleri* pupae collected from cow dung. 1♂, Mangere, Montgomerie Farm, 19 Nov 1974, NA Martin, sweeping pasture. 1♀, Manurewa, 26 Oct 1983, VE Eastop. 2♀, Manurewa, 6 May 1990, HF Gribble. 4♀, Mt Albert, 188 Mt Albert Rd, 29 Feb 1976, TK Crosby, Malaise trap. 2♀, Mt Albert, MARC, coll 17 Jul 2000, em 16 Aug 2000, B Rhode, Forensic Exp. 4♀, Noises Islands, Motuhoropapa, 11–17 Jan 1978, LL Deitz, Malaise trap near pit trap 23. 1♀, Noises Islands, Motuhoropapa, 18 Feb 1978, JS Dugdale, to light. 3♀, Noises Islands, Motuhoropapa, Snail Flat, near hut, 11–18 Jan 1978, LL Deitz, Malaise trap. 11♀, Puketutu Island, 22–29 Jan 1982, J Clearwater, Malaise trap in citrus orchard. 1♀, Riverhead, Blackmores Farm, 31 Dec 1974, NA Martin, pasture sweep. 1♀, Tapora, 20 Nov 1975, RL Hill, swept lucerne. 1♀, Tapora, 18 Jan 1976, Biological Control Survey, swept over ryegrass/clover pasture. 5♀, Titirangi, Oct 1980 (4♀), Nov 1980 (1♀), GW Ramsay, Malaise trap in garden. 8♀, Titirangi, Jan 1981, PA Maddison, Malaise trap in garden. 1♀, Wellsford, 14 Mar 1989, M. Lessiter, on [fly]struck sheep. 1♂, Whatipu, 26 Jan 1975, BA Holloway, beating *Senecio*, lupin & grasses on dunes. 1♀, Whenuapai, 18 Feb 1971, RA Cumber, ex *Sarcophaga milleri*. 1♀, Woodhill, 6 Jan 1977, DJ Allan, sweeping pasture. **BP**. 1♀, Hicks Bay, 29 Apr 1993, JS Dugdale, beating. 1♀, Lake Rotoma, 15 Feb 1979, JS Dugdale, sweeping *Hebe stricta*. 1♀, Rotorua, Blue Lake, 22 Jan 1982, CF Butcher, sweeping. 11♀, Rotorua, Forest Research Inst., Feb 1981, J Bain, Malaise trap. 2♀, Waiaroho, Dec 1992–27 Jan 1993, JS Dugdale, Malaise trap (damaged). 2♀, Whangaparaoa, 7–12 Mar 1993, JS Dugdale & JW Marris, UV light. **CL**. 1♀, Colville, 21 Feb 1973, RA Cumber, ex *Sarcophaga milleri*. 1♀, Coromandel, Kennedy Bay, 7 May 1969, HA Oliver, Malaise trap. 24♀, Little Barrier I, Caretakers Garden, 21–23 Feb 1976, AK Walker & TK Crosby, Malaise trap. 5♀, Little Barrier I, Caretakers Garden, 22 Feb 1976, AK Walker & TK Crosby, sweeping old orchard. 4♀, Little Barrier I, Caretakers Garden, 22 Feb 1976, AK Walker. 1♀, Little Barrier I, Haowhenua Stream, 21 Feb 1976, AK Walker. 2♀, Little Barrier I, Pohutukawa Flat, 20 Feb 1976, AK Walker, sweeping. 15♀, Little Barrier I, Te Maraeroa, 21 Feb 1976, AK Walker, sweeping *Muehlenbeckia*. 1♀, Little Barrier I, 19 Feb 1976, TK Crosby & AK Walker, Malaise trap in bush. 2♀, Little Barrier I, 22 Feb 1976, TK Crosby & AK Walker, sweeping rushes in field. 1♀, Mercury Is, Korapuki I, 11–13 Dec 1987, G Hall, Malaise trap. 1♀, Mercury Is, Ohena I, Old Man Rock, 26 Nov 1972, D Merton, litter 72/240. 1♀, Thames, Kirikiri saddle, 400m, 12 Feb 1979, JS Dugdale, to light. 2♀, 19 km east of Tapu, 31 Jan 1981, JS Noyes. **WO**. 3♀, Mangatarata,

Mar 1982, R Chambers, reared larva/pupa *Hypopygia varia*. 3♀, Paeroa, near Elstow Canal, Kopouatai, <10 m, 12 Feb 1988, GM Barker, peat bog, pitfall trap, Awaiti Canal Road, transect. 2♀, Rukuhia, Moanatuatua Scientific Reserve, Feb 1998, GM Barker, peat bog, Malaise trap, transect. 2♀, Cambridge, 23 Dec 1975, Biological Control Survey, swept over ryegrass/clover pasture. 1♀, Morrinsville, 21 Jan 1976, Biological Control Survey, swept over ryegrass/clover pasture. 16♀, Morrinsville, 24 Feb 1976, Biological Control Survey, swept over *Zea mays*. 1♀, 2♂, Paterangi, 22 Dec 1975, Biological Control Survey, swept over ryegrass/clover pasture. 2♀, Pokuru, 24 Feb 1976, Biological Control Survey, swept over *Zea mays*. 1♀, 1♂ Ruawaro, 19 Jan 1976, Biological Control Survey, swept over ryegrass/clover pasture. 3♀, Ruawaro, 23 Feb 1976, Biological Control Survey, swept over *Zea mays*. 4♀, Te Kauwahata, 23 Feb 1976, Biological Control Survey, swept over *Zea mays*. 1♀, Waitakaruru, 23 Feb 1976, Biological Control Survey, swept over ryegrass/clover pasture. 1♀, Waitakaruru, 1 Apr 1976, Biological Control Survey, swept over *Zea mays*. 1♀, Whatawhata, 22 Dec 1975, Biological Control Survey, swept over ryegrass/clover pasture. 1♀, Whatawhata, 22 Feb 1976, Biological Control Survey, swept over *Zea mays*. **TO**. 1♀, Kaimanawa Forest, 31 Jan 1971, HA Oliver, Malaise trap in *Nothofagus fusca*. 11♀, SW Taupo, 25 Jan 1990, T Herman, reared ex maggots on fly-blown lamb. 1♀, Taupo Botanic Reserve, 14 Jan 1985, TH & JM Davies. **GB**. 1♀, Awatere Valley, Pohutu, 30 Jan 1993, JS Dugdale, to MV light. 1♀, Taikawakawa, 2 Feb 1993, 18 Mar 1993, JS Dugdale, Malaise trap. 3♀, Taikawakawa, 18 Mar–1 May 1993, G Hall, Malaise trap. **HB**. 1♀, Hawkes Bay, Haumoana, 1 Feb 1985, TH & JM Davies. 26♀, Little Bush, Puketiriri, 16 Jan 1986 (1♀), 21 Jan 1986 (1♀), 26 Jan 1986 (1♀), 10 Feb 1986, 20 Feb 1986 (2♀), 10 Mar 1986 (11♀), 15 Mar 1986 (3♀), 16 Mar 1986 (1♀), 20 Mar 1986 (2♀), 14 Mar 1986 (1♀), 27 Apr 1986. (2♀), 22 May 1986 (1♀), TH & JM Davies. 5♀, Little Bush, Puketiriri, 10 May 1988 (2♀), 7 Jul 1988 (3♀), TH & JM Davies, cyanide, Malaise trap. 1♀, Little Bush, Puketiriri, 27 Apr 1996, TH & JM Davies. **TK**. 1♀, Pouakai Ra, 1250–1340 m, 9 Jan 1978, JS Dugdale, sweeping. **WI**. 5♀, Palmerston North, 21 Dec 1980, Porate, Malaise trap. 4♀, Palmerston North, Ballantrae, 26 Feb 1975, JM Esson, light trap in hill country pasture. 28♀, Palmerston North, Monro's Bush, Jan 1981 (1♀), Feb 1981 (13♀), Mar 1981 (14♀), P Watts, Malaise trap in bush. **WN**. 1♀, Tararua Range, Clouston Park, 600 m, 2 Mar 1981, JS Noyes. 5♀, Tararua Range, Dundas Hut, 1250 m, 10 Feb 1985, BA Holloway, on outside walls of toilet. 1♀, Tararua Range, Dundas Hut, 1250 m, 10 Feb 1985, BA Holloway, 7:00 pm. 1♀, Tararua Range, Dundas Hut, 10 Feb 1985, CF Butcher, sweeping near stream. 2♀, Tararua Range, Dundas Hut Ridge, 4 Feb 1985, BA Holloway, beating. 1♀, Tararua Range, Dundas Ridge, 1430 m, 6 Feb 1985, BA Holloway, sweeping at tarns. 1♀, Tararua Range, Dundas Ridge, Logan E Basin, 5 Feb 1985, CF Butcher, sweeping. 62♀, Tararua Range, Mt Dundas, 1500 m, 9 Feb 1985, CF Butcher, sweeping. 57♀, Tararua Range, Mt Dundas summit, 9 Feb 1985, BA Holloway, sweeping. **South Island**. **SD**. 1♀, Stephens Island, Feb 1971, J McBurney, light trap. **NN**. 46♀, Kongahu, Jan 1981 (30♀), Feb 1981 (1♀), Mar 1981 (15♀), J Jones, Malaise trap near swamp. 2♀, Nelson, Boulder Bank, 29 Mar 1973, AK Walker (1♀), JS Dugdale (1♀). **MB**. 1♀, Molesworth homestead, 24 Mar 1976, PEC Read. **BR**. 3♀, Lake Rotoiti, 600 m, Apr 1981, F Dodge, Malaise trap edge of *Nothofagus* forest. **CO**. 4♀, Alexandra, 16 Feb 1976, LL Deitz, sweeping legumes and pasture/ paddock. 1♀, Alexandra, 6 Feb 1985, GF McLaren, ex wrapper under crates of nectarines. **WD**. 4♀, 1 km south of Lake Matheson, 28 Feb 1976, LL Deitz, sweeping. **MC**. 33♀, Banks Peninsula, Prices Valley, Jan 1981 (10♀), Feb 1981 (3♀), Mar 1981 (15♀), Apr 1981 (5♀), RP Macfarlane, Malaise trap edge of native bush. 41♀, Lincoln Orchard, 1 Mar 1999, on banana. 265♀, Lincoln University Orchard BFP block (79♀), IFP block (137♀), BFP block (32♀), CFP block (17♀), 2 Feb 1996, AR Gibb, Malaise trap. 1♀, Somerfield, King George V Res, 7 Apr 1999, C Vink, baited trap banana. **OL**. 1♀, Coronet Peak1640 m, 19 Jan 1981, JS Noyes & EW Valentine, sweeping tussock alpine plants. 1♀, Coronet Peak near Queenstown, 1520 m, 14 Feb 1976, LL Deitz, sweeping. 1♀, Glendhu, Lake Wanaka, 1 Mar 1976, LL Deitz, sweeping ferns and grasses. **No locality**. 1♀, 8 Feb 1972, A Parrott collection, cow pat. 11♀, 6 May 1986, *H. varia*, ex larvae in cattle faeces.

***Aphaereta pallipes* (Say)**

Material examined. 26 specimens (22♀, 3♂; NZAC; 1♀ AMNZ). **North Island**. **AK**. 10♀, 1♂, Birkenhead, Nov 1980 (1♀), Dec (2♀), Jan 1981 (4♀, 1♂), Feb 1981 (1♀), Mar 1981 (2♀), JF Longworth, Malaise trap in second growth bush. 1♀, Titirangi, Jan 1981, PA Maddison, Malaise trap in garden. 2♀, 1♂, Birkenhead, Oct 1980 (1♀), Dec 1980 (1♂), Jan 1981 (1♀), JF Longworth, Malaise trap in second growth bush. 1♀, Tamaki River, Tahuna Torea Reserve, in grass on sandy spit, 16 Apr 2005, SE Thorpe (AMNZ). **Vanuatu**. 9♀, 1♂, Vanuatu, Efate PQS, Tagabe, 26 Feb–11 Mar 1988, D Boe, *Othreis fullonia* pupae E532.

***Asobara ajbelli* sp.n.**

Material examined. 94 specimens (60♀, 34♂; NZAC). **North Island: AK**. 1♀, Lynfield, 4 Dec 1974, G Kuschel. 1♀, Lynfield, 29 Apr 1981, G Kuschel, Malaise trap 5. 1♀, Waitakere Ra, Jan 1981, J Noyes. 1♀, Titirangi, Oct 1980, PA Maddison, Malaise trap in garden. 1♀, Titirangi, 8 Mar 1979, PA Maddison. 1♀, Huia, Dec 1980, BM May, Malaise trap in bush. 1♀, Birkenhead, Dec 1980, JF Longworth, Malaise trap in second growth bush. 1♀, L Ototoa, Water Conservation Reserve, 23 Sep 1977, BA Holloway. 1♂, Bethells, Matuku Res, 26 Sept–25 Oct 1991, Malaise trap by swamp. **CL**. 2♀, Coromandel, 9 km E of Tapu, 15 Nov 1980, JS Noyes. 1♀, Middle I, 16–19 Feb 1984, G Hall, to light. 1♀, 1♂, Mercury Is, Korapuki I, 14 Dec 1987, G Hall, ex nest material of *Eudyptula minor,* reared, em Dec 1987–1988. **BP**. 1♀, Native Forest Res, Rotoehu Forest, Pongakawa V Rd, 4 Apr 1993, V Munro, em 12 Apr 1996, ex tortricid larva on titoki, 963R31. 1♀, Waenga Bush, 10 Mar–27 Apr 1993, G Hall, malaise trap. 1♀, Lottin Pt Rd, Waenga Bush, 24 Nov 1992–27 Jan 1993, RC Henderson, Pit traps. 1♀, Te Koau, 243 m, 31 Jan–15 Mar 1993, JS Dugdale, Malaise trap. **GB**. 1♀, Kakanui, Dec 1992–1 Feb 1993, JS Dugdale, malaise trap (damaged). 1♀, L

Waikaremoana, 17 Jan 1972, GW Ramsay, Litter 72/21. **TO**. 1♂, Hauhungaroa Ra, 700 m, 20 Nov 1965, G Kuschel, Litter in bush, 65/603. 1♀, Pohokura, Napier–Taupo, 15 Feb 1957, JI Townsend. 1♂, Raurimu, nr National Park, 26 Nov 1965, JI Townsend, Litter. **HB**. 1♀, Little Bush, Puketitiri, 20 Feb 1986, TH Davies. 1♀, Little Bush, Puketitiri, 5 May 1982, TH & JM Davies. 1♀, Little Bush, Puketitiri, 10 Mar 1988, TH Davies, Cyanide malaise trap. 1♀, Little Bush, Puketitiri, 7 July 1988, TH Davies, Cyanide malaise trap. 1♀, 1♂, Little Bush, Puketitiri, 20 Jan 1985, JG Charles. **WI**. 1♀, Palmerston North, Monro's Bush, Jan 1981, P Watts, Malaise trap in bush. **WN**. 1♀, Eastbourne, 28 Feb 1981, JS Noyes, 150 m, mixed podocarp/*Nothofagus*. 1♀, Tararua Ra, 600 m, Clouston Park, 2 Mar 1981, JS Noyes. **SD**. 1♀, Opouri, 15 Jan 1969, JS Dugdale. 1♀, 4♂, Okiwi Bay, Moncrieff Res, 1 Jan 1985, AK Walker, sweeping *Nothofagus/Podocarpus* forest. 1♂, Stephens I, Feb 1971, GW Ramsay, Litter 71/74. 1♂, Stephens I, "Rushton" Bush, Jan 1978, DC Newman, Wildlife Service, pit trap. 1♂, Titirangi Bay, 20 Oct 1969, F Alack, Litter 69/174. 1♂, Pelorus Bridge, 15 Oct 1965, LP Marchant, Litter 65/513. **NN**. 1♀, Mangarakau, 11 Jan 1966, AK Walker, beating. 1♀, Shenandoah, Oct 1969, GW Ramsay, Litter 69/188. 1♀, Nelson, 8 June 1927, ES Gourlay. 1♂, Nelson, 11 Nov 1923, ES Gourlay. 1♀, 3♂, Nelson, 8 June 1927, ES Gourlay. 1♂, Nelson, 12 Nov 1927, ES Gourlay. 3♂, Nelson, 19 Nov 1927, ES Gourlay. 1♂, Nelson, 2 Jan 1928, ES Gourlay. 1♂, Nelson, 14 Jan 1928, ES Gourlay. 1♂, Aniseed Val, 1–4 Dec 1923, A Philpott. 1♀, Nelson, Redmans Ck, 3 Apr 1973, JS Dugdale, Malaise trap. 1♀, Collingwood, Aorere V, 18 Apr 1963, JI Townsend, Litter 63/9. **BR**. 1♀, Lower Buller Gorge, 16 Dec 1970, HA Oliver, Malaise trap. 1♀, 1♂, Louis R, (*sic* Lewis?), 30 Dec 1984, AK Walker, sweeping *Nothofagus* forest. 1♀, 1♂, Lake Rotoiti, Dec 1980, AK Walker, Pan trap in *Nothofagus* forest. **MC**. 10♀, 1♂, Banks Peninsula, Prices Valley, Nov 1980 (4♀), Dec 1980 (1♀), Jan 1981 (2♀), Mar 1981 (2♀), Apr 1981 (1♀, 1♂), RP Macfarlane, Malaise trap, edge of native bush. 1♀, Christchurch, Dallington, 12 Mar 1922, ES Gourlay, parasite? of cabbage aphis. **WD**. 1♀, Bullock Ck, Mt Cook R, Westland, 29 Mar 1964, IO Brown. **OL**. 2♀, Glenorchy SF, Dart River, 21 Jan 1981, JS Noyes & EW Valentine, sweeping. 1♀, Mt Aspiring NP, Makarora, 25 Jan 1981, JS Noyes & EW Valentine, sweeping *Nothofagus/Podocarpus.* 1♂, L Wakatipu, Bobs Cove, 23 Jan 1981, JS Noyes & EW Valentine, sweeping *Nothofagus.* **FD**. 1♀, Hump Ridge, 914 m, 9 Feb 1968, JI Townsend, Moss 68/10. 1♂, Doubtful Sound, Deep Cove, Jan 1970, AC Eyles, sweeping *Cyathea*. **SI**. 1♀, Stewart I, Codfish I, Loop Track, 1–7 Dec 1981, BA Holloway, Malaise trap in *Podocarpus*/broadleaf forest. 3♀, 3♂, Codfish I, July 1982, E Kennedy, reared puparium, fanniid, *Mystacina* guano. 4♂, Stewart I, Codfish I, Valley Track, 26 Nov 1981, BA Holloway, guano 81/196.

***Asobara albiclava* sp.n.**

Non-type material examined: 169 specimens (103♀, 66♂; NZAC). **North Island: ND**. 1♀, 1♂, Poor Knights Is, Tawhiti Rahi, 9 Sep 1980 (1♀), 8 Sep 1980 (1♂), JC Watt, Pan traps. 1♀, Poor Knights Is, Tawhiti Rahi, Shag Bay, 40 m, 20 Sep 1980, JC Watt, Litter 80/73. 1♀, Poor Knight Is, Tawhiti Rahi, 8 Dec 1980, CF Butcher, sweeping lighthouse track. 1♀, Poor Knights Is, Tawhiti Rahi, 7 Dec 1980, CF Butcher, sweeping sth track. 2♀, Poor Knights Is, Aorangi, Puweto V, 80 m, 11–16 Nov 1981, JS Dugdale, Malaise trap in *Beilschmiedia tarairi* site. 1♂, Poor Knights Is, Aorangi, Puweto Valley, 13 Nov 1981, JC Watt, Litter 81/130. 1♀, Poor Knights Is, Aorangi I, Urupa Pt, 14–17 Nov 1981, JC Watt, Window trap. 1♀, 1♂, Poor Knights Is, Aorangi. Urupa Pt, 11–12 Nov 1981, JC Watt, Window trap. 1♀, Poor Knights Is, Aorangi, Crater Bay, 17 Nov 1981, JC Watt, Litter 81/145. 2♀, 1♂, Waipoua SF, Te Matua Ngahere, 4 Feb 1975, AK Walker, sweeping undergrowth in *Agathis* forest. 1♀, 1♂, Waipoua SF, 3 Oct 1980, JS Noyes. 8♂, Poor Knights, Tawhiti Rahi, 2–10 Dec 1980, MF Tocker, Pan trap in native bush. 1♂, Poor Knights Is, Aorangi, ridge to Oneho Hill, 17 Nov 1981, JC Watt, sifted litter, 81/141. 1♂, Kerekere (Kerikeri), Quarry Rd, Jan 1979, no. 153.249, Nat. Mus. Lowland Forest Inventory, Bot Div DSIR, ex litter, NZMS15 495 470. 1♂, Chicken Is, Whatupuke I, 25 Oct 1968, Litter 68/155. **CL**. 4♀, 1♂, Alderman Is, Ruamahuaiti I, 14 Nov 1972, GW Ramsay, Litter 72/203. 1♀, Alderman Is, Ruamahuanui I, 16 Nov 1972, GW Ramsay, Litter 72/207. 1♀, Alderman Is, Hongiora I, 11 Nov 1972, A Whittaker, Litter 72/196. 1♀, Ohena Is, Ohena I, 25 Nov 1972, GW Ramsay, Litter 72/236. 1♀, Ohena I, 25 Nov 1972, GW Ramsay, Litter 72/235. 1♀, Cuvier I, Main Ridge, 1 Mar 1982, G Hall, Litter 82/41. 1♂, Cuvier I, 25 Feb–2 Mar 1982, G Hall, Pan trap in native bush. 2♂, Cuvier I, Radar Point, 27 Feb 1982, G Hall, Litter 82/37. 1♀, Little Barrier I, Pohutukawa Flat, 20 Feb 1976, AK Walker, sweeping. 1♀, Little Barrier I, Caretaker's Garden, 22 Feb 1976, AK Walker. 4♀, Kauaeranga V, 1 Feb 1980, JS Noyes. 3♀, 3♂, 19 km E of Tapu, 31 Jan 1981, JS Noyes. **BP**. 4♀, Waenga Bush, 16 Sep–20 Oct 1992, G Hall, Malaise trap. 6♀, Waenga Bush, 20 Oct–24 Nov 1992, G Hall, Malaise trap. 1♀, Waenga Bush, Dec 1992–27 Jan 1993, RC Henderson, Malaise trap. 1♀, Waenga Bush, 10 Mar–27 Apr 1993, G Hall, Malaise trap. 1♀, Waiaroho, 10 Mar–26 Apr 1993, G Hall, Malaise trap. 1♀, 1♂, Waiaroho, 10 Mar 1993, JS Dugdale, Litter 93/36. 1♀, Hicks Bay, 25 Oct 1992, JS Dugdale, Litter 92/79. 1♀, 1♂, Hicks Bay, Dec 1992–3 Feb 1993, RC Henderson, Malaise trap. 2♀, Hicks Bay, 4 Feb–14 Mar 1993, JS Dugdale, Malaise trap. 1♀, Taikawakawa, 21 Sep 1992, G Hall & RC Henderson, sifted litter 92/58. 1♀, Taikawakawa, 300 m, 1 May 1993, CT Duval, Litter 93/106. 1♀, Papatea, 24 Sep–19 Oct 1992, JS Dugdale, malaise trap. 1♀, Papatea, 13 Oct–23 Nov 1992, G Hall, Pit traps. 1♀, 1♂, Papatea, 8 Mar 1993, JS Dugdale, Litter 93/32. 1♂, Papatea, 26 Apr 1993, JS Dugdale, Litter 93/94. 6♀, Papatea, 5 Feb–8 Mar 1993, RC Henderson, Malaise trap. 3♀, 1♂, Te Koau, 24 Sep 1992, JS Dugdale, Litter 92/65. 1♀, Te Koau, 24 Oct–1 Dec 1992, G Hall, Lincoln pit trap. 1♀, Te Koau, Twin puriris, 140 m, 1 Dec1992–31 Jan 1993, RC Henderson, Pit traps. 1♀, Te Koau, 220 m, main ridge, 23 Sept 1992, JS Dugdale, Litter 92/63. 1♀, 1♂, Te Koau–Hovells Watching Dog, 24 Oct 1992 (1♀, 240 m, Litter 92/78), 31 Jan 1993 (1♂, 480 m, Litter 93/12), JS Dugdale. 1♀ Oweka River, 11 Mar 1993, JS Dugdale, Litter 93/38. 1♀, Lottin Pt, Otanga, 12 Mar 1993, JS Dugdale, Litter 93/40. 2♀, Lottin Pt Rd, Waenga Bush,

