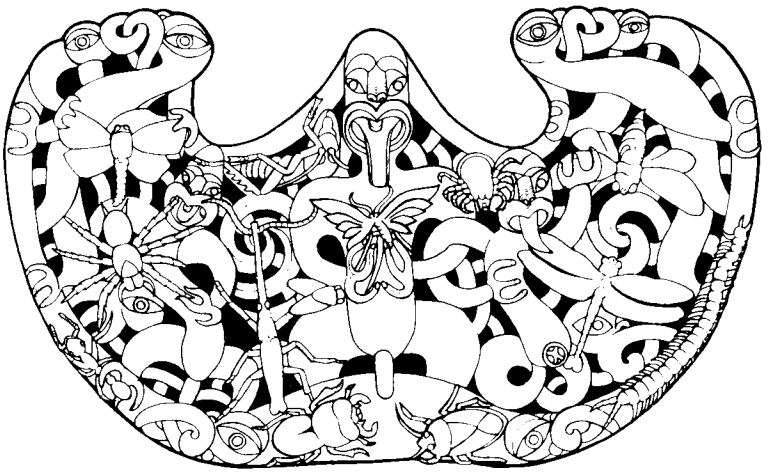

Fauna of New Zealand

Ko te Aitanga Pepeke o Aotearoa

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Sciapodinae, Medeterinae
(Insecta: Diptera)
with a generic review
of the Dolichopodidae

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Front cover / Aro mua

The insect depicted is / Ko te ngaarara nei a *Parentia malitiosa*, male / he tame. *Artist / Toihanga: Des Helmore, DSIR Plant Protection / Te Wāhanga Manaaki Tupu.*

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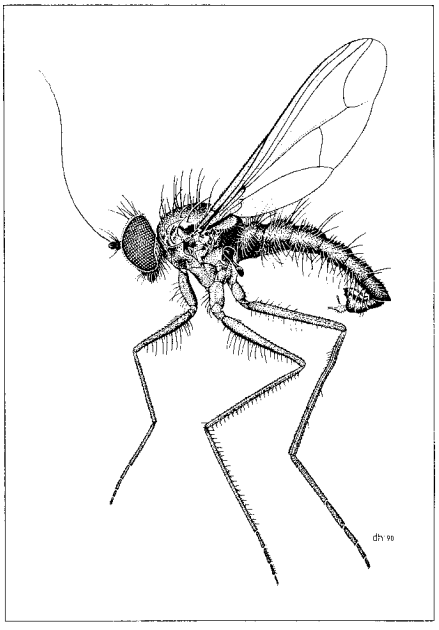
POPULAR SUMMARY — HE WHAKAPOTONGA MA TE MAREA

Class / Karaaihe **Insecta**
Order / Oota **Diptera**

Family / Whaamere
Dolichopodidae

'Long-legged flies'
'Te Ngaro Waewae-roa'



Illustration/Whakaahua: *Parentia malitiosa,* male/taane, x10.
Artist/Toihanga: Des Helmore

The Dolichopodidae are one of the largest fly families in New Zealand, with 132 valid species and perhaps half as many again yet to be described.

These small insects are usually metallic blue-green in colour and slender in build, with rather long legs. They are commonly seen on leaves, tree trunks, river rocks, mudflats, intertidal reefs, and even window panes. Here they run about rapidly searching for prey and for potential mates. They favour moist habitats, and are often taken in large numbers by sweeping with an insect net. Since most are under 5 mm long, a microscope is needed to study them.

Adults are predatory on such soft-bodied invertebrates as mites, thrips, aphids, small aquatic worms, and even mosquito larvae, and are important general control agents of many pest species. Prey is crushed between a pair of hard, press-like mouthparts, and the body fluids of the prey are then ingested.