10 Mar 1993, JS Dugdale, Litter 93/37. 1♀, Lottin Pt Rd, Waenga Bush, 15 Mar 1994, G Hall & RC Henderson, Litter 94/5. 2♂, Lake Rotoma Sc. Res, 17 Sept 1995, M-C Lariviere, A Larochelle, Litter 95/8, Tawa dominant forest. 1♂, Kaimai-Mamaku FP, 300 m, Dalleys Clearing Hut Tr, 26 Nov 1994, M-C Lariviere, Litter 94/15. **TO**. 1♀, Turangi, Pihanga Scenic Reserve, 13 Jan 1972, GW Ramsay, litter 72/3. **TK**. 1♀, Awakino Gorge, 23 Jan 1972, GW Ramsay, Litter 72/62. **GB**. 1♀, Kakanui, 27 Oct–2 Dec 1992, G Hall, Malaise trap. 1♀, E Kakanui, 22 Sep 1992, JS Dugdale, Litter 92/61. 1♂, L Waikaremoana, 17 Jan 1972, GW Ramsay, Litter 72/18. **HB**. 1♂, Little Bush, Puketitiri, 20 Jan 1985, JG Charles. **RI**. 1♀, Mangaweka, 427 m, 29 Nov 1983, HP McColl, 37/83, above old main trunk line, rotting log. **WI**. 2♀, Palmerston North, Monro's Bush, Jan 1981, P Watts, Malaise trap in bush. 3♀, Palmerston North, Monro's Bush, Feb 1981, P Watts, Malaise trap in bush. 6♀, Palmerston North, Monro's Bush, Mar 1981, P Watts, Malaise trap in bush. **WN**. 1♀, 4♂, Balance Bridge, 3 Jan 1975, JC Watt, Litter 75/24. 2♀, 1♂, Wiltons Bush, Wellington, 30 Oct 1927, E S Gourlay. **South Island: SD**. 5♀, 1♂, Stephens I, Feb 1971, GW Ramsay, Litter 71/73 and 71/74. 1♀, 1♂, Stephens I, FB1, Jan 1978, DG Newman, Wildlife Service, Pit trap (wrongly coded SI). 1♀, 1♂, Okiwi Bay, Moncrieff Res, 1 Jan 1985, AK Walker, sweeping *Nothofagus/Podocarpus* forest. 2♀, Pelorus V, Tanakino V, 28 Apr 1964, JI Townsend. 3♂, Stephens I, "Keepers Bush", Jan 1978, DG Newman, Wildlife Service, pit trap. **NN**. 1♀, Nelson, Wairoa Gorge, 20 Oct 1971, GW Ramsay, Litter 71/121. 1♀, Nelson, Botanical Hill, 5 Oct 1967, JI Townsend, reared ex *Myoporum laetum*, W67/86, em 19 Oct 1967. 2♀, 13♂, Nelson, 8 June 1927 (7♂), 12 Nov 1927 (1♀, 3♂), 19 Nov 1927 (1♀, 1♂), 12 May 1928 (2♂), ES Gourlay. 2♀, Upper Maitai, 26 Jan 1923 (1♀), 10 Mar 1960 (1♀), ES Gourlay. 1♂, NW Nelson, Kahurangi, 20 Aug 1970, F Alack, Litter 70/151. **WD**. 2♀, 1♂, Lake Mahinapua, Hokitika, 17 Mar 1981, JS Noyes, mixed podocarp/broadleaf. 1♂, Waiata, Haast, 16 Mar 1968, RA Cumber, leaf litter.

***Asobara antipoda* Ashmead**

Material examined: 186 specimens (176♀, 10♂; NZAC). **North Island: GB**. 5♀, Kakanui, Dec 1992–Feb 1993, JS Dugdale, Malaise trap. **HB**. 3♀, Puketitiri, Little Bush, TH & JM Davies, 10 Apr 1981 (1♀), 5 May 1982 (1♀), 10 Mar 1986 (1♀). **WI**. 2♀, Palmerston North, Monro's Bush, Mar 1981, P Watts, malaise trap in bush. 1♀, Aramoho, 26 Aug 1921, manuka. **WN**. 1?, Wellington, 1 Feb 1927, B Miller, bred from consignment *Alysia* collected in England. 1♀, Eastbourne, 28 Feb 1981, JS Noyes, 150 m, mixed *Nothofagus*/*Podocarpus*. **South Island**. **SD**. 2♀, Stephens Island, 14–28 Jan 1933, ES Gourlay. 1♀, Stephens Island, Feb 1971, J McBurney, light trap. 4♀, Tennyson Inlet, 29 Nov 1971, D Parrott. 1♀, Okiwi Bay, Moncrieff Reserve, 1 Jan 1985, AK Walker, sweeping *Nothofagus*/*Podocarpus* forest. **NN**. 5♀, 1♂, Nelson, 22 Nov 1926, JG Bartel. 3♀, Nelson, 12 Nov 1926, JG Bartel, ex *Pollenia stygia*. 1♀, 5♂, Nelson, 18 Oct 1926, JG Bartel (2♂ TAMU). 9♀, Nelson, ES Gourlay, 11 Nov 1923 (1♀), 18 Nov 1923 (1♀), 15 Nov 1924 (1♀), Feb–Mar 1925 (3♀), Feb 1926 (2♀), 24 Mar 1926 (1♀). 1♀, Collingwood, 13 Jan 1986, AK Walker, malaise trap in grassy clearing in mixed podocarp forest. **MC**. 1♀, M, Christchurch, Wairarapa Stream, 25 Apr 1922, ES Gourlay. **OL**. 1♀, Mt Aspiring National Park, Makarora, 25 Jan 1981, JS Noyes & EW Valentine, sweeping *Nothofagus*/*Podocarpu*s. 1♀, L. Wakatipu, Bob's Cove, 23 Jan 1981, E. W. Valentine, sweeping *Nothofagus*. **SL**. 1♀, Owaka, 15 Jan 1959, JI Townsend.

Stewart Island: 1♀, Stewart Island, Big South Cape Island, 12 Nov 1968, JC Watt, on dead *Puffinus griseus*. 6♀, 1♂, Big South Cape Island, 20 Nov 1968, G Kuschel, lichen. 1♀, Big South Cape Island, 9 Feb 1969, BA Kuschel, ex *Phormium* leaves. 4♀, Big South Cape Island, AC Eyles, 11 Feb 1969 (1♀), cove between North and South Pe12 Feb 1969 (3♀), sweeping grass esp. cocksfoot. 1♀, Big South Cape Island, 14 Feb 1969, BM May, beating *Hebe elliptica*. 1♀, Codfish Island, North Hut track, 6 Dec 1981, BA Holloway. **Offshore Islands**. **AU**. 1♀, Auckland Islands. Port Ross, Jan 1954, 1?, Auckland Island, Small Hut Cave, Carnley Harbour, 11 Feb 1973, JS Dugdale. 10♀, Enderby Island, North of Sandy Bay, 14 Feb 1973, CJ Horning, under dead *Puffinus griseus*. **CH**. 1♀, Hapupu, 27 Feb 1967, EW Valentine, at night.

Other material:

DMNZ: ND. 1♀, Trounson Park area, 14 Jan 1971, F Chambers. **AK**. 1♀, Northcote, 17 Mar 1982, F Chambers. **AMNZ: CL**. 4♀, Great Barrier Island, Little Windy Hill, 220 m 7 Nov–11 Dec 2001, P Sutton & J. Gilbert. 1♀, Great Barrier Island, Little Windy Hill, 220 m 21 Feb–26 Mar 2002, P Sutton. 4♀, Great Barrier Island, Little Windy Hill, 2 Nov 2001, JW Early & RF Gilbert. 1♀, Great Barrier Island, Rosalie Bay, Benthorn Farm 2 Nov–11 Dec 2001, P Sutton. 3♀, Great Barrier Island, Little Windy Hill, 17 Jan–27 Feb 2003, K Parsons. 1♂, Great Barrier Island, Little Windy Hill, 180 m, 27 Feb–18 Mar 2003, K Parsons. 1♀, Great Barrier Island, Mt Hobson, 21 Jan–22 Feb 2003, K Parsons.

***Asobara persimilis* (Papp)**

Material examined: 269 specimens (143♀, 126♂; NZAC). **North Island: ND**. 1♀, Poor Knights Is, Tawhiti Rahi, 2–10 Dec 1980, MF Tocker, Pan trap amongst rushes. 1♀, Poor Knights Is, Tawhiti Rahi, 3–10 Dec 1980, RH Kleinpaste, Malaise trap, regenerating bush, SE track. 1♂, Poor Knights Is, Tawhiti Rahi, 9 Dec 1980, CF Butcher, sweeping regenerated area on Eastern ridge. **AK**. 9♀, 2♂, Auckland, Dec 1981, Univ of ex University culture, reared, puparium *Drosophila melanogaster*. 24♀, 29♂, Auckland, Remuera, 7 Apr 1941, D Spiller, Bred ex *Drosophila* from rockmelons. 1♀, Waitakere Ra, Nov 1980, J Noyes. 17♀, 1♂, Birkenhead, Nov 1980 (2♀), Dec 1980 (6♀, 1♂), Jan 1981 (2♀), Mar 1981 (7♀), JF Longworth, Malaise trap in second growth bush. 7♀, 14♂, Pukekohe Res Centre, 19 Dec 2000, NA Martin, ex wild radish, pupae collected 22 Dec 2000. 23♀, 23♂, Pukekohe Res Centre, 22 Nov 2001 (3♀, 3♂), 7 Dec 2001 (2♀, 2♂), 20 Dec 2001 (4♀, 1♂), 3 Jan 2002, (14♀, 16♂), 28 Mar 2002 (1♂), NA Martin, ex turnip, leaf mines *Scaptomyza flava*. 27♀, 31♂, Pukekohe Res Centre, 21 Nov 2000 (4♀, 1♂), 1 Dec 2000 (1♀, 5♂), 7 Dec 2000 (4♀, 1♂), 19 Dec 2000 (6♀, 15♂), 11 Oct 2001 (2♀, 2♂), 8 Nov 2001 (10♀, 7♂), NA Martin, ex wild radish, leaf mines

Scaptomyza flava. 6♀, 3♂, Pukekohe Res Centre, 11 Oct 2001, NA Martin, ex mustard, leaf mines *Scaptomyza flava.* 1♀, Dome Valley SF, 29 Apr 1975, LL Deitz, sweeping. 1♂, Te Atatu, Sep 1974, RA Cumber. 2♂, Mt Albert, Nov 1973, JS Dugdale, ex *Raphanus maritimus*, parasite of *S. flava*. **CL**. 4♀, 1♂, Great Barrier Is, Apr 1966, RG Ordish, ?*Drosophila* sp. 1♀, Little Barrier I, Caretakers garden, 22 Feb 1976, AK Walker. 1♀, Mercury Is, Korapuki I, 14 Dec 1987, G Hall, ex nest material of *Eudyptula minor*, reared, em Dec 1987–Jan 1988. **WO**. 1♀, Ruakura, 4 Mar 1969, HA Oliver, from shrubs. **HB**. 1♀, Puketitiri, Little Bush, 7 July 1988, TH Davies, cyanide malaise trap. **South Island: NN**. 1♀, Nelson, Oct 1968, DCF Perrott. **MC**. 1♀, Christchurch, Ilam campus, 30 Apr 1976, DS Horning, Grass litter on stream bank. 1♀, Lincoln University, Orchard IFP block, 2 Feb 1996, AR Gibb, Malaise trap. 1♀, Lincoln orchard, Mar 1999, on banana. **Offshore Islands: TH**. 2♀, Three Kings Is, Castaway camp, 26 Nov 1970, G Kuschel, Litter 70/222. 1♀, Three Kings Is, Castaway Camp, 29 Nov 1970, GW Ramsay, Litter 70/233. 1♀, Three Kings Is, Summit, 275 m, G Kuschel, Litter 70/203. 1♂, Landing Beach, 26 Nov 1970, G Kuschel, Litter 70/220.

***Asobara tabida* (Nees von Esenbeck)**
Material examined: 74 specimens (72♀, 2♂; NZAC). **South Island: MC**. 23♀, Lincoln Orchard, Mar 1999, on banana. 7♀, 1♂, Christchurch, Apr 1999, S Hodge, banana trap, ex *Drosophila neozelandica* pupae. 4♀, Christchurch, Nov 1998, S Hodge, garden on banana. 13♀, Riccarton, 22 Dec 1998, C Vink, banana baited trap in garden. 4♀, Lincoln University Orchard, BFP block (2♀), IFP block (2♀), 2 Feb 1996, AR Gibb. 13♀, 1♂, Somerfield, King George V Res, 7 Apr 1999, C Vink, baited trap banana. 8♀, Lincoln, 10 Dec 1998, C Vink, banana baited trap in garden.

***Aspilota andyaustini* Wharton**
Non-type material examined: 2♀; NZAC. **NN**. 1♀, Bulivant's Island, Mapua Estuary, Apr–May 1987, AK Walker. 1♀, Nelson, 14 Mar 1926, ES Gourlay.

***Aspilota angusta* sp.n.**
Non-type material examined: 22 specimens (10♀, 12♂; NZAC). **ND**. 1♂, Te Paki Bush, Sth Pandora, 7 Feb 1975, AK Walker, sweeping forest remnant. 1♂, Trounson Kauri Park, 1 Oct 1980, JS Noyes. **AK**. 1♀, Titirangi, Dec 1980, PA Maddison, Malaise trap in garden. 3♀, 3♂, Waitakere Ra, Nov 1980 (2♂), Jan 1981 (3♀, 1♂), JS Noyes. **GB**. 1♂, Kakanui, Dec 1992–Feb 1993, JS Dugdale, Malaise trap. **WN**. 1♀, Days Bay, 8 May 1927, ES Gourlay. 1♀, Eastbourne, 150 m, 28 Feb 1981, JS Noyes, Mixed podocarp/*Nothofagus*. 1♀, Rimutaka Ra., 250 m, 27 Feb 1981, JS Noyes, Mixed podocarp/*Nothofagus*. **SD**. 1♂, Okiwi Bay, Moncrieff Res., 1 Jan 1995, AK Walker, sweeping *Nothofagus*/*Podocarpus* forest. **NN**. 1♂, Cawthron Park. 4 Oct 1924, ES Gourlay. **BR**. 1♀, 1♂, Lake Rotoiti, 24 Dec 1982 (1♂), Dec 1982 (1♀), AK Walker, Pan trap in *Nothofagu*s forest. **MC**. 2♀, Banks Peninsula, Prices Valley, Dec 1980 (1♀), Mar 1981 (1♀), RP Macfarlane, Malaise trap, edge of native bush. **OL**. 2♂, Lake Hawea, Kirks Bush, 16 Jan 1981, JS Noyes & EW Valentine, sweeping *Nothofagus*. **FD**. 1♂, Doubtful Sound, Deep Cove, 1 Jan 1970, AC Eyles, sweeping *Cyathea*.

***Chorebus roderickí* n. sp.**
Non-type material examined: 448 specimens (434♀, 14♂; NZAC). **ND**. 1♀, Mangamuka Gorge Walkway, 425 m, 29 Jun 1999, Lariviere, Larochelle, litter 99/40, wet broadleaf forest. 40♀, Omahutu SF, Kauri Sanctuary, 6 Oct 1980, JS Noyes. 1♀, Waipoua SF, 13 Dec 1983, AK Walker, swept mixed vegetation. **AK**. 2 ♀, Bethells, Matuku Res, 26 Sep–25 Oct 1991, Malaise trap by swamp. 5♀, Cornwallis Bch, 27 Oct 1980, JS Noyes. 43♀, Huia, Nov 1980 (34♀), Dec 1980 (9♀), BM May, Malaise trap in bush. 1♀, Kawau I, 13 Oct–12 Nov 1992, D Williams, Malaise trap. 6♀, Lynfield, 26 Oct 1980, G Kuschel. 6♀, Lynfield, 31 Sep 1980 (1♀), Oct 1980 (1♀), Nov 1980 (3♀), 9 Nov 1980 (1♀), G Kuschel, Malaise trap. 1♀, Manukau Peninsula, Grahams Bch, 28 Oct 1982, MF Tocker, beating coastal vegetation. 1♀, Mangere, Montgomeries Farm, 19 Nov 1974, NA Martin, sweeping pasture. 1♀, Manurewa, 2 Nov 1983, V Eastop. 53♀, 6 m, Titirangi, Sep 1980 (6♀), Oct 1980 (20♀, 6♂), Nov 1980 (27♀), GW Ramsay, Malaise trap in garden. 21♀, Titirangi, Sep 1980 (1♀), Oct 1980 (1♀), Nov 1980 (13♀), Dec 1980 (6♀), PA Maddison, Malaise trap in garden. 4♀, Titirangi, Oct 1980, RH Kleinpaste, Malaise trap in native bush. 99♀, Waitakere Ra, Nov 1980, J Noyes. 1♀, Waiheke I, Cactus Bay, 23 Oct 1977, LL Deitz, sweeping. **CL**. 1♀, Kauaeranga SF, 22 Oct 1967, JS Dugdale, in forest. 2♀, Kauaeranga V, 14 Nov 1980, JS Noyes. 25♀, Thames, Kauaeranga V, 29 Nov 1970, HA Oliver, malaise trap. 2♂, Waiaro Bay, 25 Oct 1981, CF Butcher, sweeping rushes, *Cotula* and pasture. **WO**. 1♀, Cambridge, 3 Mar 1959, AE Eyles, lucerne. 1♀, Pirongia Mts, Nov 1969, HA Oliver, Malaise trap. 5♀, Pirongia Mts, Pioneer Bush, Kaniwhaniwha River, 28 Sep 1969, HA Oliver, Malaise trap. 1♀, Mt Karioi, 11 Oct 1981, CF Butcher, sweeping. **BP**. 7♀, Mt Te Aroha, 975 m, 21 Oct 1967, JS Dugdale, sweeping. 1♀, Mt Te Aroha, 975 m, 21 Oct 1967, JC Watt, beating *Nothofagus menziesii*. 2♀, Orete Forest, Te Puia Hut, 25–29 Jan 1993, RC Henderson, pan traps. 9♀, Rotorua, Forest Research Inst., Feb 1981, J. Bain, Malaise trap. 1♀, Rotorua, Mamaku Ra, 20 Nov 1974, AK Walker, sweeping grass. 1♀, Tarawera Bush, 11 Feb 1969, HA Oliver, Malaise trap. 1♀, Te Araroa, Tokata, 30 Nov–3Dec 1992, G Hall, Pan traps around lagoon. 1♀, Te Koau, 243 m, 24 Oct–1 Dec 1992, G Hall, Malaise trap. **HB**. 4♀, Puketitiri, Little Bush, 21 Jan 1986 (1♀), 10 Mar 1986 (1♀), 22May 1986 (2♀), TH Davies & JM Davies. 7♀, Puketitiri, Little Bush, 10 Oct 1986, TH Davies. **WI**. 1♀, Marton, 5 Dec 1960, BF Gregory, oats. 3♀, Palmerston North, 14 Nov 1980, sweeping grazed pasture. 2♀, Palmerston North, Monro's Bush, Dec 1980, P Watts, Malaise trap in bush. 1♀, Tangimoana, 4 Nov 1960, BF Gregory, barley. **WI/RI**. 1♂, Palmerston North, Ballantrae, 26 Feb 1975, JM Esson, light trap in hill country pasture. **TK**. 1♀, Pouakai Ra, 1250–1340 m, 9 Jan 1978, JS Dugdale, sweeping. 1♀, Pouakai Ra, 1220 m, 10 Jan 1978, JS Dugdale, Malaise trap. 1♀, Pouakai Trig, 1400 m, 1 Dec 1975, AK Walker, sweeping. 1♀, Pouakai Trig, 1400 m, 9 Jan 1978, JS Dugdale, sweeping. **NN**. 33♀, Kongahu, Nov 1980 (3♀), Dec 1980 (27♀), Jan 1981 (2♀), Mar 1981 (1♀), J Jones, Malaise trap near swamp. 1♀, Rai Valley, 11 Jan 1950, BE Montgomery, 88/51. **BR**. 1♀, Lower Buller Gorge, 16 Dec 1970, HA Oliver, Malaise trap. 1♀, Lake Rotoiti, 600 m, Dec 1980, F Dodge, Malaise trap, edge of *Nothofagus* forest.

MC. 18♀, 2♂, Banks Peninsula, Prices Valley, Oct 1980 (2♀), Nov 1980 (1♀), Dec 1980 (10♀), Jan 1981 (2♀, 2♂), Mar 1981 (3♀), RP Macfarlane, Malaise trap, edge of native bush. 1♂, Christchurch, 11 Apr 1922, ES Gourlay. 1♂, Christchurch, Cashmere, 11 Feb 1968, PM Johns, in garden & lawn in bright sunlight. 1♀, Christchurch, Little River, 13 Jan 1921, ES Gourlay. 3♀, Lincoln College, 26 Dec 1966 (1♀), 31 Dec 1966 (1♀), 9 Jan 1967 (1♀), RP Macfarlane, ex lucerne. 1♀, Lincoln University Orchard, BFP block, 2 Feb 1996, AR Gibb. 1♀, Little River, 11 Jan 1922, ES Gourlay. **MK**. 1♀, Lake Tekapo, Dec 1980, P Quinn, Malaise trap in tussock and pine plantation. **CO**. 1♂, Alexandra, 27 Oct 1982, AK Walker, ex *Prunus nectarina* leaves. 1♀, Alexandra, Nov 1982, AK Walker, pan trap in grassland. **OL**. 1♀, Coronet Pk, 1450 m, 3 Mar 1996, BIP Barratt, Malaise trap. 2♀, Glenorchy SF, Dart River, 21 Jan 1981, JS Noyes & EW Valentine, sweeping. **DN**. 1♀, 19 km south of Palmerston, 19 Feb 1976, LL Deitz, sweeping salt marsh. **SL**. 1♀, Invercargill, Queens Park, 14 Mar 1977, AK Walker, sweeping around pond area.

***Dacnusa areolaris* (Nees)**

Material examined: 404 specimens (247♀, 157♂; NZAC). **North Island: ND**. 1♀, Poor Knights Is, Aorangi, Crater Bay, 11–16 Nov 1981, JS Dugdale, Malaise trap in coastal scrub. **AK**. 17♀, 18♂, Auckland, 21 Oct 1940, D Spiller, leaf miners in sow thistle. 1♀, Birkenhead, Nov 1980, JF Longworth, Malaise trap in second growth bush. Browns Bay, 14 Nov 1948 (5♀, 3♂), Dec 1948 (6♀, 2♂), RA Harrison, leaf mines ex *Cineraria* leaves. 3♀, 2♂, Glen Eden, 12 Nov 1991, NA Martin. 1♀, Greenlane, 15 Dec 1948, KP Lamb. 4♀, Lynfield, 23 Sep 1974, BA Holloway, leaf mines ex *Cineraria*, em 7–11 Oct 1984. 2♂, Lynfield, Tropicana Dr, 6 Sep 1975, BA Holloway, ex *Picris echioides*, em 30 Sept 1975. 6♀, 5♂, Mt Albert, Aug 1975, AK Walker, ex *Phytomyza syngenesiae*, *Sonchus* leafmines. 3♂, Mt Albert, 30 Oct 1980, AK Walker, sunflower leaf. 1♀, Mt Albert Res Centre, 14 Nov 1974, A Esler, agromyzid leaf mines in *Lapsana communis*, em 29 Nov 1974. 2♀, 5♂, Mt Albert Res Centre, 12 Nov 1991, NA Martin. 10♀, 6♂, New Lynn, 8 Sep 1996 (7♀, 4♂), 30 Sep 1996 (3♀), 17 Sep 1996 (2♂), NA Martin, ex *Sonchus* sp. 2♂, New Lynn, 97 Astley Ave, 31 Dec 1996, NA Martin, assoc. with *Phytomyza syngenesiae* and *Scaptomyza* sp. ex peas. 6♀, 8♂, New Lynn, Astley Ave, 6 Nov 1996, NA Martin, ex *Cineraria* leaves. 1♀, New Lynn, by railway, 29 Dec 1996, NA Martin, ex *Senecio sylvaticus*. 3♂, New Lynn, by railway track, 29 Dec 1996, NA Martin, assoc. with *Phytomyza syngenesiae* ex ox-eye daisy. 1♀, 1♂, New Lynn, Delta Ave, 29 Dec 1996, NA Martin, ex *Arctotheca calendula*. 18♀, 11♂, New Lynn, Gardner Rd, 28 Oct 1996, NA Martin, ex *Sonchus* sp. 10♀, 7♂, New Lynn, Parker Rd, 28 Oct 1996, NA Martin, ex *Sonchus* sp. 30♀, 13♂, New Lynn, Rankin Ave, 2 Dec 1996, NA Martin, ex oxtongue (*Picris echioides*), ex *Senecio* sp., large yellow flowers or ex *Sonchus* sp. 9♀, 1♂, Oakley Ck walkway, nr Phyllis St Res, 25 Nov 1997, NA Martin, ex *Senecio* sp. (cut leaves). 2♀, Titirangi, Nov 1980, GW Ramsay, Malaise trap in garden. 3♀, Waitakere Ra., Nov 1980 (1♀), Jan 1981 (2♀), J Noyes. 5♀, Waitakere Ra., Ferndown track, 4 Jan 1998, NA Martin, ex ox-eye daisy. 1♀, Waitakere Ra, Huia, Huia Dam Rd, 22 Nov 1997, NA Martin, ex *Senecio* sp. fine cut leaf. 4♀, Waitakere Ra, Matuku Res, 9 Jan 1998, NA Martin, ex *Hydrocotyle* ?*pterocarpa*. **BP**. 1♀, Mt Ngongotaha, 15 Feb 1979, JS Dugdale, to light. **WO**. 3♀, 4♂, nr Matamata, Hinuera, Wilcox & Son Farm, 16 Dec 1999, NA Martin, ex *Sonchus oleraceus*. 1♀, 2♂, nr Tatuanui, Whakahongi Rd, by Waitoa R bridge, 16 Dec 1999, NA Martin, ex *Senecio jacobaea*. 2♂, Piako County, 2 Dec 1938, ex ragwort. 1♀, Pirongia Mt, Arthurs Stm, 18 Jan 1969, HA Oliver. 9♀, 1♂, Te Kuiti, 18 Nov 1938 (8♀, 1♂), 1 Nov 1940 (1♀), MB McKenzie, parasite of agromyzid flies ex ragwort. **WI**. 3♀, Palmerston North, Monro's Bush, Feb 1981 (2♀), Mar 1981 (1♀), P Watts, Malaise trap in bush. 1♀, 3♂, Palmerston Nth, 20 Oct 1982, JJ Dymock, reared from pupa *Phytomyza syngenesiae* on *Senecio jacobaea*. **WN**. 1♀, Tararua FP, 750 m, 1 Mar 1981, JS Noyes. 4♀, 1♂, Tararua Ra, Clouston Park, 600 m, 2 Mar 1981, JS Noyes. **SD**. 1♀, D'Urville I, Kaingawari, Feb 1971, GW Ramsay. 2♀, Stephens I, Feb 1971, J McBurney. 1♀, Stephens I, Feb 1971, GW Ramsay, sweeping beating tussock. 2♀, Stephens I, 14–28 Jan 1933, ES Gourlay. **NN**. 1♀, Kongahu, Dec 1980, J Jones, Malaise trap near swamp. 2♀, Nelson, 8 Oct 1924, ES Gourlay. 5♀, Nelson, 24 Nov 1926, ES Gourlay, ex *Phytomyza atricornis* Meig. on *Cineraria*. 1♀, Nelson, 2 Mar 1927, ES Gourlay. 3♂, Nelson, 26 Sep 1927, ES Gourlay. 3♀, 7♂, Nelson, 7 Jul 1935, JM Kelsey (2♀, 5♂), G Liscan (1♀, 2♂), ex *Phytomyza atricornis* larvae. 1♀, Nelson, 16 Jan 1936, *Antholeus* material, 24 Jan 1936. 4♀, 2♂, Nelson, Dec 1965, G Kuschel, ex *Phytomyza syngenesiae* from *Santolina*. 1♂, Nelson, Feb 1966, G Kuschel, ex *Phytomyza syngenesiae* from *Gazania*. 3♀, 3♂, Nelson, 4 Jan 1966, G Kuschel, ex *Phytomyza atricornis* on *Senecio cineraria*. 2♀, 1♂, Nelson, 31 Jul 1920 (1♂), A Philpott. 1♀, Nelson, Farewell Spit Rd, 12 Jan 1966, AK Walker, beating. 2♀, Nelson, Maitai V, 15 Jan 1976, AK Walker, sweeping grass. 2♀, Wakapuaka, 23 Dec 1951, AW Parrott, 107/51. 1♂, Wakapuaka, 7 Jul 1966, JB Waller, reared from dead elm wood, em 22 July 1966. 2♂, Appleby, 26 Nov 1970, L Skilling. **WD**. 1♀, Gillespies Beach, 28 Feb 1976, LL Deitz, sweeping. **MC**. 1♀, Banks Peninsula, Prices Valley, Dec 1980, RP Macfarlane, Malaise trap, edge of bush. 10♀, 13♂, Christchurch, North Brighton, 29 Sep 1998, NA Martin, ex *Senecio glomeratus*, sand dunes, or *Sonchus* sp. sand dunes. 2♀, 2♂, Christchurch, Dallington, 1 Nov 1921 (1♀), Jan 1922 (2♂), 12 Jan 1924 (1♀), ES Gourlay. 2♀, Lincoln University Orchard IFP block, 2 Feb 1996, AR Gibb, Malaise trap.1♂, Little River, 22 Jan 1922, ES Gourlay. **SL**. 1♀, 2♂, Invercargill, Queens Park, 27 Jan 1984, JS Dugdale, *Phytomyza syngenesiae* from *Senecio minimus*, em 14 Feb 1984. **TH**. 10♀, 3♂, Three Kings Is, Great I, Castaway Camp, Nov 1970, J McBurney/ GW Ramsay. **CH**. 2♀, Chatham I, Awatotara, 6–19 Feb 1967, EW Valentine, *Sonchus oleraceus*. 1♀, Chatham I, Awatotara, 23 Feb 1967, EW Valentine, leaf miners, *Senecio lautus*. 2♀, Chatham I, Limestone Quarry, 11 Feb 1967, EW Valentine, D.V. Roadside grass. **AN**. 1♀, AN, Antipodes Is, Reef Pt, 6 Feb 1969, G Kuschel, ex *Sonchus oleraceus*. 1♀, 2♂, AN, Antipodes Is, Stella Bay, 15–25 Feb 1969, ex *Senecio antipodus*. **Australia**. 1♀, Australia, D Miller, agromyzid ex ragwort.

ILLUSTRATIONS

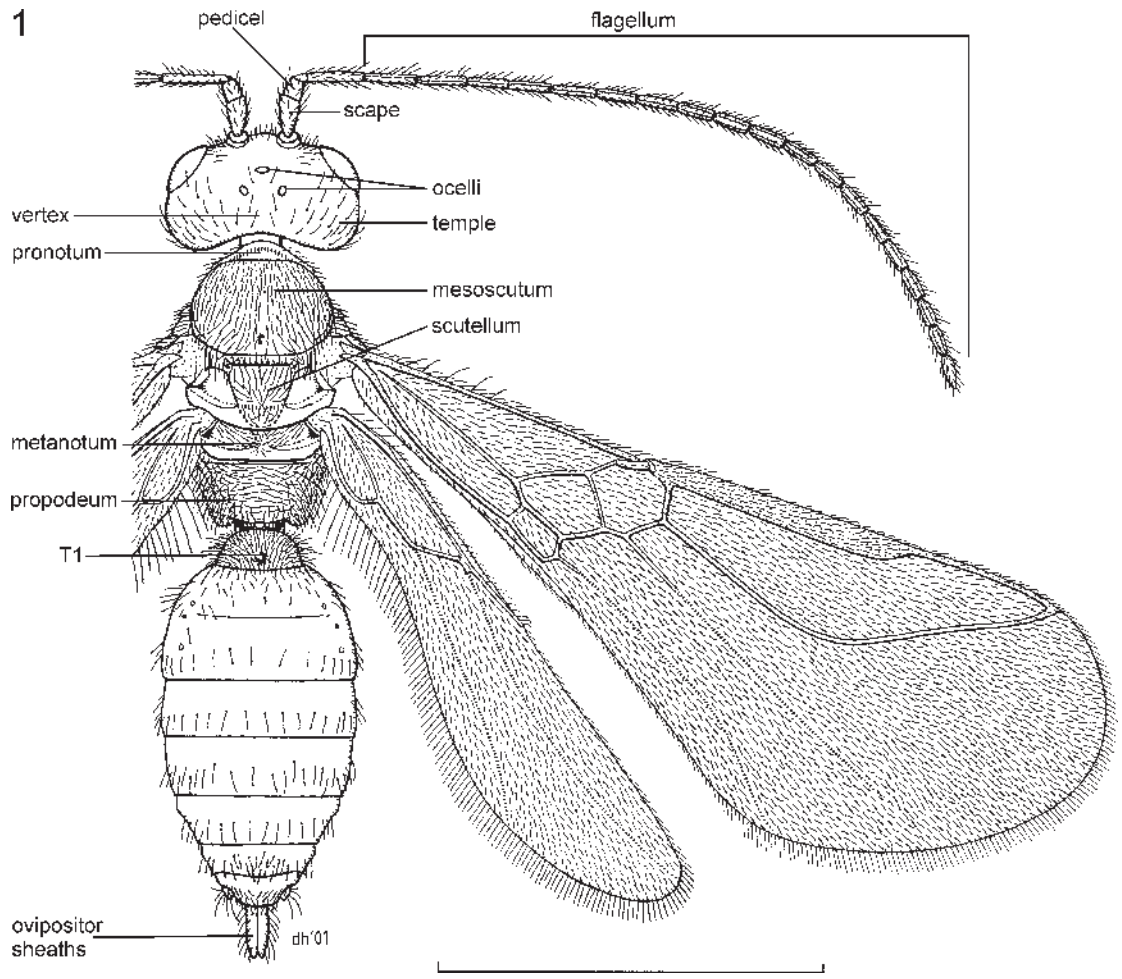


Fig.1 *Dacnusa areolaris*, female, dorsal view. Morphology. Scale bar = 1 mm

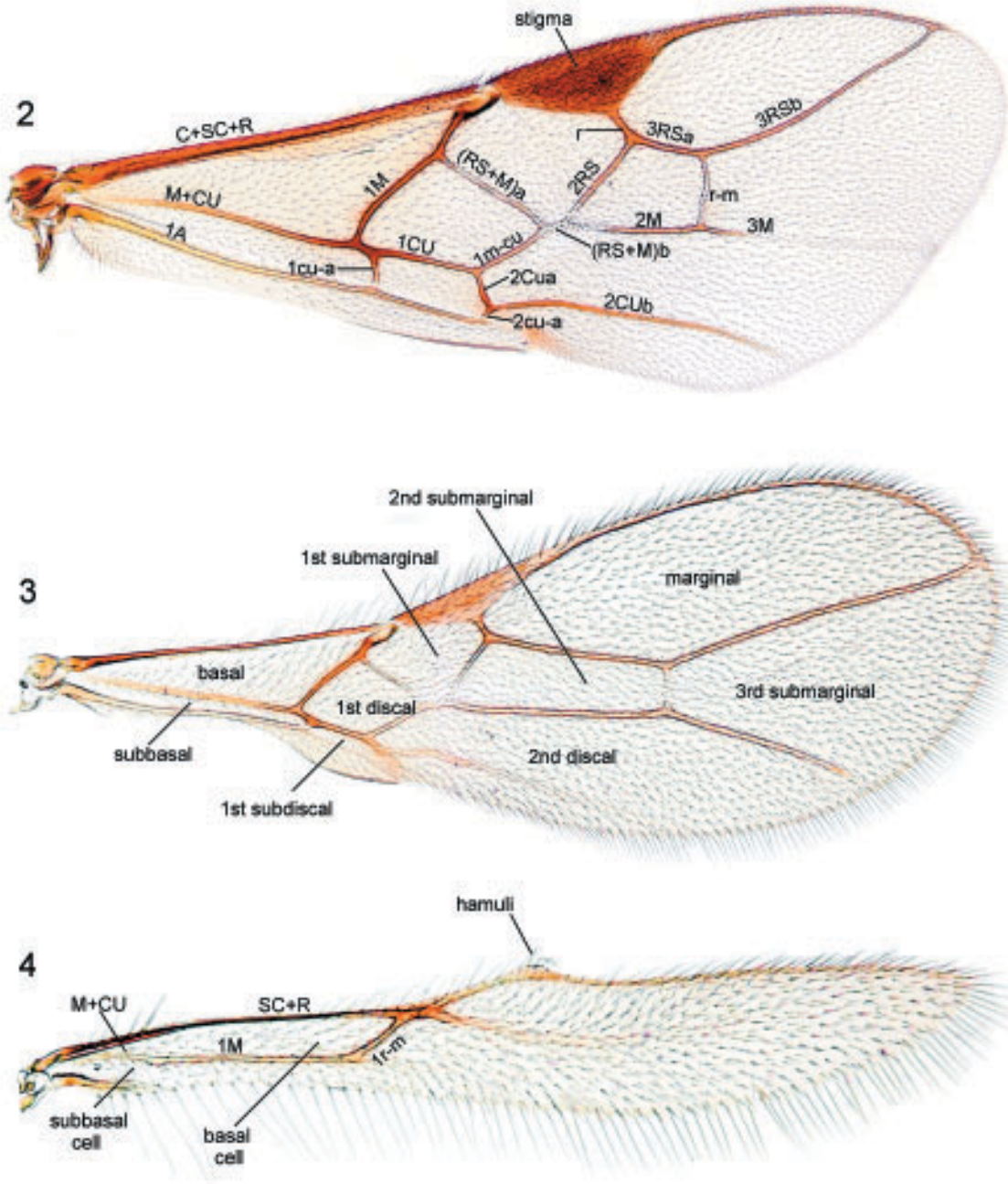


Fig. 2–4 Wings. 2, *Alysia manducator* forewing, veins and cross-veins. 3, *Asobara albiclava* forewing, wing cells. 4, *Asobara albiclava* hindwing, veins and wing cells.

5

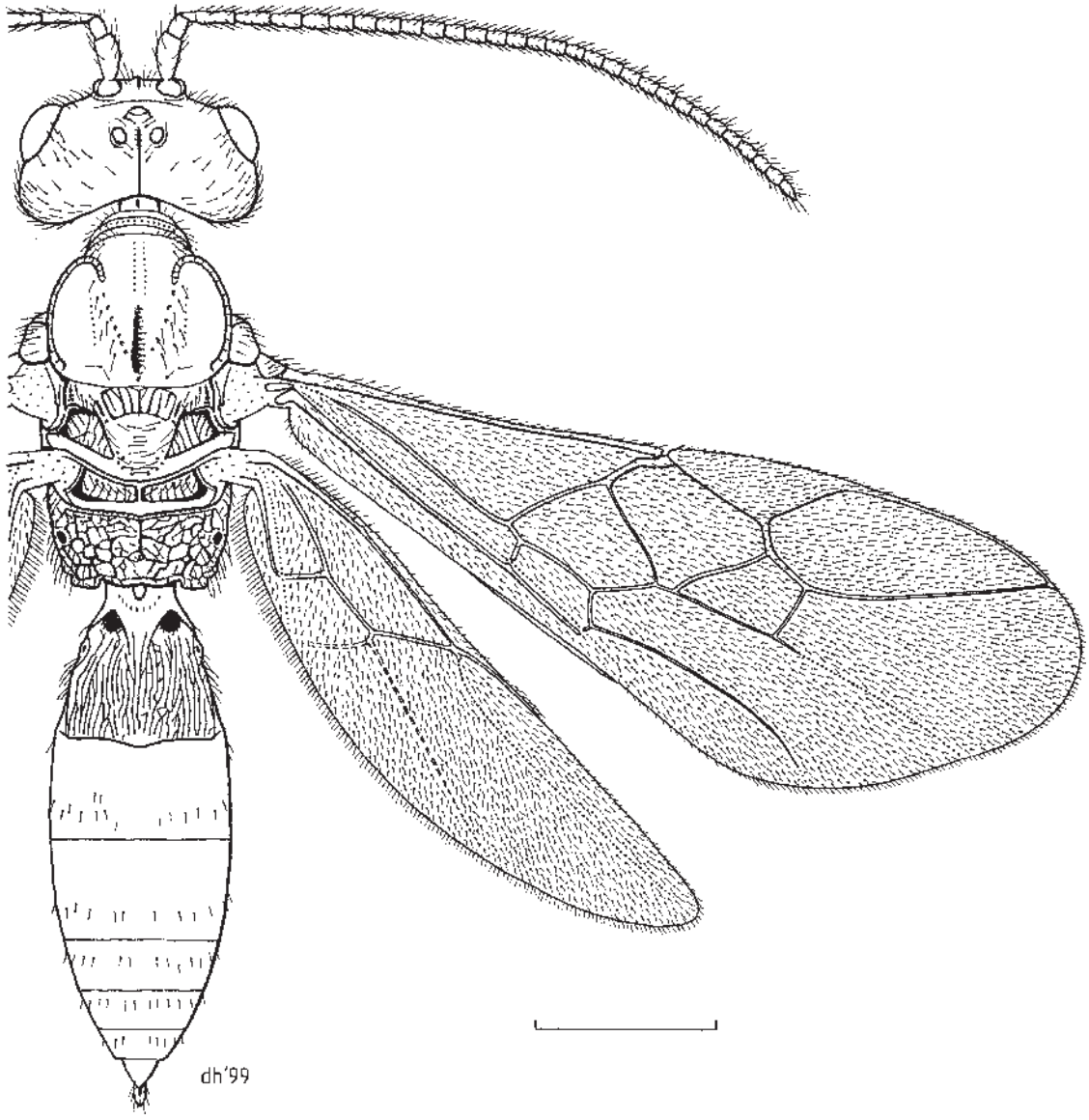


Fig. 5.*Alysia manducator*. Habitus.