Dolichopodids are best known for their elaborate male secondary sexual characters – special modifications of body structures that enable the sexes of a species to recognise each other during courtship. These include flag-like flattening of the antennae and legs, modified hairs, elongation and deformation of legs, silvery patches that flash in the sunlight, and unusual wing veins. As a result of these modifications, males and females of a species often look strikingly different.

(continued overleaf)

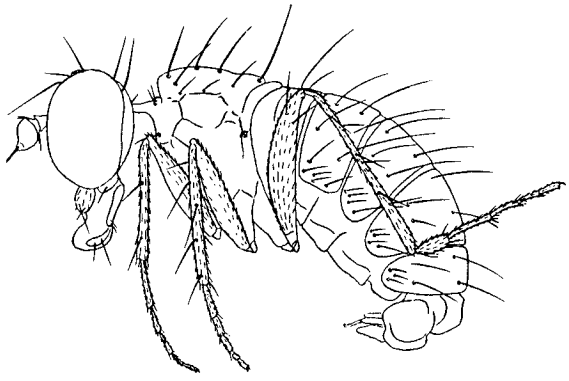
Ko Dolichopodidae teetahi o nga whaamere nunui o nga ngaro o Niu Tiireni; kotahi rau toru tekau ma rua pea te kaute o nga tuumomo kua aata maatakitakina ai, aa, teeraa pea he maha noa atu kaaore anoo kia aata whakaaturia te aahua.

He waewae roa too nga kararahe nei; ko te kara he puruu-kiriini, he aahua meetara hoki; he kookau, araa he toohihi te tinana. E kitea ana i nga rau me nga kaatua o nga raakau; i nga koowhatu o nga awa; i nga paruparu me nga toka tai; i te wini hoki o nga whare. Kei reira raatou e whaiwhai kai ana, e kimi wahine/taane ana. He waahi maakuu taa raatou e pai ai. Ka tangohia nuitia raatou i reira ki te kupenga e rite ana. Na te mea he ririki rawa (kei raro iho i te 5 mm) ka aata tirotirohia raatou ki te karaaihe e kiia ana he maikara-koroapu.

Ko nga ngaarara tinana ngorungoru te kai a nga pakeke, araa ko nga toke ririki i roto i te wai me nga mea e kiia ana *mites, thrips, aphids*. He mahi pai ta raatou patu i nga mea kino peenei. Ka kukumitia e nga kauwae, aa, ka ngotea te wai o roto.

Ko te rerekee o te taane me te wahine te tohu o nga Dolichopodidae. Kua rerekee eetahi waahi o te tinana kia

(ara haere tonu)



Illustration/Whakaahua: *Apterachalcus borboroides*, male/taane, x30. Reprinted with permission from / Ka tukua kia taahia anoo mai i nga *Records of the Dominion Museum* 2: 244.

The maggot-like larvae of dolichopodid flies are found in soil, moss, decaying vegetation, and mud, and under bark. Most are predators or scavengers, although larvae of one genus are stem miners in various grass-like plants. Almost nothing is known of the immature stages of New Zealand species.

One of the strangest New Zealand dolichopodids is the flea-like *Apterachalcus borboroides*, the only member of its family in the world to have lost both its wings and its halteres (balancing organs). It is found only in the mountains of the South Island and the cold, windswept subantarctic islands. Another species from the subantarctic islands, *Schoenophilus pedestris*, has wings reduced to narrow straps, useless for flying. There is a general trend among insects for their flying ability to degenerate on cold, windy islands or high mountains, where flight is extremely difficult or costly in energy.

New Zealand's dolichopodid fly fauna is adapted to temperate and cool climates, and is broadly similar to the dolichopodid faunas of other Southern Hemisphere landmasses, especially Tasmania, south-eastern Australia, and southern South America. Because of its geographical position, no tropical groups of Dolichopodidae have been able to reach New Zealand.