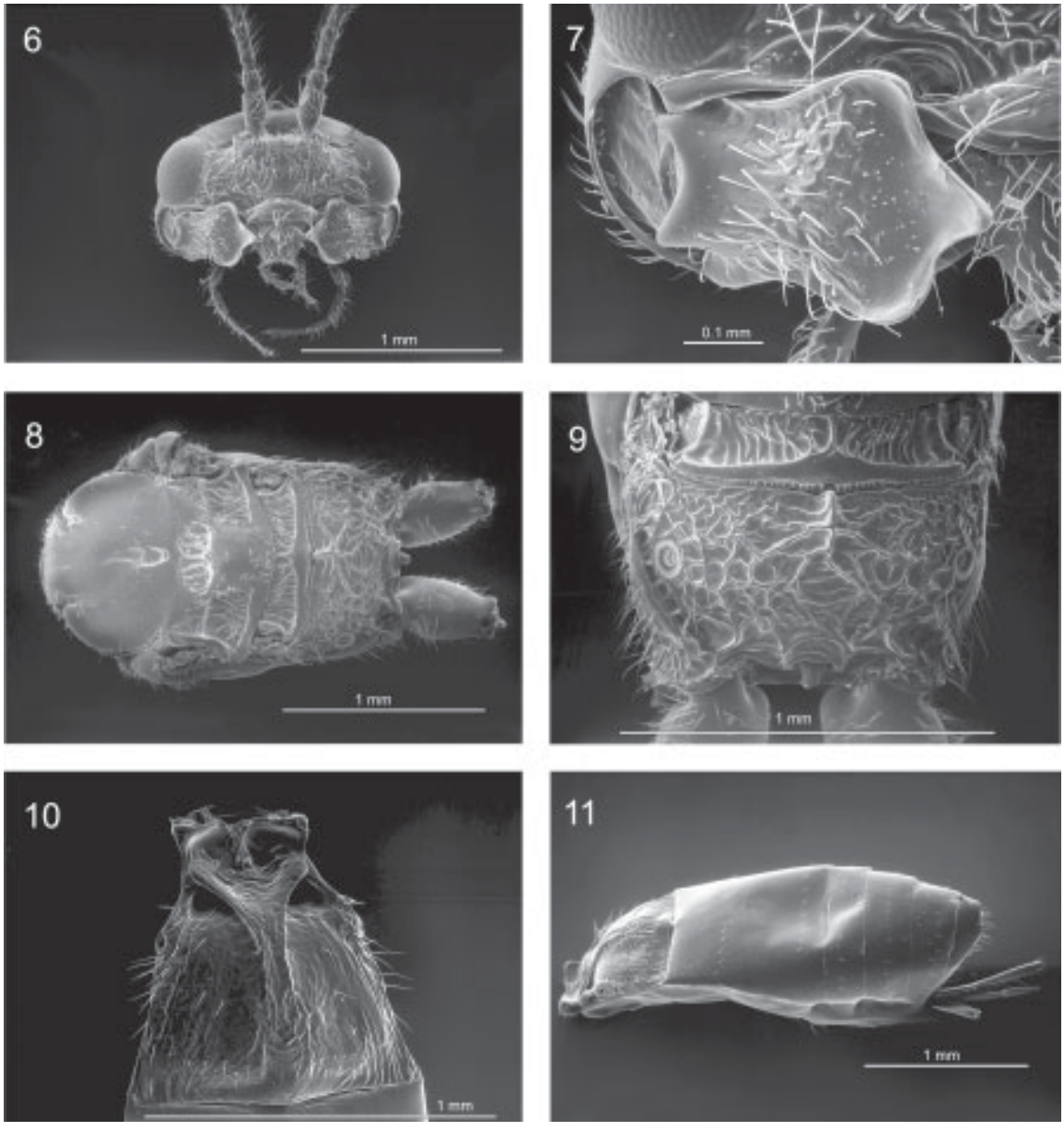


Fig. 6–11 ***Alysia manducator***. 6, head. 7, mandible. 8, mesosoma. 9, propodeum. 10, tergite 1 of metasoma. 11, metasoma.

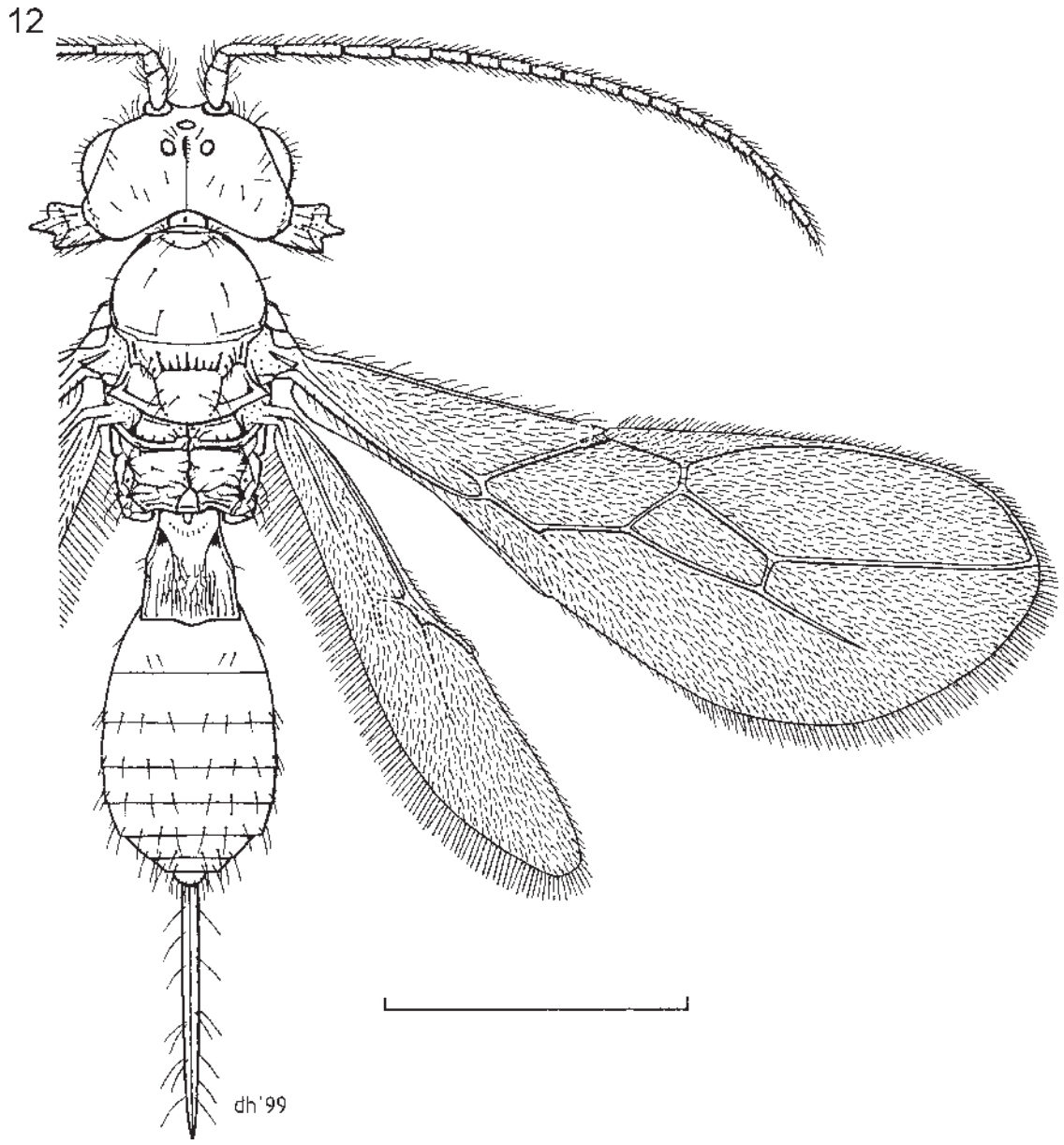


Fig. 12 ***Aphaereta aotea***. Habitus.

Fig. 13 ***Aphaereta aotea***. Wings (forewing = 2.3 mm, hindwing = 1.6 mm).

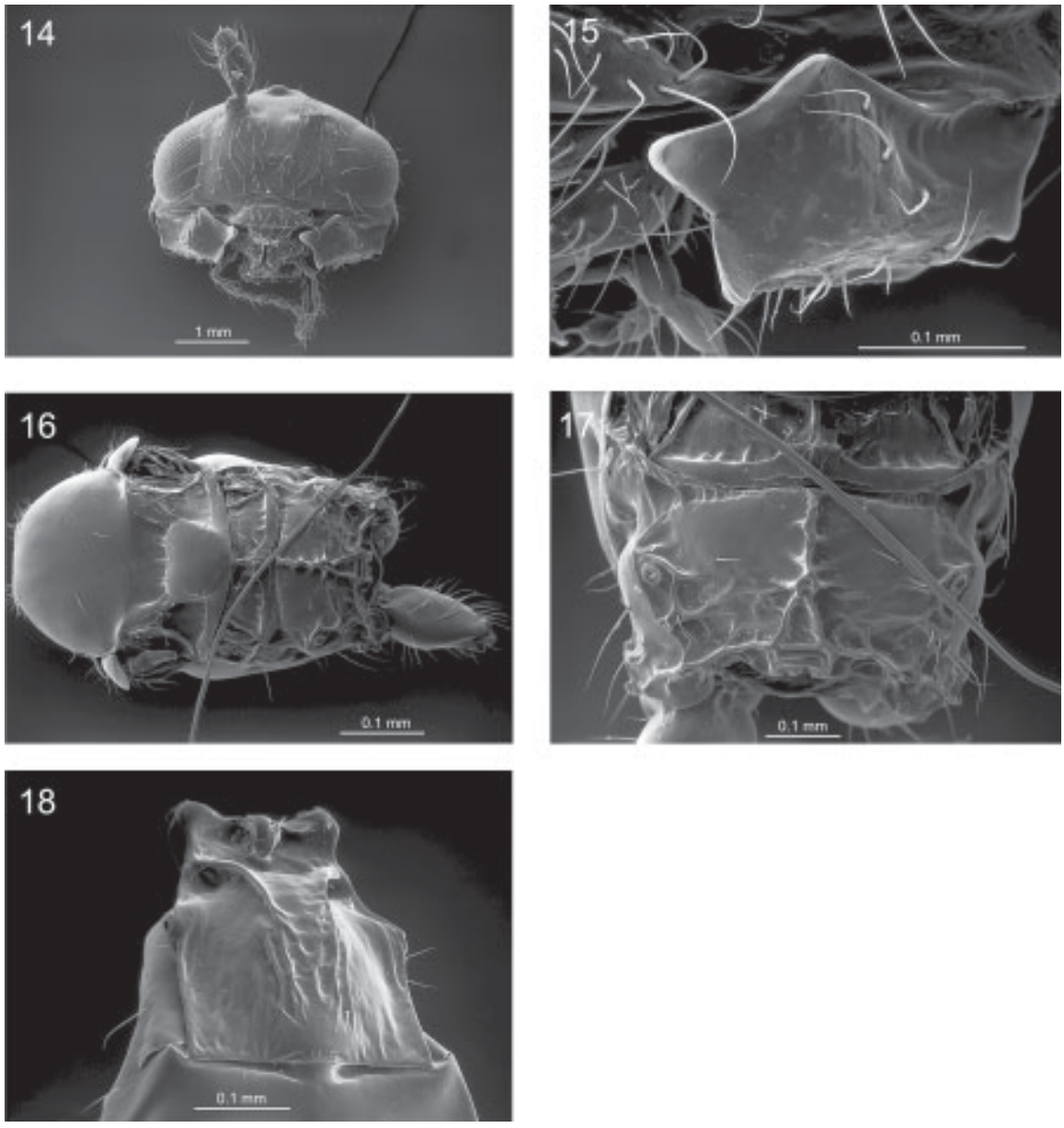


Fig. 14–18 ***Aphaereta aotea***. 14, head. 15, mandible. 16, mesosoma. 17, propodeum. 18, tergite 1 of metasoma.

Fig. 19–21 ***Aphaereta pallipes***. 19, wings (forewing = 2.1 mm, hindwing = 1.34 mm). 20, head. 21, tergite 1 of metasoma.

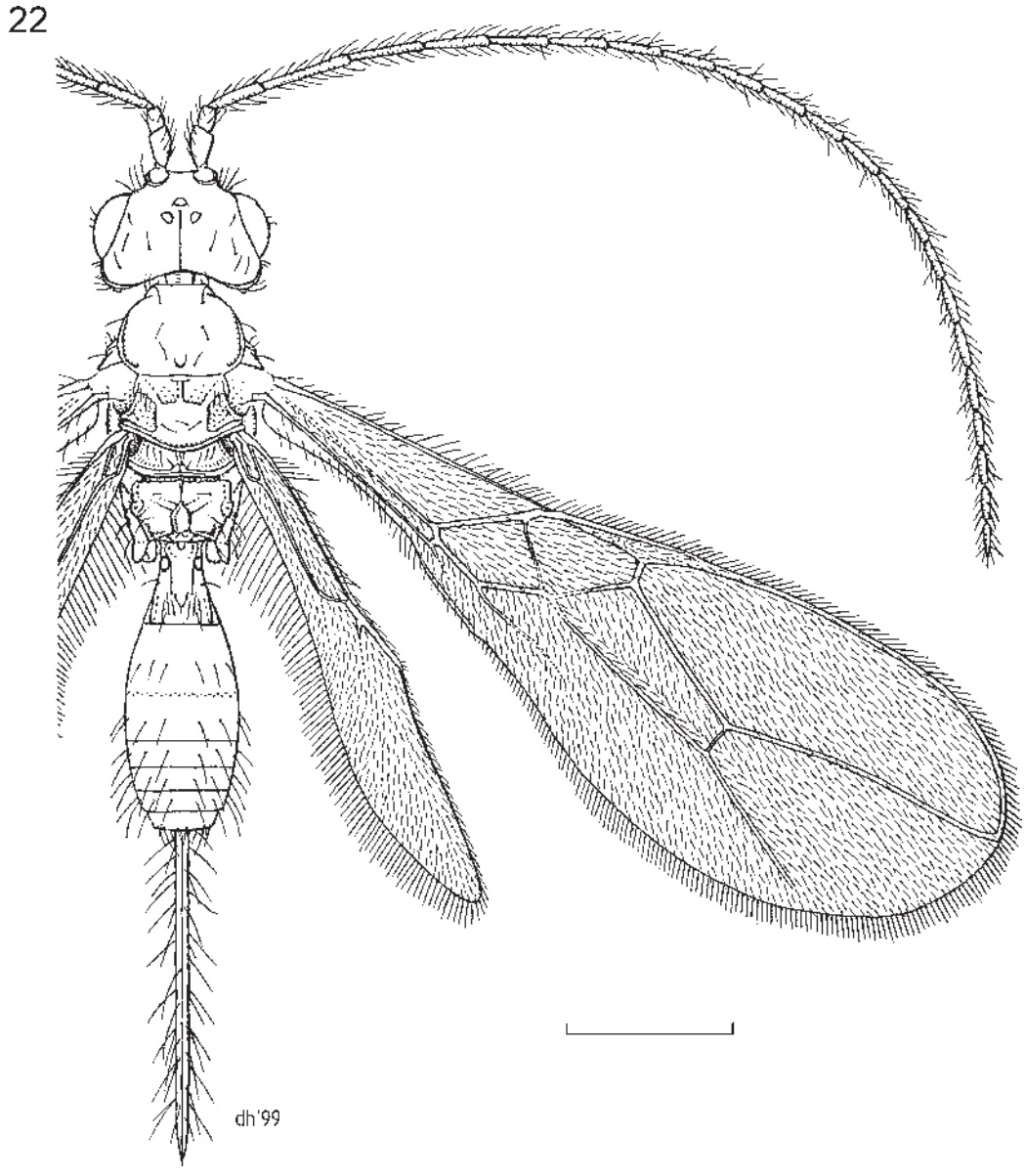


Fig. 22 ***Asobara ajbelli***. Habitus.

Fig. 23 ***Asobara ajbelli***. Wings (forewing = 2.8 mm, hindwing = 1.9 mm).

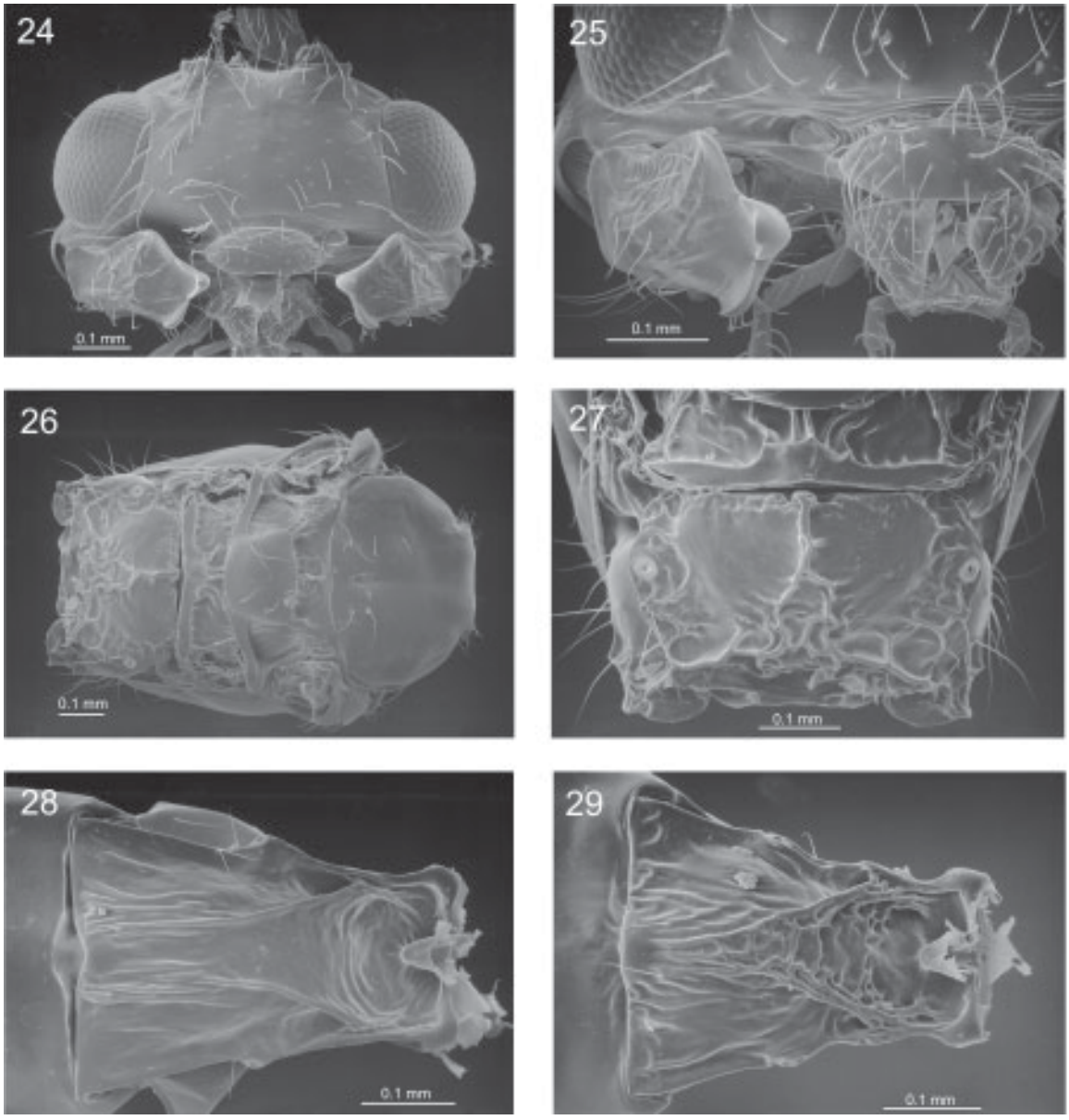


Fig. 24–29 ***Asobara ajbelli***. 24, head. 25, mandible. 26, mesosoma. 27, propodeum. 28–29, tergite 1 of mesosoma.

Fig. 30 ***Asobara albiclava***. Wings (forewing = 2.5 mm, hindwing = 1.6 mm).

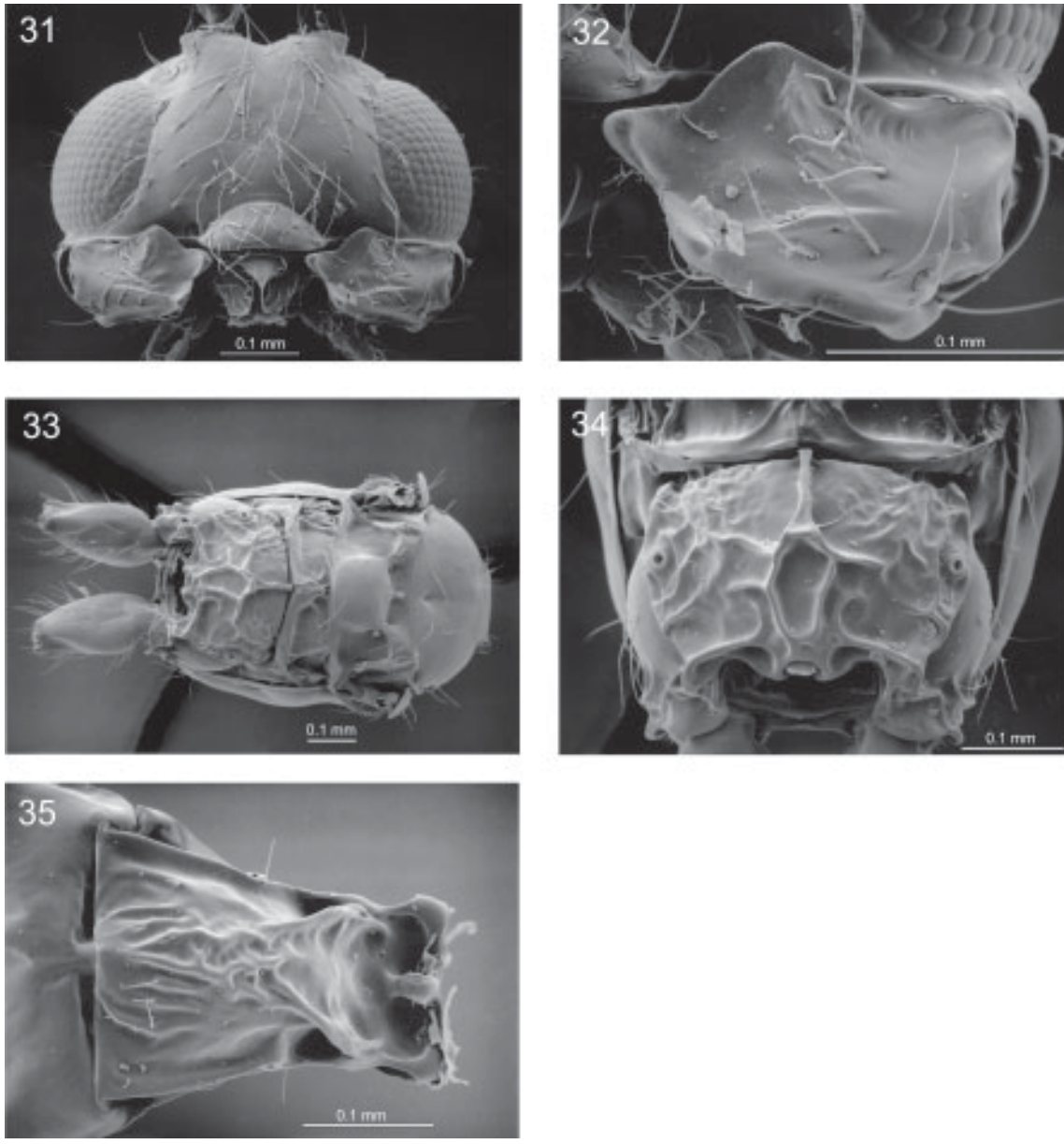


Fig. 31–35 ***Asobara albiclava***. 31, head. 32, mandible. 33, mesosoma. 34, propodeum. 35, tergite 1 of metasoma.

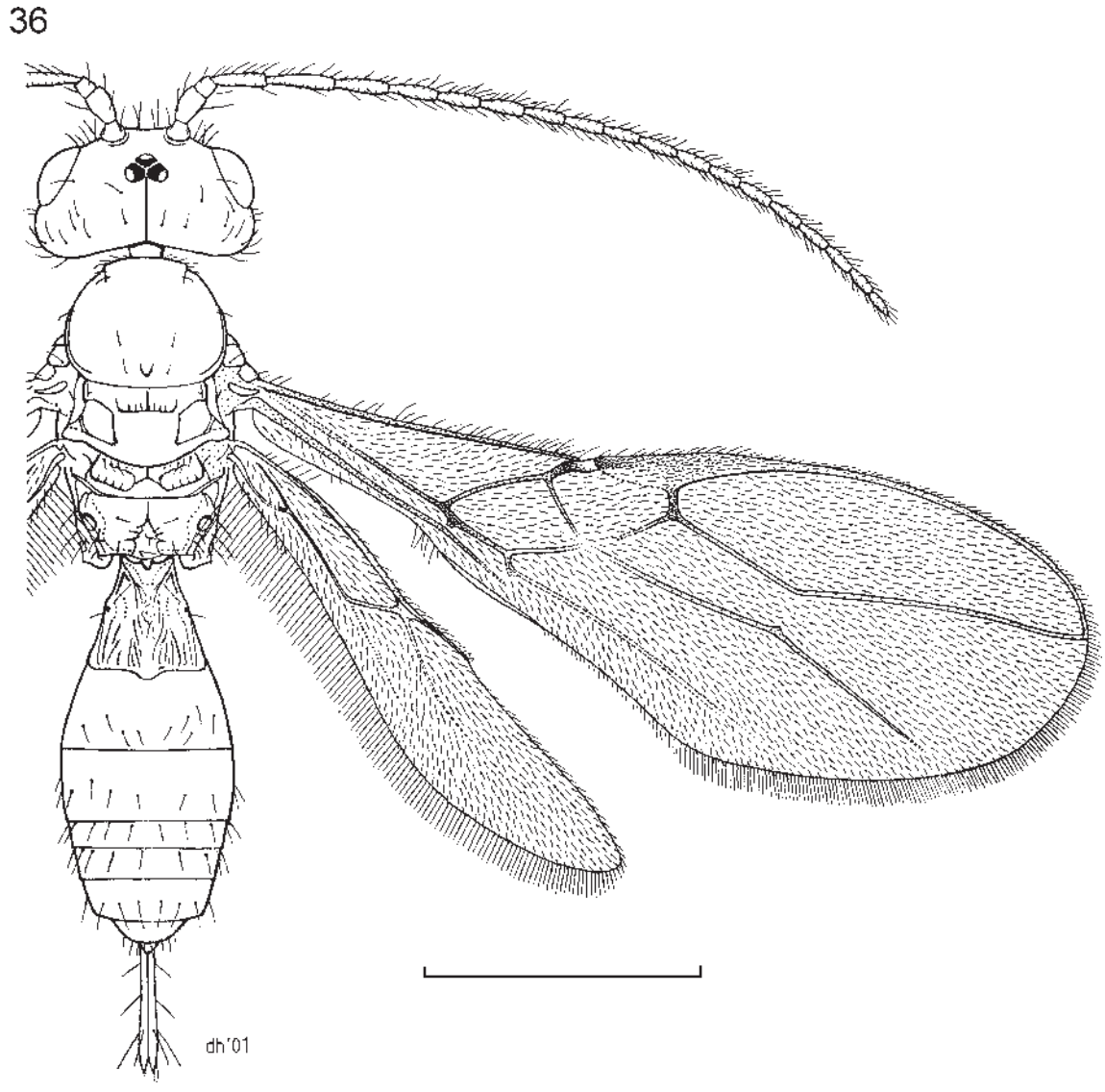


Fig. 36 ***Asobara antipoda***. Habitus.

Fig. 37 ***Asobara antipoda***. Wings (forewing = 3.32 mm, hindwing = 2.2 mm).

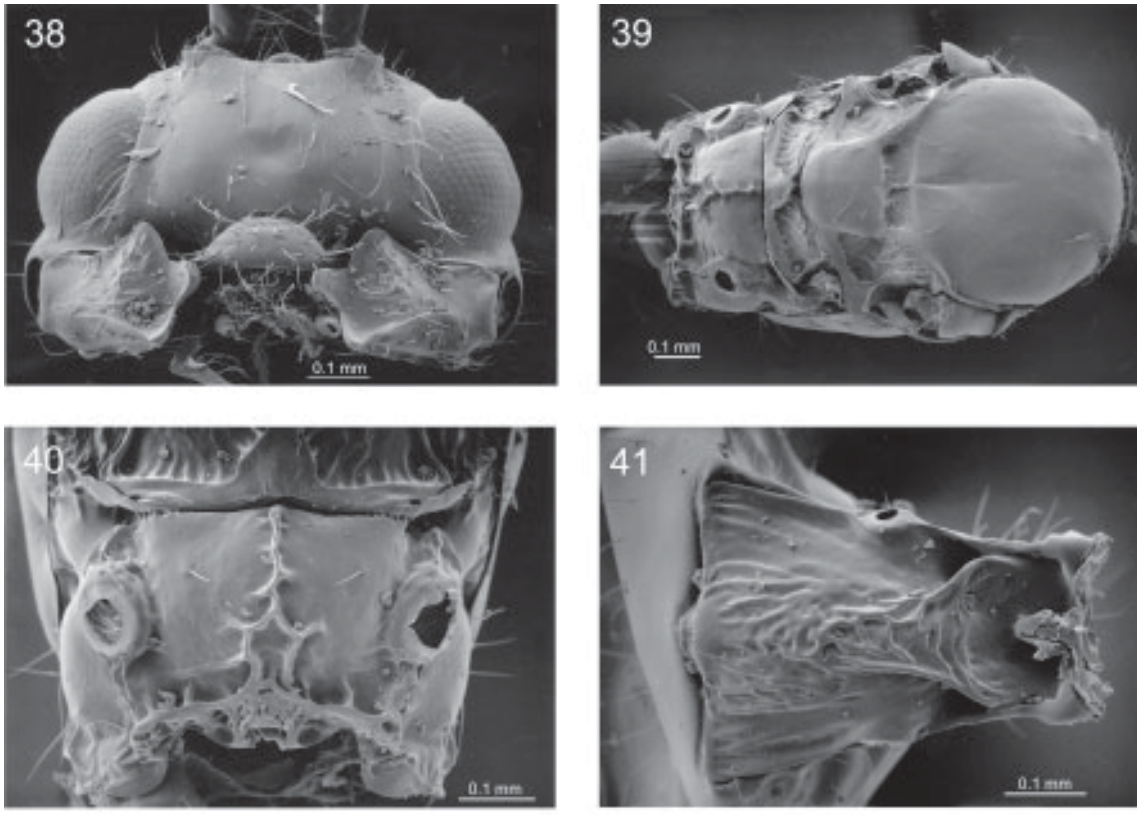


Fig. 38–41 ***Asobara antipoda***. 38, face. 39, mesosoma. 40, propodeum. 41, tergite 1 of gaster.

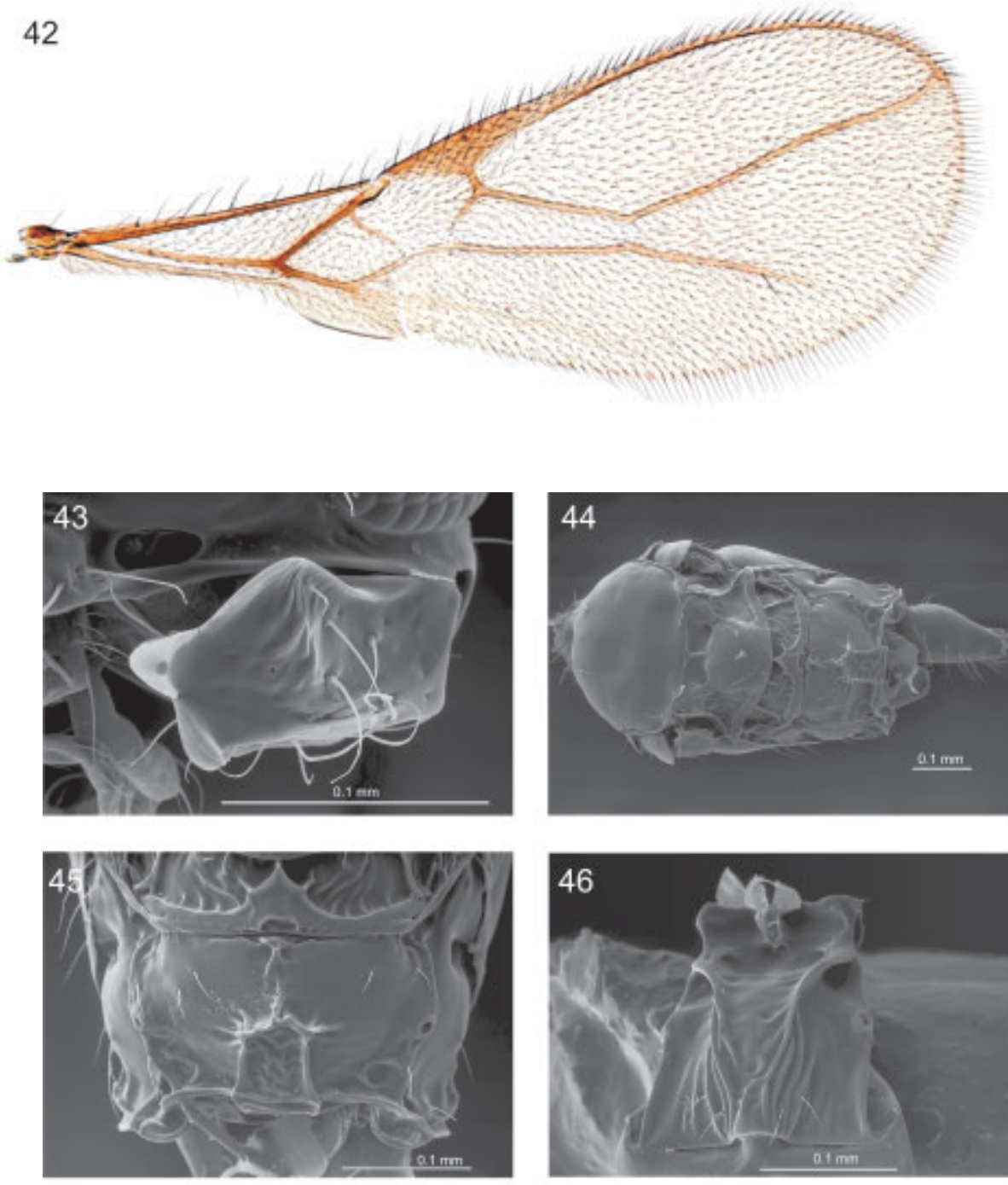


Fig. 42–46 ***Asobara persimilis***. 42, Forewing (length = 2.0 mm). 43, mandible. 44, mesosoma. 45, propodeum. 46, tergite 1 of gaster.

Fig. 47 ***Asobara tabida***. Wings (forewing = 2.24 mm, hindwing = 1.54 mm).

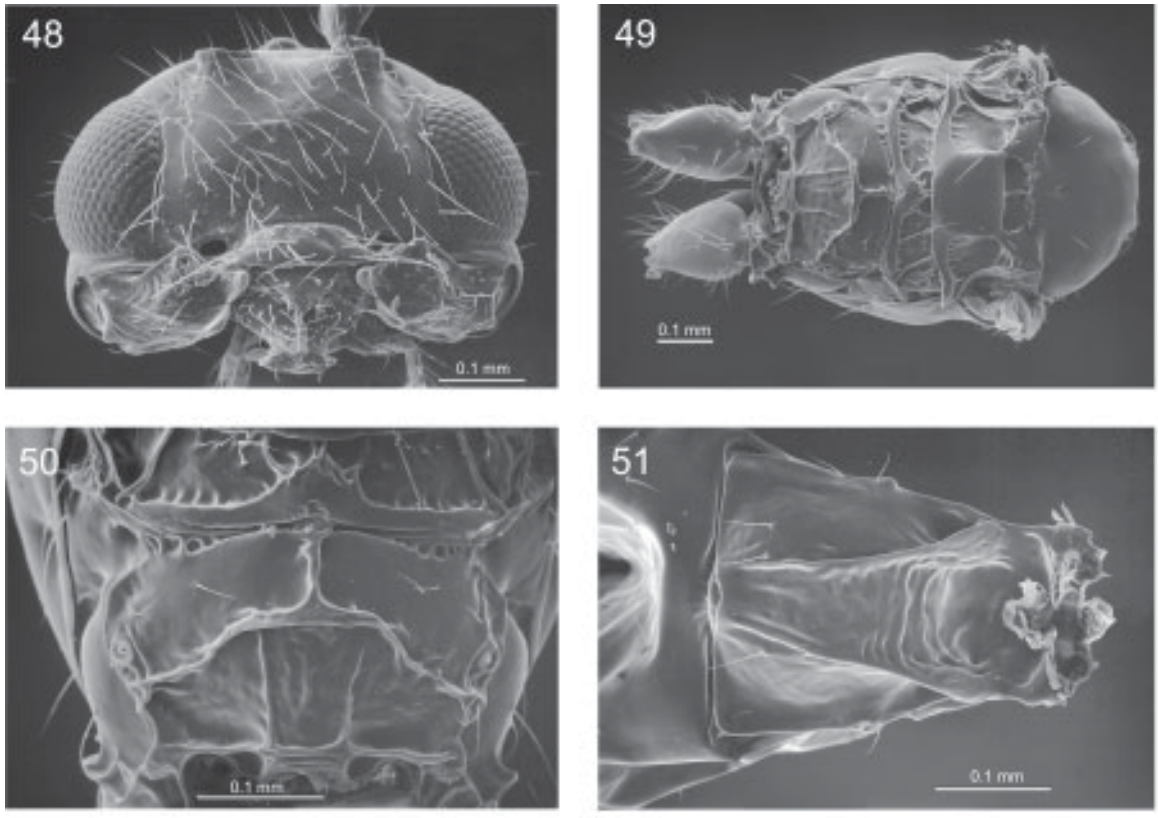


Fig. 48–51 ***Asobara tabida***. 48, face. 49, mesosoma. 50, propodeum. 51, tergite 1 of gaster.

Fig. 52 ***Aspilota angusta***. Wings (forewing = 2.22 mm, hindwing = 1.54 mm).

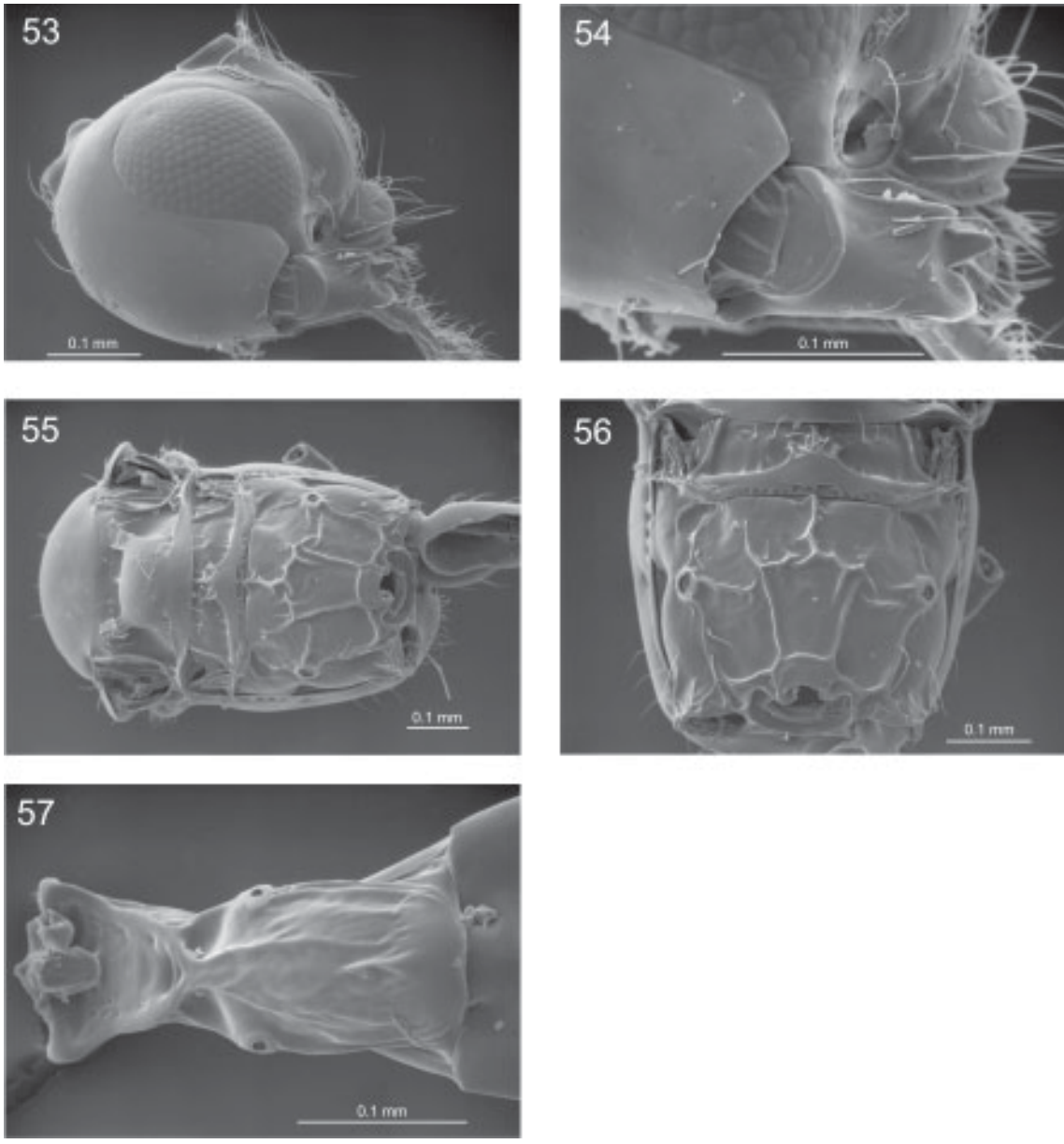


Fig. 53–57 ***Aspilota angusta***. 53, head. 54, mandible. 55, mesosoma. 56, propodeum. 57, tergite 1 of metasoma.

Fig. 58 ***Aspilota albertica*** Forewing of male (length = 1.16 mm).

Fig. 59 ***Aspilota parecur***. Wings (forewing = 1.9 mm, hindwing = 1.42 mm).