Contributor ***Daniel J. Bickel*** *is originally from the United States, but has lived in Australia for 15 years. He holds a PhD in entomology from Cornell University. His position as a research scientist at the Australian Museum, Sydney, enables him to continue his studies on the systematics of Australasian Diptera (flies).*

Dan has recently focused on studying the Sciapodinae, a subfamily of the Dolichopodidae, and has published revisions of the sciapodine faunas of both Australia and New Zealand.

moohiotia ai ko wai te taane, ko wai raanei te wahine i a raatou e whakawhaiapo ana. Ko te aahua tiirara o nga waewae me nga puuhihi; ko te rerekee o te huruhuru; ko te rerekee me te whakaroa o nga waewae; he tiwha hiriwa e rarapa ana i te whitinga o te raa; he uaua rerekee i roto i nga parirau. Na eenei tikanga ka tino rerekee te aahua o te taane me te wahine.

Ka kitea nga iroiro a eenei ngaro Dolichopodidae i roto i te one, i nga rimurimu, i nga rau raakau kua pirau, i te paruparu, aa, i raro hoki i te kiri raakau. Ko te kai a te nuinga he raapihi, he ngaarara iti raanei; ko eetahi ka kai i nga too o eetahi tarutaru aahua paatiitii (karaaihe). Kaahore kau i moohiotia nga tikanga o te tamarikitanga o nga Dolichopodidae o Niu Tiireni.

Ko *Apterachalcus borboroides* he Dolichopodidae tino rerekee no Niu Tiireni. Kei roto i te ao katoa ko ia anake te mea kua ngaro kee oona parirau me oona ama (nga mea aarei huripoki). E noho ana teenei kei runga i nga maunga o Te Waipounamu me nga moutere makariri, kainga e te hau hoki, i runga ake o Te Waipounamu. Teeraa teetahi tuumomo Dolichopodidae no eenei moutere, ko *Schoenophilus pedestris* te ingoa, kua huri kee oona parirau kia rite ki te tarapu, aa, kua koretake mo te rere. Ko te tikanga teenei o te ngaarara e noho ana i nga moutere makariri e kainga e te hau, ki nga maunga tino teitei; e tino uaua te rere i nga waahi peeraa, aa, ka pau wawe te kaha.

Kua huri kee nga ngaro Dolichopodidae o Niu Tiireni kia pai ai te noho i nga whenua makariri; kua aahua riterite raatou ki nga tuumomo Dolichopodidae o eetahi whenua o te tonga, araa ki Tasmania, ki Aahitereiria ki te tonga-maraawhiti, ki te toopito hoki o Amerika ki te tonga. Na te tawhiti atu o Niu Tiireni, kaaore i aahei te heke mai ki konei nga tuumomo Dolichopodidae o nga whenua mahana ki raro ake o taatou.

He Marikena te kai-tuhituhi, a ***Daniel J. Bickel****; kua noho ia i Aahitereiria mo nga tau kotahi tekau ma rima. He taakuta ia (PhD Cornell) aa, ko tana maatauranga e paa ana ki nga tikanga o Te Aitanga-a-pepeke (insects). Na tana tuuranga hei tohunga kimi maatauranga i te Australian Museum i Poihaakena ka aahei ia te kimi haere i nga tikanga o nga Diptera (ngaro) o Aahitereiria.*

I eenei raa ka aata maatakitaki a Dan i nga Sciapodinae, he whaamere-iti no nga Dolichopodidae, aa, kua taaia ki te pukapuka ana whakahooutanga i nga tuumomo Sciapodinae o Aahitereiria me Niu Tiireni.