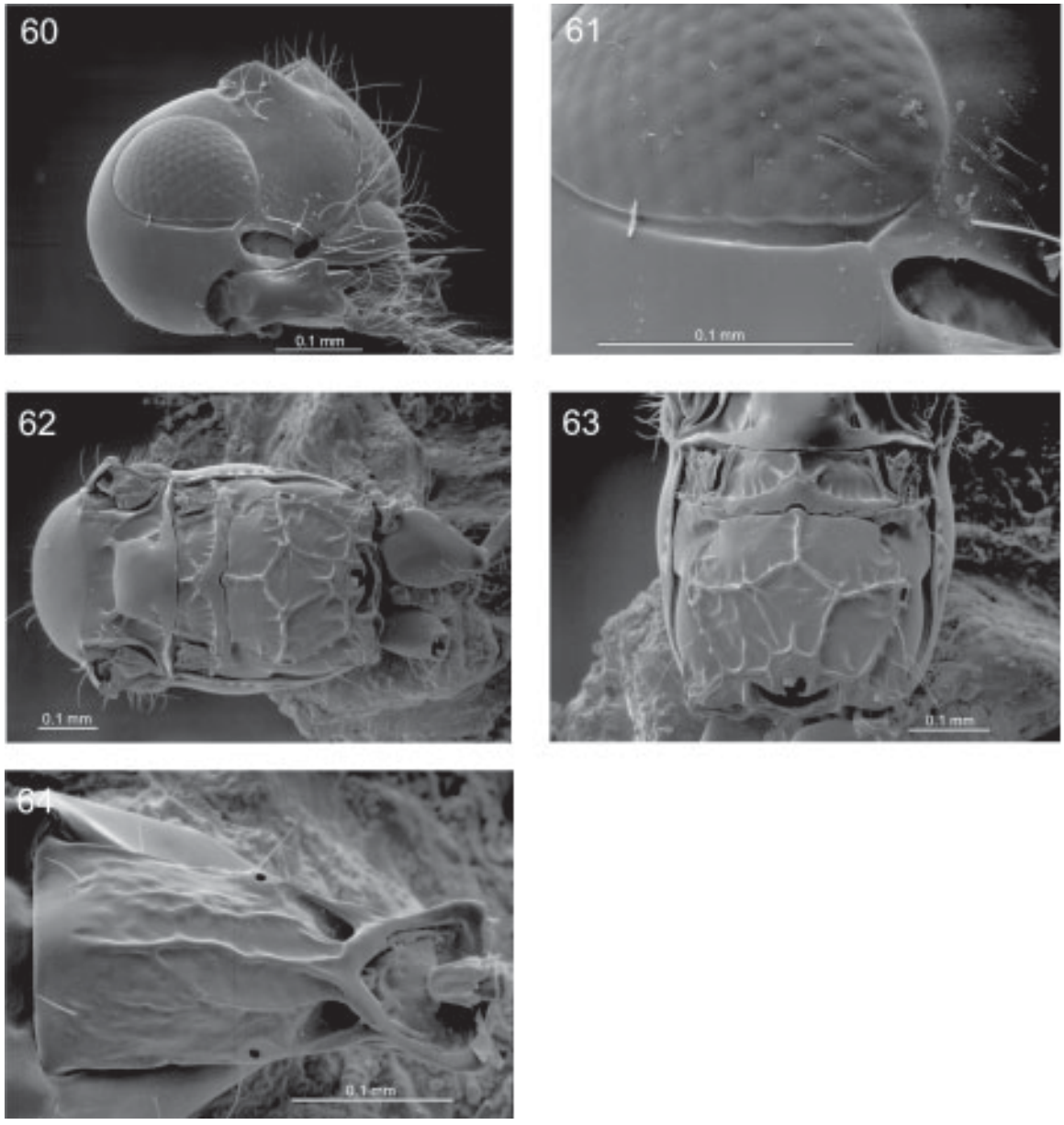


Fig. 60–64 ***Aspilota parecur***. 60, head. 61, subocular sulcus. 62, mesosoma. 63, propodeum. 64, tergite 1 of metasoma.

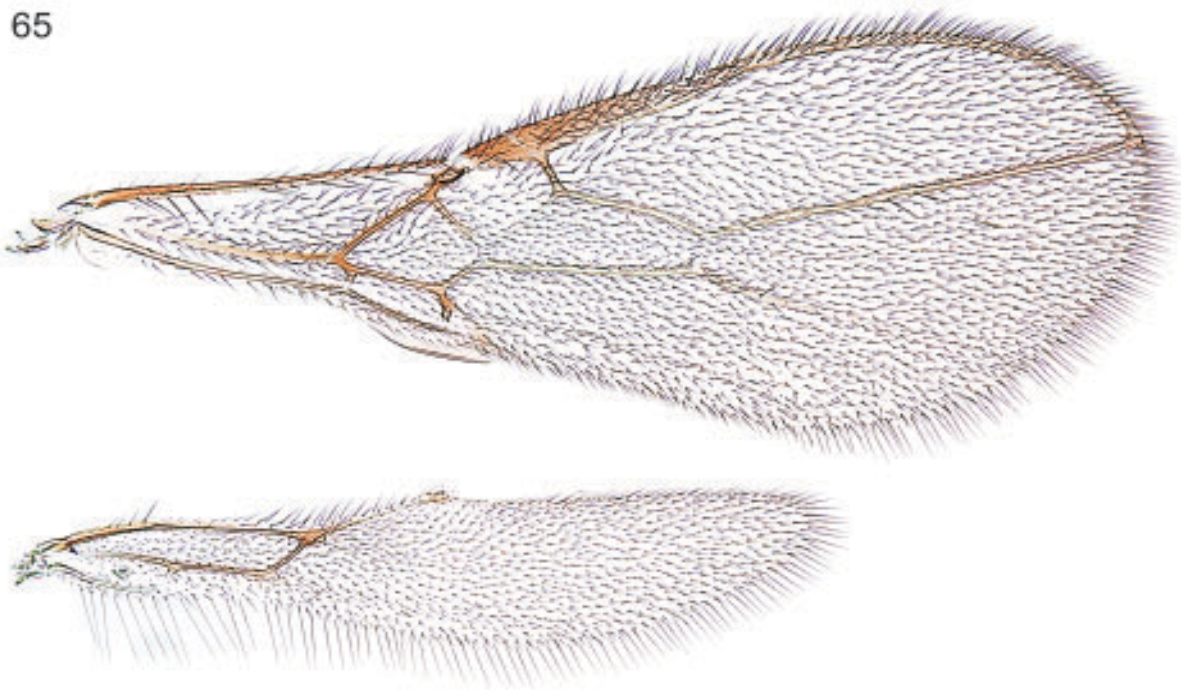


Fig. 65 ***Aspilota villosa***. Wings (forewing = 2.24 mm, hindwing = 1.62 mm).

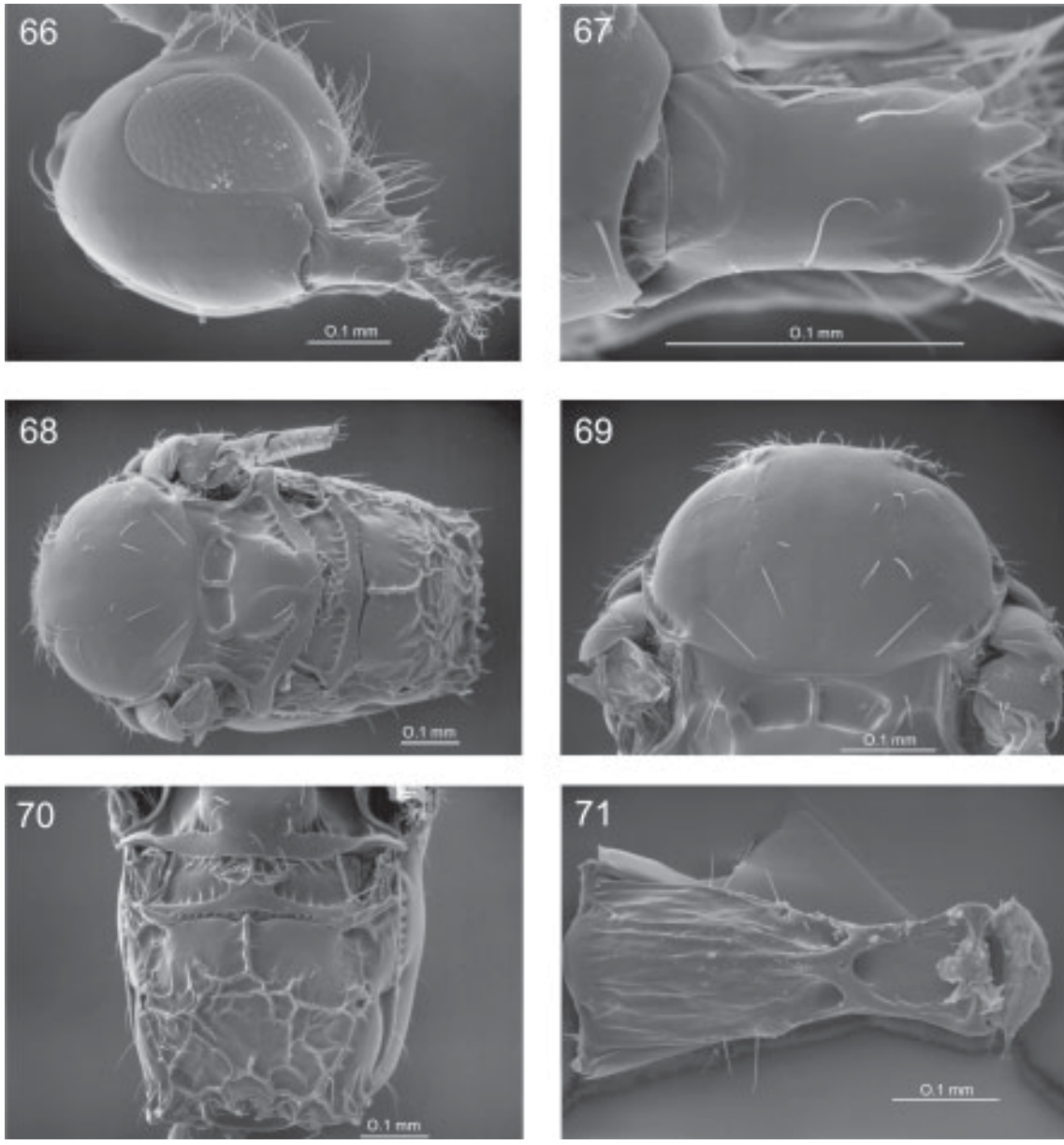


Fig. 66–71 ***Aspilota villosa***. 66, head. 67, mandible. 68, mesosoma. 69, anterior mesosoma. 70, propodeum. 71, tergite 1 of metasoma.

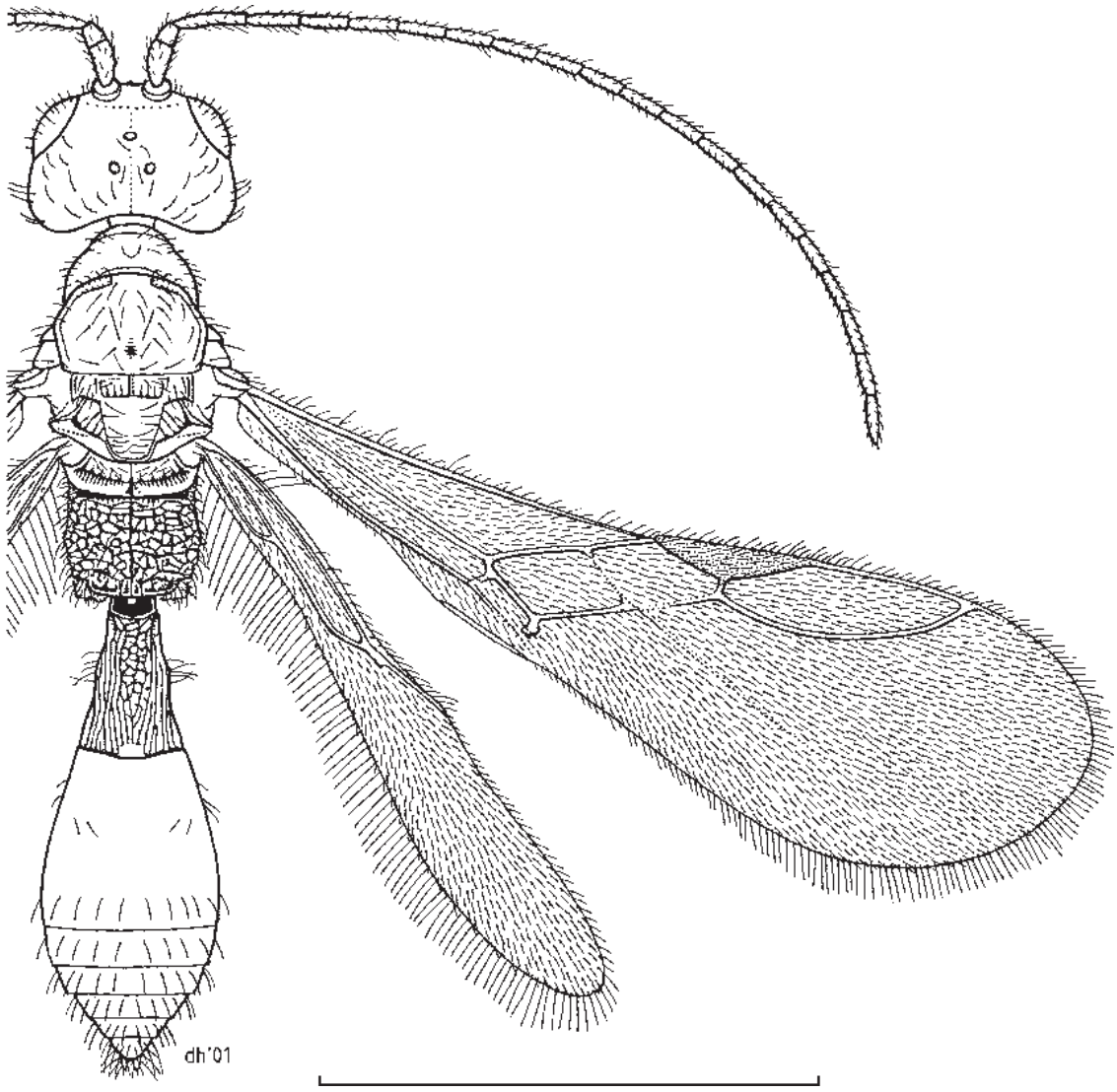


Fig. 72 ***Chaenusa helmorei***. Habitus.

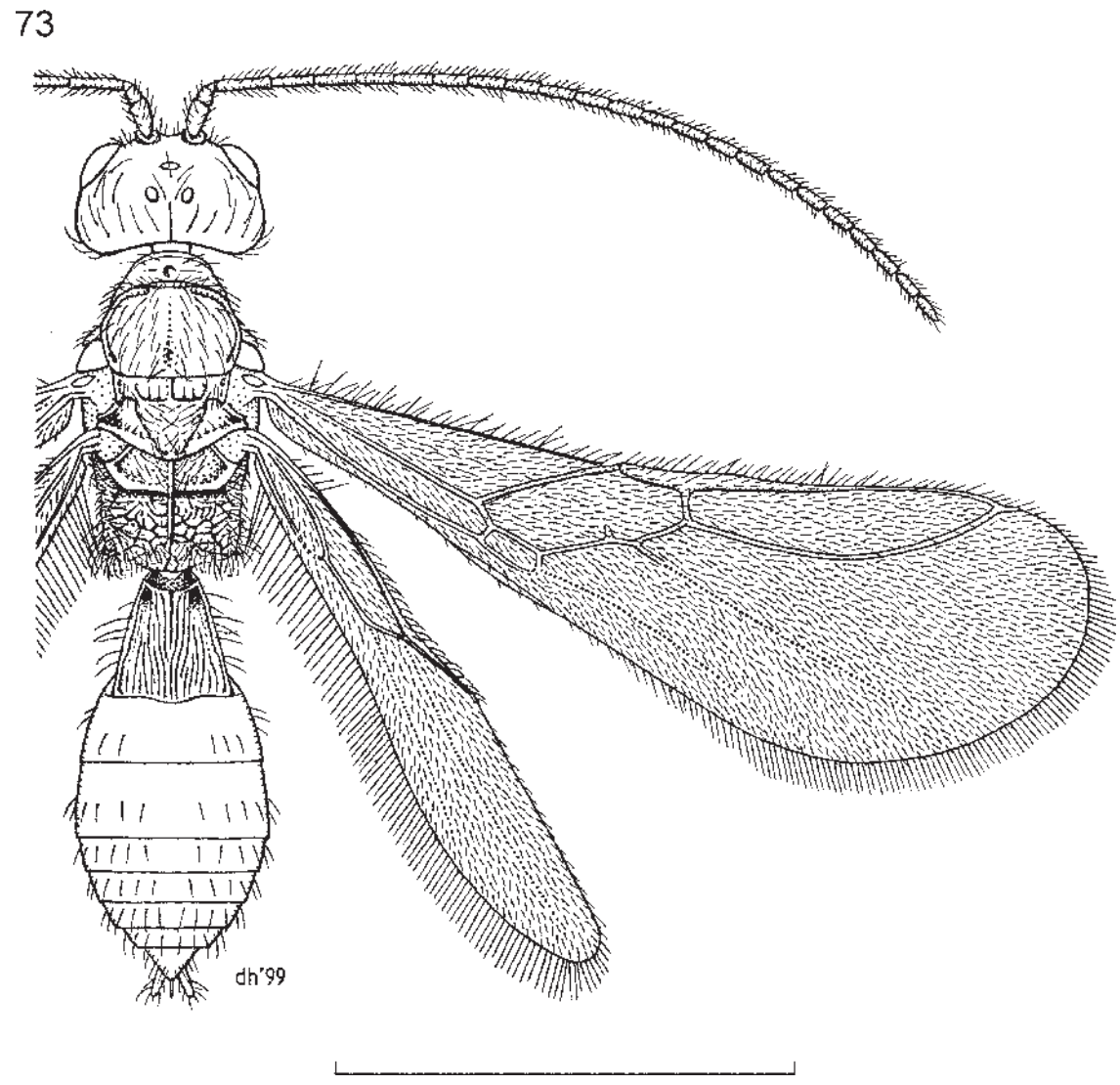


Fig. 73 ***Chorebus rodericki***. Habitus.

Fig. 74 ***Chorebus rodericki***. Wings, (forewing = 2.02 mm, hindwing = 1.42 mm).

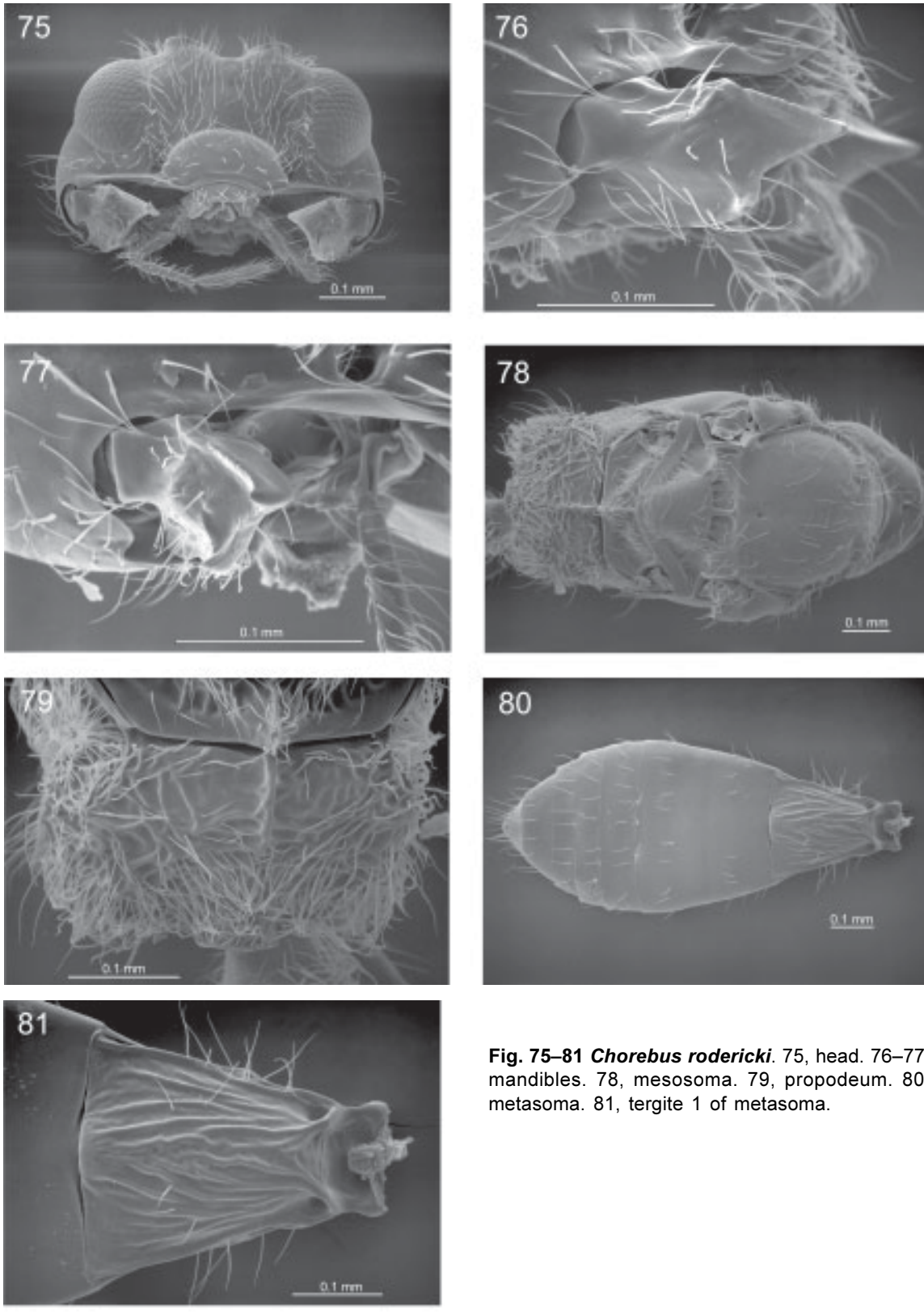


Fig. 75–81 ***Chorebus roderickí***. 75, head. 76–77, mandibles. 78, mesosoma. 79, propodeum. 80, metasoma. 81, tergite 1 of metasoma.

Fig. 82 ***Dacnusa areolaris***. Wings (forewing = 2.5 mm, hindwing = 1.84 mm).