ABSTRACT

The New Zealand Dolichopodidae (Diptera) are reviewed, with a general discussion of morphology and natural history. An annotated key is provided to the described genera. The New Zealand fauna comprises both endemic and widespread continental genera. However, in composition and dominance it is distinctly southern temperate, and shows similarities to the faunas of southeastern Australia / Tasmania and southern South America. Owing to New Zealand's southern geographical position, the fauna has no tropical Oriental-Papuan elements. The subfamilies Sciapodinae and Medeterinae are treated in detail. The Sciapodinae are represented by twenty-nine species in three genera. *Parentia* is a temperate trans-Tasman genus known only from New Zealand, Australia, and New Caledonia. There are twenty-seven New Zealand species, fifteen of which are newly described. Four nominal species are reduced to synonymy. A phylogenetic analysis combining the New Zealand and Australian faunas is presented. Sister-taxon relationships between New Zealand and Australian groups suggest a fauna held in common before the opening of the Tasman Sea more than 80 m.y. BP. The new genus *Naufraga,* with its single species *N. hexachaeta* (Parent), is of uncertain position within the Sciapodinae. The eastern Australian *Austrosciapus proximus* (Parent) is known only from disturbed habitats in Auckland, and is almost certainly an accidental introduction. The Medeterinae are represented solely by *Thrypticus arahakiensis*, a new species. The new genus *Apterachalcus* is established to accommodate the apterous *A. borboroides* (Oldroyd), formerly placed in *Acropsilus*.

CHECKLIST OF TAXA

CONTENTS

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INTRODUCTION

The Dolichopodidae or 'long-legged flies' comprise one of the most diverse fly families. Its diagnostic features include: vein *Sc* usually joined with *R1*, crossvein *r-m* in the basal quarter of the wing, and wing cells *dm* and *bm* united or only incompletely separated. Wing vein *M* is usually unbranched, but vein *M2* is present in the subfamily Sciapodinae. However, most dolichopodids are readily recognised by their general habitus, slender build, long legs, often metallic blue-green coloration, and hair-like arista.

Although good fliers, dolichopodids are frequently cursorial on foliage, tree trunks, mud flats, intertidal reefs, and river rocks. They favour moist habitats, and are often taken in large numbers in Malaise traps and yellow pan traps, as well as by sweeping.

Adults are predatory on such soft-bodied invertebrates as mites, thrips, psocids, aphids, small nematocerous Diptera, and aquatic oligochaetes, and are important general control agents of many pest species. Prey is crushed between a pair of longitudinally opposed labella, and the body fluids are ingested through tube-like pseudotracheae.

Dolichopodids are known for their elaborate male secondary sexual characters (MSSC), assumed to aid species recognition during courtship. These MSSC, which often show parallel development in unrelated groups, include flag-like flattening of the arista and tarsi, modified setae and cuticular projections, prolongation and deformation of podomeres, orientated silvery pruinosity, and modified venation. In some instances male-female dimorphism is so striking that the association of sexes is not readily apparent.

The hypopygium or male genital capsule is often enlarged, and often is diagnostic for species identification. In some groups the hypopygial peduncle – formed from the 7th abdominal segment – is prolonged, and the hypopygium is projected forwards underneath the abdomen.

The maggot-like larvae are found in soil, moss, decaying vegetation, and mud, and under bark. Most larvae are predators or scavengers, although *Thrypticus* is a phytophagous stem miner in various grass-like monocotyledonous plants. Almost nothing is known of the immature stages of New Zealand species.

Robinson & Vockeroth (1981) provided a well illustrated synopsis of the family, and Dyte (1959) reviewed the immature stages.

HISTORICAL SUMMARY

The study of New Zealand's Dolichopodidae began with the description of a single species by Walker (1849). Subsequently, Hutton (1901) described four species of Sciapodinae and two additional New Zealand species, including the endemic genus *Ostenia*. Species from the Bounty Islands and Macquarie Island were treated by Lamb (1909).

Becker (1924) described two species of New Zealand Sciapodinae in a paper on Dolichopodidae of Formosa. Since neither the paper's title nor the 'Zoological Record' for 1924 gave any indication that New Zealand species were included, their existence remained unknown to both Parent (1933a, b) and Miller (1956). C.E. Dyte alerted me to these 'lost' species.

Parent's (1933b) monograph on the New Zealand Dolichopodidae is the standard reference. It is perhaps one of his best works among numerous papers on the family, and it added 103 species and eleven genera to the fauna.

Since Parent, the New Zealand fauna has remained little studied except for nomenclatural notes by Miller (1945) and descriptions of Campbell Island species by Oldroyd (1955) and Harrison (1964). The Bickel & Dyte (1989) catalogue of Australasian and Oceanian Dolichopodidae covers all described species and nomenclatural changes.

NEW ZEALAND'S DOLICHOPODIDAE

The New Zealand subregion (see map on p. 71) has 132 valid species of Dolichopodidae in twenty-eight genera. In diversity among dipteran families it ranks fourth in the fauna, after the Tipulidae, Mycetophilidae in a broad sense, and Tachinidae (based on Evenhuis 1989). However, if the approximately 50% increase in the subfamily Sciapodinae treated here is an indication, the true number of New Zealand dolichopodid species could exceed 200.

Hennig (1960) provided an extensive review of the zoogeography of New Zealand flies and discussed major groups as to their relationship with other southern landmasses, in particular Australia and southern South America. He referred to taxa having such austral distributions as AS-groups (A = Australia and New Zealand, S = South America). Hennig emphasised the necessity to demonstrate repeated occurrence of sister-taxa among AS-groups before direct trans-Antarctic links could be assumed. He noted that many AS-taxa also occur or are present as fossils in the Northern Hemisphere.

Hennig did not discuss the Dolichopodidae. However, apart from endemic genera, much of the New Zealand fauna is included in near-cosmopolitan genera: Medeterinae – *Thrypticus*; Hydrophorinae – *Hydrophorus* and *Thinophilus*; Dolichopodinae – *Hercostomus*; Diaphorinae – *Chrysotus* and *Diaphorus*; Sympycninae – *Chrysotimus* and *Sympycnus*; unplaced – *Achalchus*. Most of these species fit well into traditional generic concepts. Nevertheless, some of these genera, such as *Hercostomus* and *Sympycnus*, are broadly defined and need further clarification with respect to the New Zealand species. In this respect, for example, Parent originally placed species now included in the trans-Tasman genus *Parentia* into three poorly defined genera, *Chrysosoma*, *Condylostylus*, and *Sciapus*.

In terms of generic composition the New Zealand fauna is continental, but decidedly southern temperate, especially noting the dominance of the Sympycninae. It is broadly similar to the faunas of southern South America (Van Duzee 1930) and Tasmania / southern Australia (Parent 1932a). In sharp contrast to Australia, however, New Zealand totally lacks elements of tropical Oriental-Papuan affinity. Its southerly geographical position has prevented entry of even widespread Indo-Pacific tramp species such as *Medetera grisescens* de Meijere and *Chrysosoma leucopogon* Wiedemann, which have both reached New Caledonia. I have seen a small collection of dolichopodids from Raoul Island, Kermadec group (BMNH), comprising *Achalcus* sp. and *Diaphorus* sp., which are of New Zealand affinity. The faunas of the southern subantarctic islands appear to be derived from mainland New Zealand.

The relationship of the largely undescribed New Caledonian fauna awaits further investigation. However, New Zealand does not appear to have been a source area for any Polynesian group, nor for Lord Howe or Norfolk islands, the dolichopodid faunas of which are of direct Australian affinity (Bickel, in press).

New Zealand has fifteen endemic dolichopodid genera, of which ten are monotypic. They fall into three categories, as follows.

(1) Distinctive genera derived from ancestral stocks within New Zealand, e.g., *Ostenia* (Diaphorinae), *Halteriphorus* (Neurigoninae), *Scorpiurus* and *Helichochaetus* (Hydrophorinae), *Apterachalcus* (from *Achalcus*), and *Scelloides* / *Ischiochaetus* (Sympycninae).