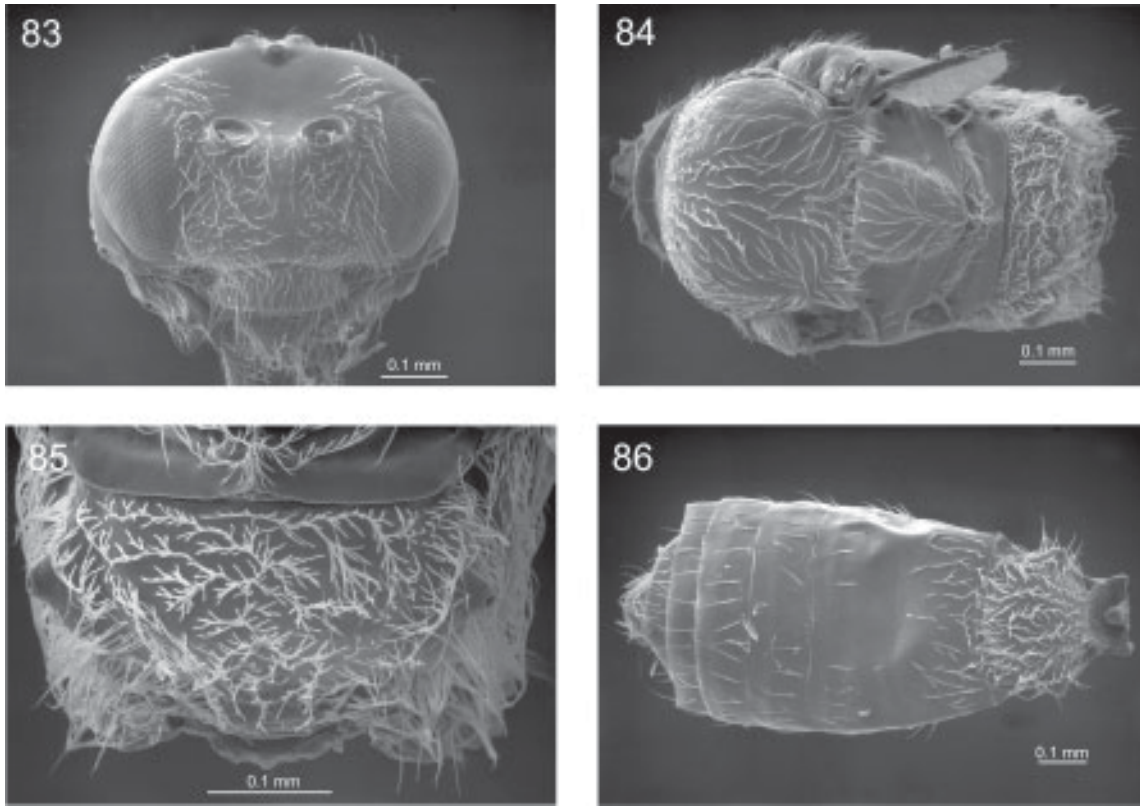


Fig. 83–86 ***Dacnusa areolaris***. 83, head. 84, mesosoma. 85, propodeum. 86, metasoma.

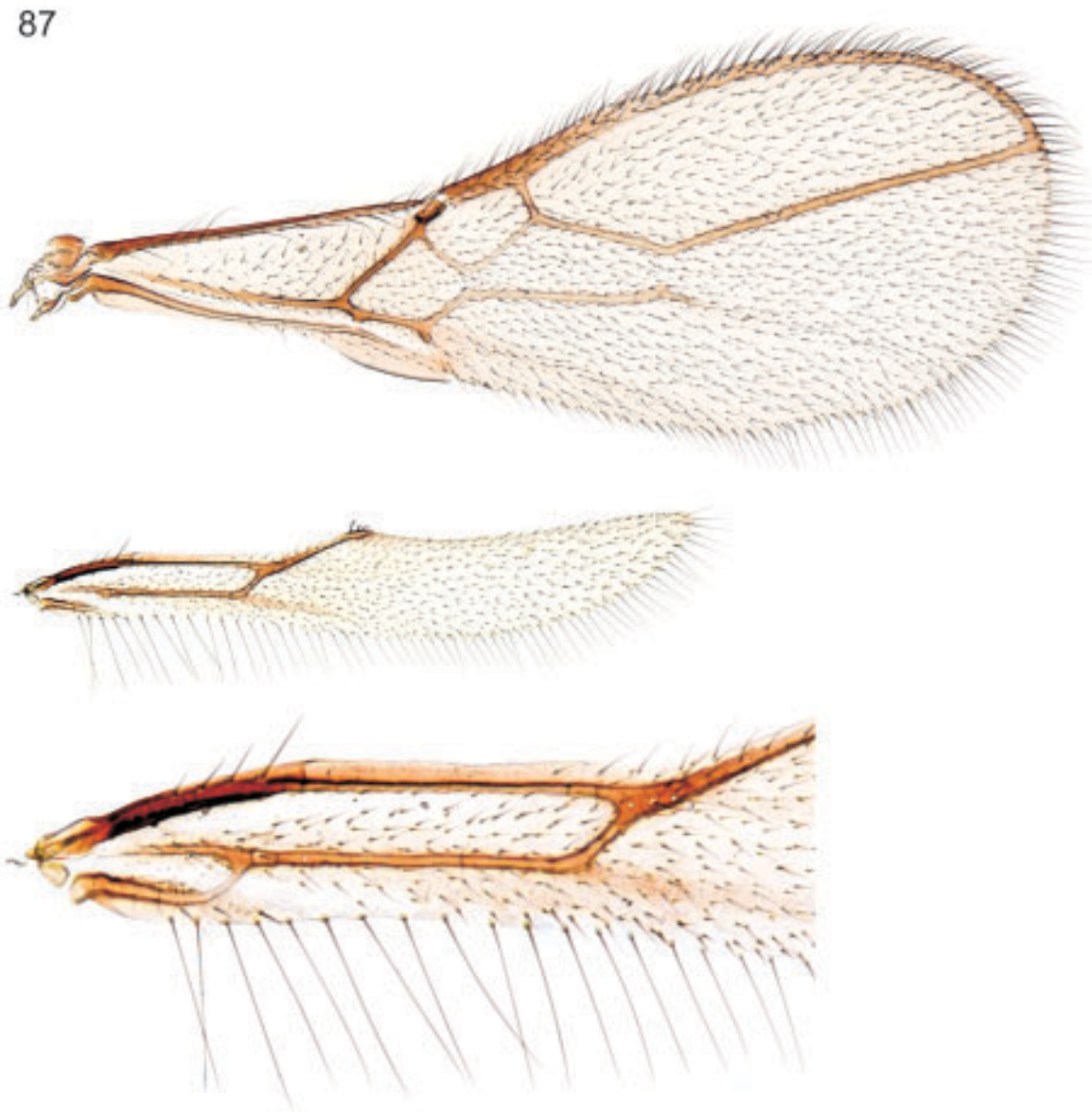


Fig. 87 ***Dinotrema barrattae***. Wings (forewing = 1.74 mm, hindwing = 1.22 mm).

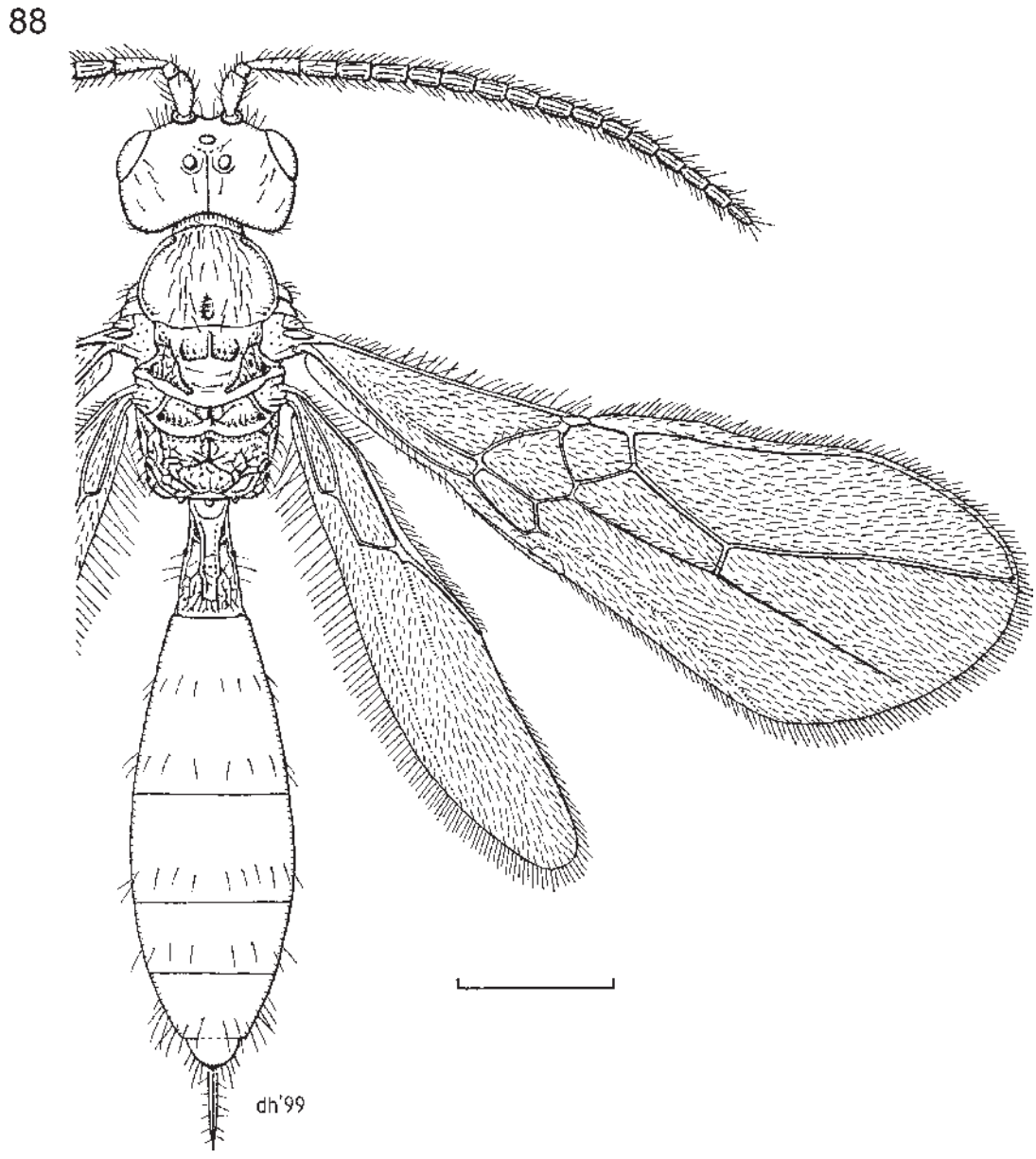


Fig. 88 ***Dinotrema longworthi***. Habitus.

Fig. 89 ***Dinotrema longworthi***. 89, wings (forewing = 2.28 mm, hindwing = 1.72 mm).

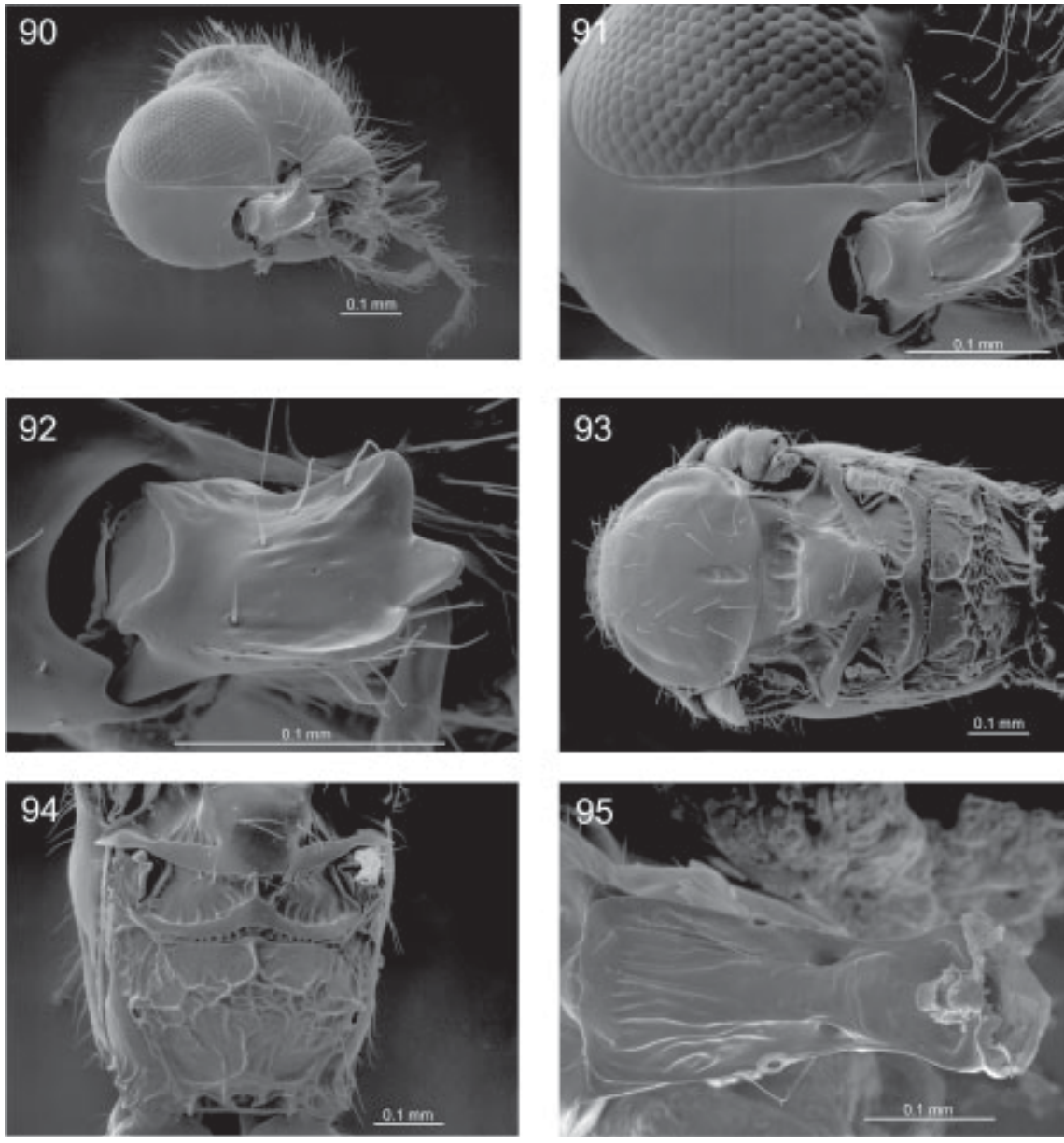


Fig. 90–95 ***Dinotrema longworthi***. 90, head. 91, subocular sulcus. 92, mandible. 93, mesosoma. 94, propodeum. 95, tergite 1 of gaster.

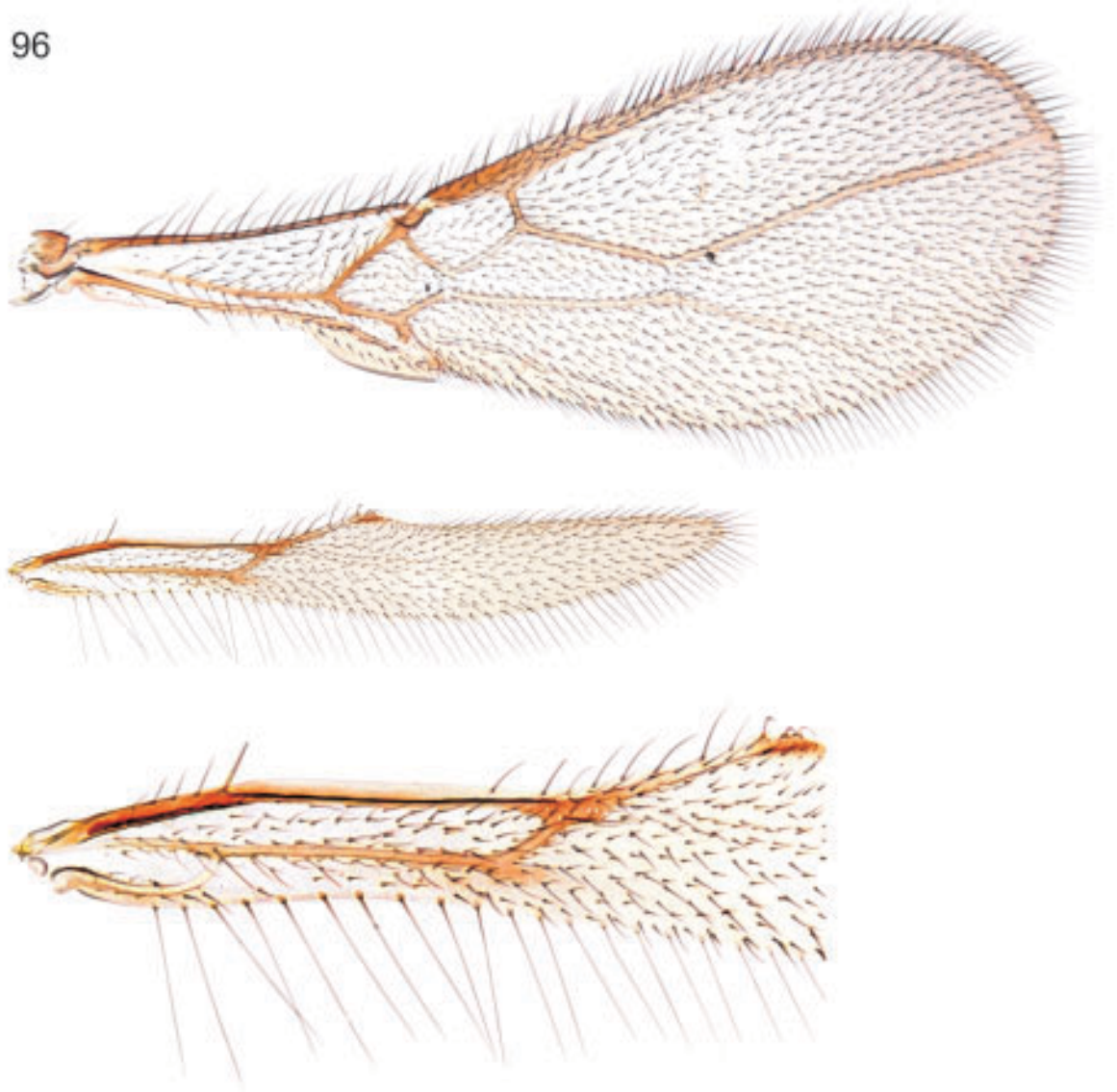


Fig. 96 ***Dinotrema philipi***. Wings (forewing = 1.68 mm, hindwing = 1.14 mm).

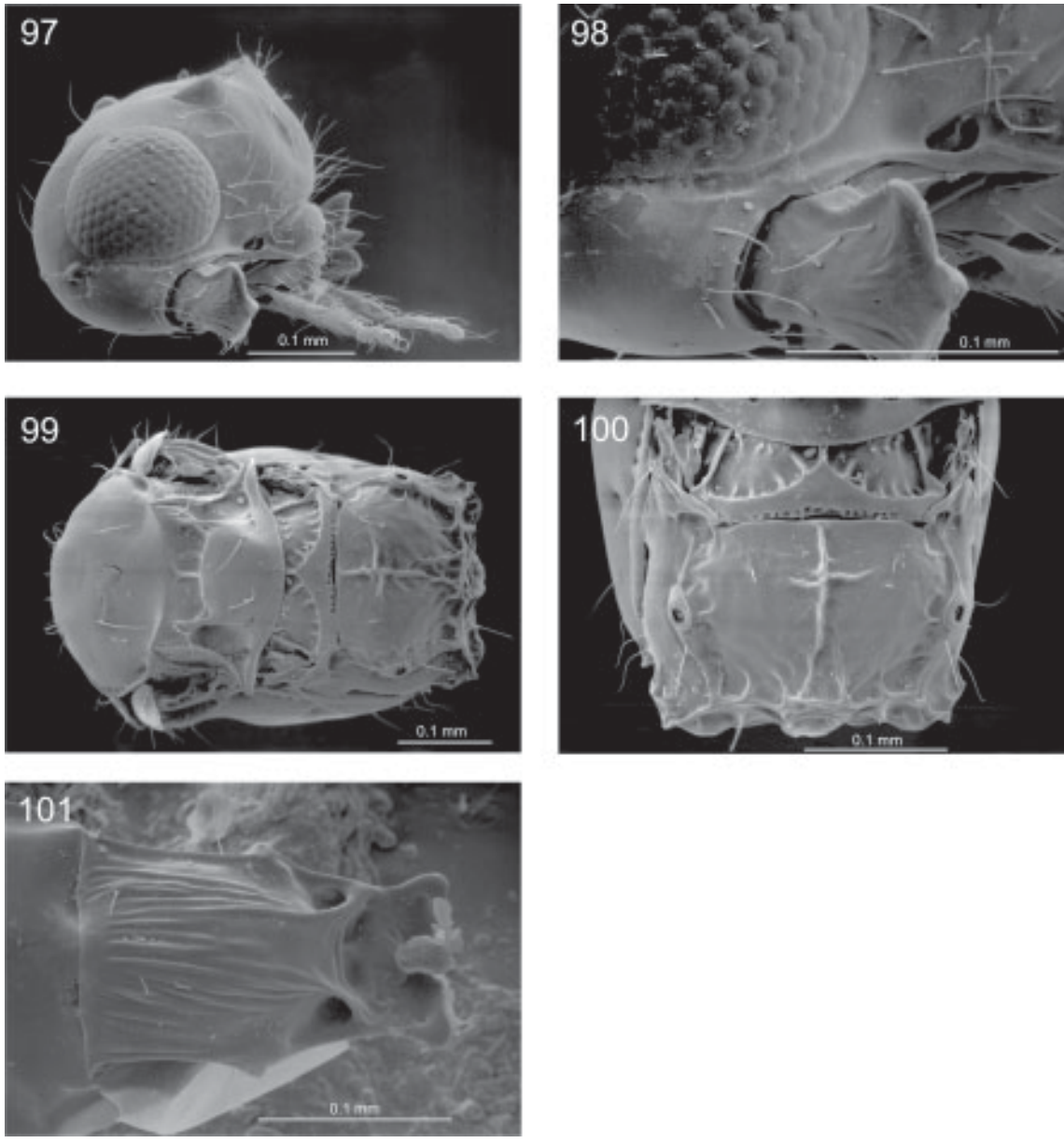
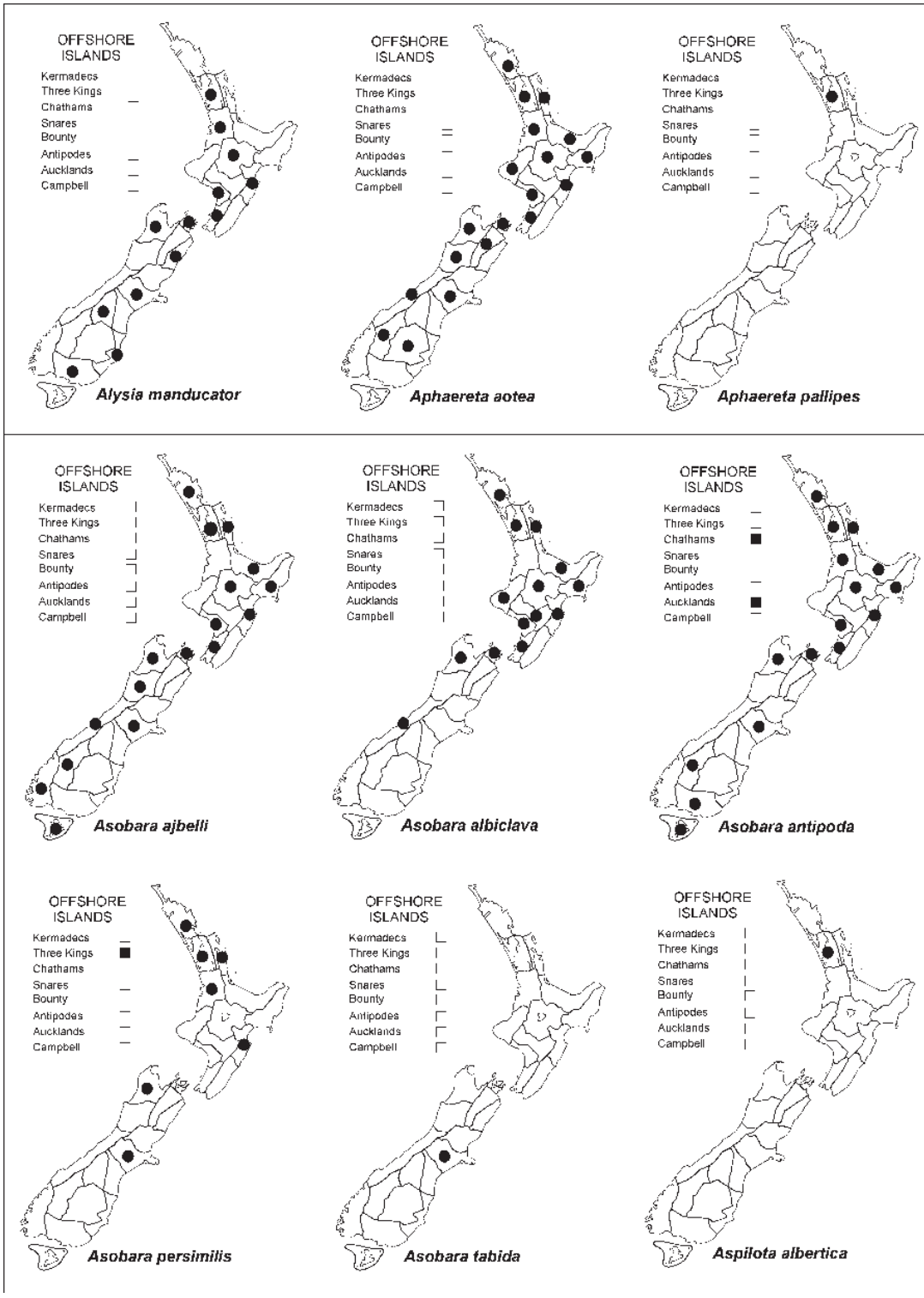