(2) Genera based only on striking MSSC which don't deserve separate generic status, both because females cannot be distinguished from the source genus, and other species with less spectacular MSSC are not generically separated. For example, *Colobocerus* is distinguished only by male antennal shape, and should be included within *Sympycnus*.

(3) Primitive relicts or genera of uncertain affinity, such as the newly described *Naufraga*.

For additional biogeographical information, see Remarks under *Parentia*, *Austrosciapus*, and *Thrypticus*.

MATERIALS AND METHODS

This study is based on New Zealand Dolichopodidae housed principally in the NZAC, supplemented by collections from additional institutions (see 'Repositories', below). The two subfamilies chosen for detailed treatment were recently revised for the Australian region (Bickel 1986 and in press). For the Sciapodinae in particular, the complexity of nomenclature and uncertainty regarding generic limits had to be resolved on a world basis before meaningful work could proceed. The primary types for all species have been examined.

Species are defined primarily on the basis of male genitalia and male secondary sexual characters (MSSC). Isolated females which lack diagnostic specific characters were left unidentified, but usually were assigned to a species group. Keys are based on non-genital characters where possible, although accurate identification sometimes requires clearing the male postabdomen. Species descriptions and locality data are condensed, conserving space and avoiding unnecessary repetition. Features common to a group of species are listed in the introductory discussion, and are not repeated in descriptions unless requiring clarification. Separate species diagnoses are omitted, since the keys provide a more readily accessible set of diagnoses.

Comments on the etymology of specific names are restricted to those few considered to need clarification. Most names have obvious morphological, geographic, or patronymic sources, or are of Maori derivation.

The general appearance of Dolichopodidae may be inferred from the single habitus drawing presented as Fig. 1. Major features of thoracic chaetotaxy, body and head features, and hypopygial structure are shown in Fig. 2–5.

In most instances the genitalia figures are essential for accurate identification. These drawings were made with a camera lucida, and show the left lateral aspect. In describing the hypopygium, 'dorsal' and 'ventral' refer to morphological position prior to genital rotation and flexion.

Thus, in figures showing a lateral view of the hypopygium, the top of the page is morphologically ventral, while the bottom is dorsal.

Measurements were taken from representative dry specimens (often the holotype); they should not be considered invariable for a species. Body length in males is measured from the base of the antennae to the tip of the seventh abdominal segment. Female body length is generally slightly less than that of the male, unless otherwise noted. Wing length is the perpendicular distance to the apex from an imaginary extension of the humeral crossvein; wing width is measured from the junction of *R1* with the costa to the opposite side of the wing, perpendicular to the wing's long axis. The CuAx ratio is the length ratio '*m-cu* crossvein / distal section *CuA*'. The position of features on elongate structures such as leg segments is given as a proportion of total length, measuring from the base.

Relative podomere lengths cited should be regarded as representative ratios and not measurements. They are given for each leg in the following formula and punctuation: leg no. – trochanter + femur; tibia; tarsomere 1/ 2/ 3/ 4/ 5.

The following abbreviations and terms are used.

Morphology

I, II, III – pro- , meso-, metathoracic legs
C – coxa
F – femur
T – tibia
MSSC – male secondary sexual character(s) – non-genital characters found only on the male
ac – acrostichal setae
ad – anterodorsal
av – anteroventral
dc – dorsocentral setae
dv – dorsoventral
hm – postpronotal setae
np – notopleural setae
pa – postalar setae
pd – posterodorsal
pm – presutural supra-alar setae
ppl – proepisternal setae
pv – posteroventral
sa – postsutural supra-alar setae
sr – presutural intra-alar setae
t – tarsus
t1–5 – tarsomeres 1 to 5