Fig. 97–101 ***Dinotrema philipi***. 97, head. 98, mandible. 99, mesosoma. 100, propodeum. 101, tergite 1 of metasoma.



Species distribution maps (pp. 85–87) according to area codes of Crosby *et al*. (1998); detailed locality information with species descriptions (type specimens) and Appendix 3 (non-type specimens, pp. 41–46).

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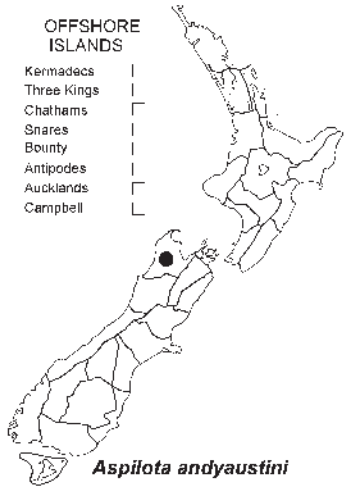
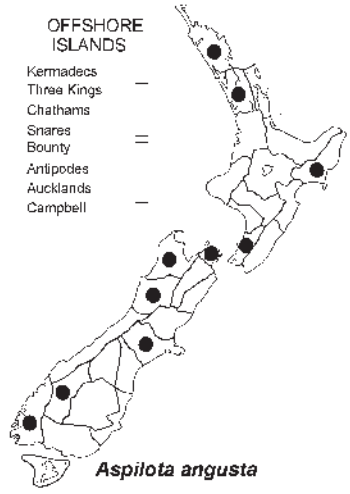
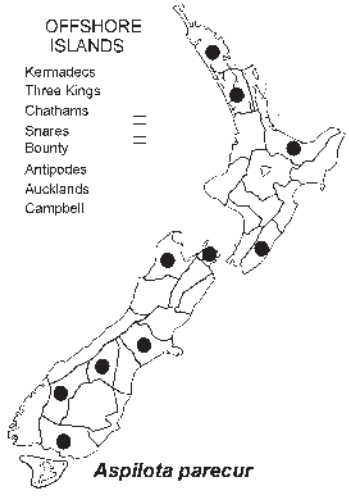


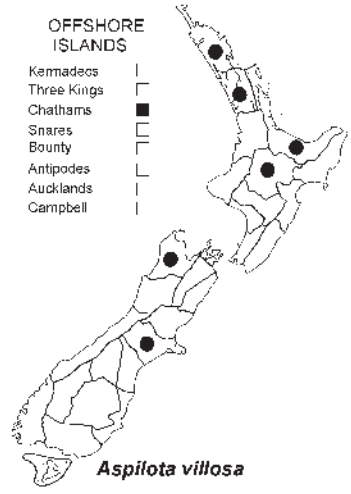
Aspilota andyaustini



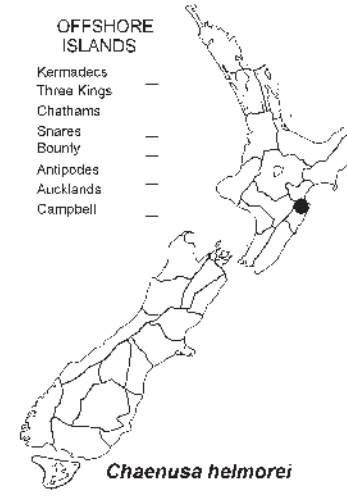
Aspilota angusta



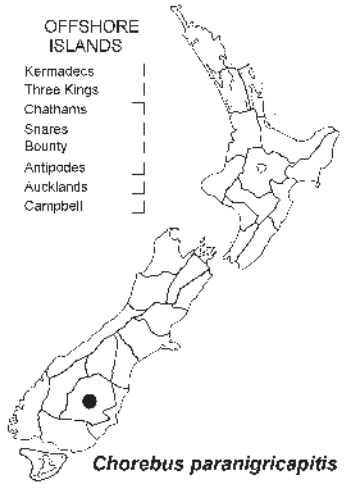
Aspilota parecur



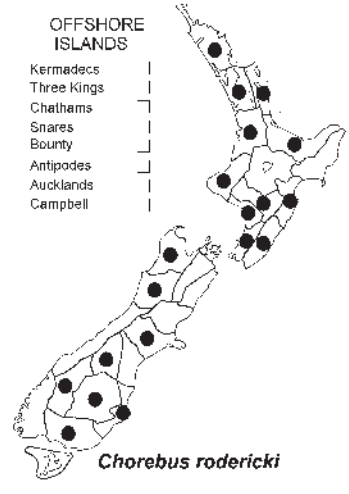
Aspilota villosa



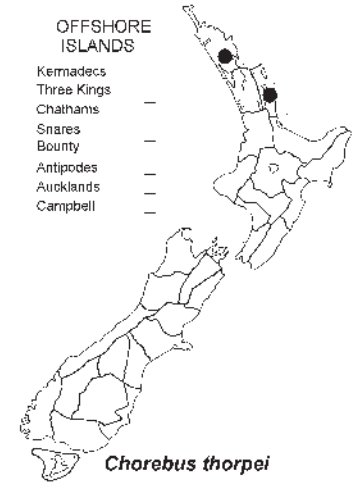
Chaenusa helmorei



Chorebus paranigricapitis



Chorebus rodericki



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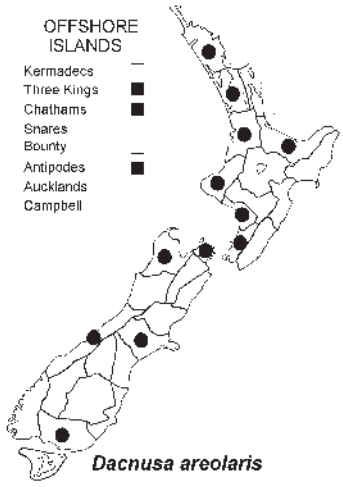
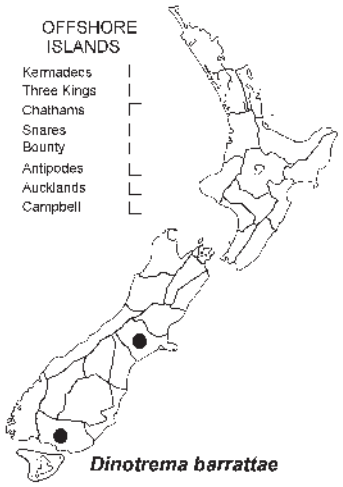
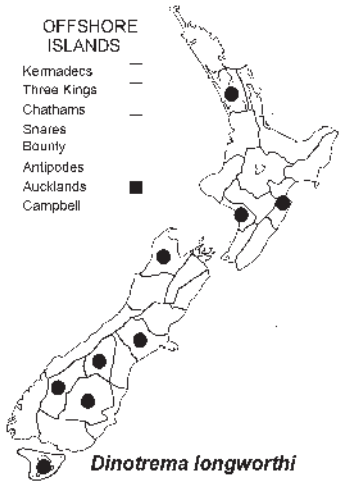


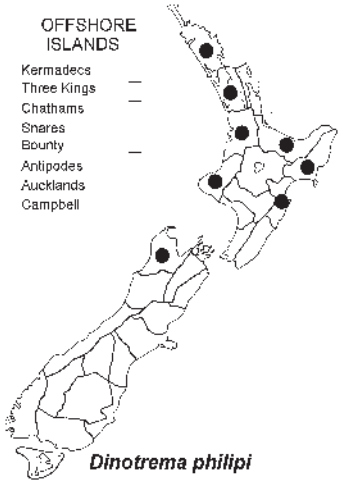
Dacnusa areolaris



Dinotrema barrattae



Dinotrema longworthi



Dinotrema philipi

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Taxa in **bold** indicate valid taxa. Page numbers in **bold** indicate main entries. The letter "**k**" after a page number indicates a **key** couplet. The letter "**f**" after a page number indicates a **figure**. The letter "**m**" indicates a **distribution map**.

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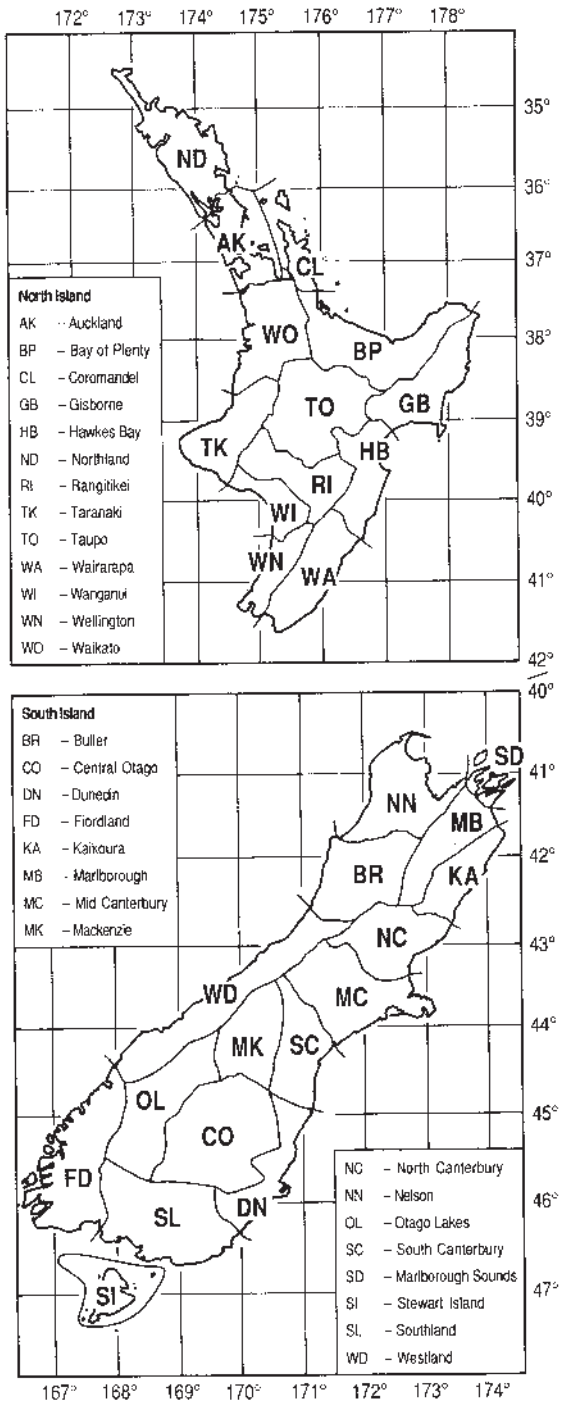
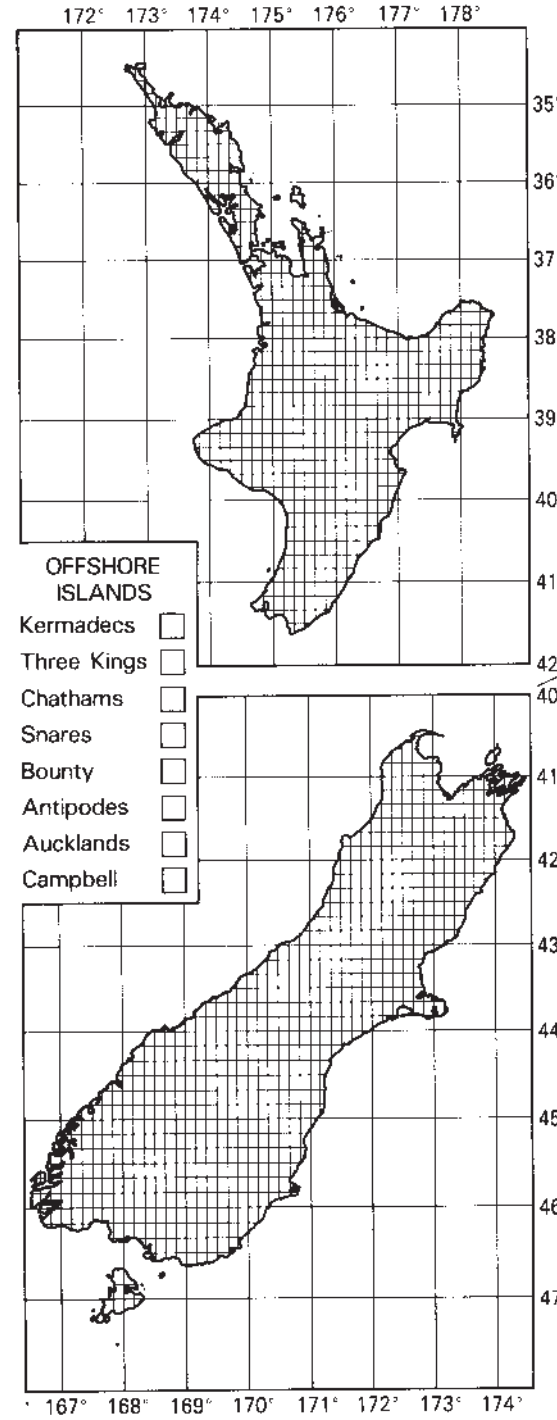
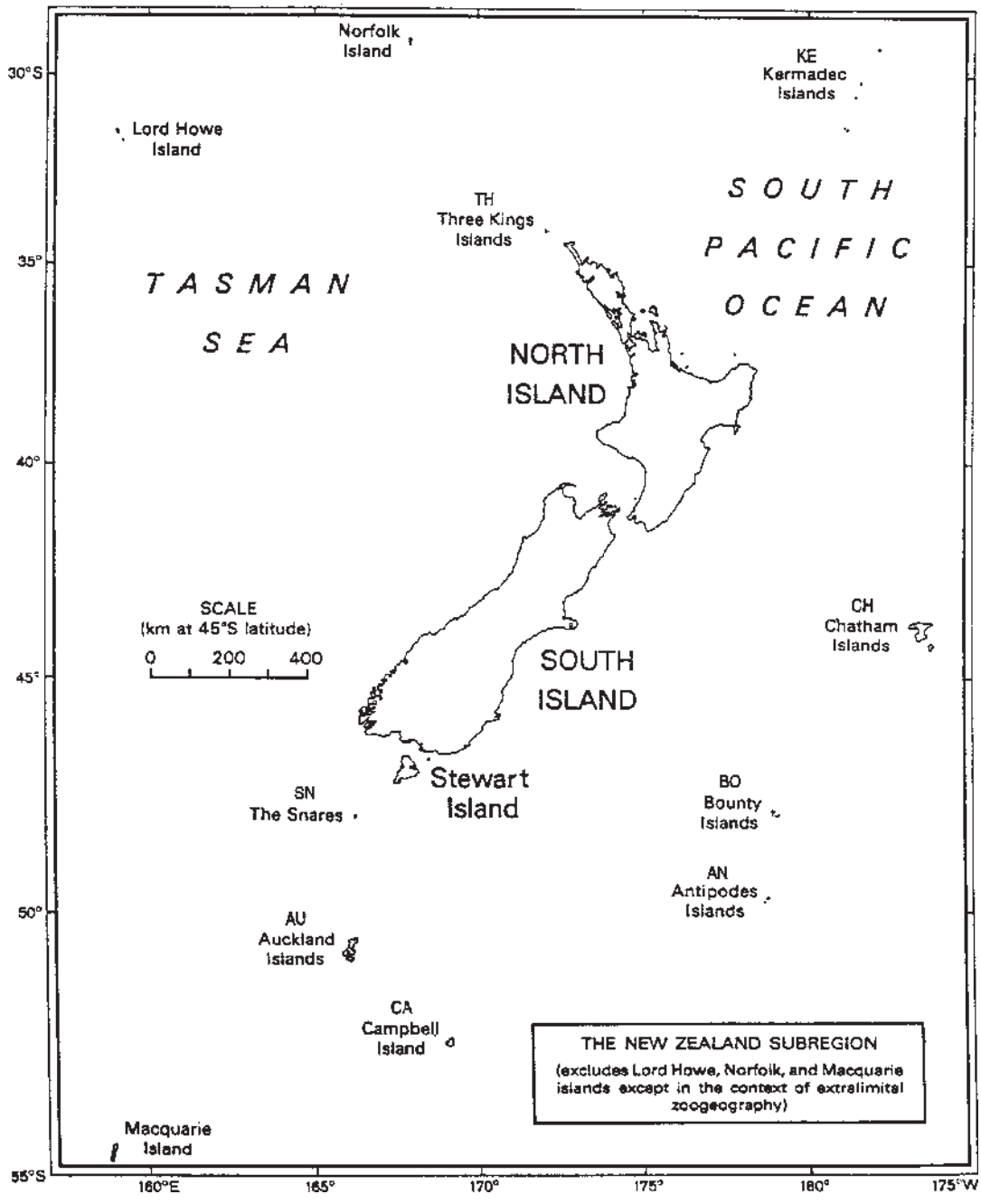


Area codes and boundaries used to categorise specimen locality data (after Crosby *et al.* 1976)



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



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He titiro whāiti tā tēnei pukapuka ki ngā mea noho whenua, kāore he tuarā; i pēnei ai i te mea kei te mōhio whānuitia ngā mea whai tuarā, ā, ko ngā mea noho moana, koirā te tino kaupapa o te huinga pukapuka *Marine Fauna of N.Z.*

Ka āhei te tangata ki te **whakauru tuhituhinga** mehemea kei a ia ngā tohungatanga me ngā rauemi e tutuki pai ai tana mahi. Heoi anō, e wātea ana te Kohinga Angawaho o Aotearoa hei āta tirotiro mā te tangata mehemea he āwhina kei reira.

Me whāki te kaituhi i ōna whakaaro ki tētahi o te Kāhui Ārahi Whakarōpūtanga Tuarā-Kore, ki te ģtita rānei i mua i te tīmatanga, ā, mā rātou a ia e ārahi mō te wāhi ki tana tuhinga.

Ko te hunga pīrangi **hoko pukapuka**, me tuhi ki *Fauna of N.Z.*, Manaaki Whenua Press, Manaaki Whenua, Pouaka Poutāpeta 40, Lincoln 8152, Aotearoa.

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Te utu (tirohia "Titles in print", whārangi 92). Ko te kōpaki me te pane kuini kei roto i te utu. Me utu te hunga e noho ana i Aotearoa me Ahitereiria ki ngā tāra o Aotearoa. Ko ētahi atu me utu te moni kua tohua, ki ngā tāra Merikana, ki te nui o te moni rānei e rite ana.

E toe ana he pukapuka o ngā putanga katoa o mua. Mehemea e hiahia ana koe ki te katoa o ngā pukapuka, ki ētahi rānei, tonoa mai kia whakahekea te utu. Tekau ōrau te heke iho o te utu ki ngā toa hoko pukapuka.