Repositories

AMSA Australian Museum, Sydney, Australia
ANIC Australian National Insect Collection, CSIRO, Canberra, Australia
BMNH British Museum (Natural History), London, U.K.
BPBM Bernice P. Bishop Museum, Honolulu, U.S.A.
CASC California Academy of Sciences, San Francisco, U.S.A.
CMNZ Canterbury Museum, Christchurch, New Zealand
CNCI Biosystematics Research Institute, Agriculture Canada, Ottawa, Canada
IFPE Institut für Pflanzenschutzforschung der Akademie der Landwirtschaftswissenschaften der DDR, Eberswalde-Finow, Germany
NZAC New Zealand Arthropod Collection, DSIR Plant Protection, Auckland, New Zealand
UCNZ Department of Zoology, University of Canterbury, Christchurch, New Zealand
USNM National Museum of Natural History, Smithsonian Institution, Washington, D.C., U.S.A.
ZMHU Zoologisches Museum, Humboldt Universität, Berlin, Germany
ZMKD Zoologisk Museum, Universitets Copenhagen, Denmark

KEY TO GENERA OF DOLICHOPODIDAE KNOWN FROM NEW ZEALAND

This key covers the winged genera from the main islands of the New Zealand subregion, including The Snares and the Chatham group. Reference to Parent (1933b) is essential for species identification and illustrations. Generic limits for most Sympycninae and some Hydrophorinae are uncertain, and genera beyond couplet 18 are not necessarily distinct. For species of the far southern or subantarctic islands, see Note 1.

1 Vein *M* branched; vertex usually strongly excavated laterad of ocellar tubercle ... (p. 15) .. **Sciapodinae**
—Vein *M* unbranched; vertex almost flat across top of eyes in anterior view ... 2

2(1) Femora II and III lacking an anterior preapical seta, or with equally strong setae on anterior femoral surface ... 3
—Femur III and usually FII with a distinct anterior preapical seta standing out from surrounding vestiture ... 7

3(2) Posterior mesonotum distinctly flattened; male genital capsule large, external or pedunculate ... 4
—Mesonotum not flattened; male genital capsule relatively small, partially enclosed by posterior abdominal segments ... **Diaphorinae** .. 5

4(3) Dorsal postcranium (occiput) strongly concave; frontoclypeal suture distinct; thoracic setae yellow; small species, length less than 2.0 mm ... (p. 38) .. **Medeterinae, *Thrypticus***

—Dorsal postcranium convex; frontoclypeal suture not evident; thoracic setae black; larger species, length approximately 5.0 mm (Note 2)
... **Neurigoninae, *Halteriphorus mirabilis*** Hutton

5(3) Scutellum with 3 pairs of marginal setae; coxae I and II, femora, and tibiae spinose; black, robust species, length greater than 6.0 mm
... ***Ostenia robusta*** Hutton (Note 3)
—Scutellum with 2 pairs or 1 pair of marginal setae; legs not strongly spinose ... 6

6(5) Male eyes often joined above antenna, and tip of male abdomen with strong setae; tarsomere 5 of male foreleg with enlarged pulvilli; 6 dorsocentral setae present
... ***Diaphorus***, 5 spp. (Note 4)
—Male eyes often joined below antenna, and tip of male abdomen without strong setae; tarsomere 5 of male foreleg with normal pulvilli; 5 dorsocentral setae present
... ***Chrysotus***, 8 spp. (Note 4)

7(2) Antennal scape with dorsal setae
... **Dolichopodinae** .. ***Hercostomus***, 4 spp. (Note 5)
—Scape bare dorsally ... 8

8(7) Veins *R2+3*, *R4+5*, and *M* all diverging towards wing apex; thorax mostly yellow-brown
... ***Achalcus***, 9 spp. (Note 6)
—Veins *R2+3*, *R4+5*, and *M* more or less parallel up to wing apex; thorax mostly metallic green ... 9

9(8) Pedicel protruding dorsally on to large, expanded 1st flagellomere; abdomen yellowish, in male with strong apical setae ... ***Syntormon formosus*** Parent (Note 7)
—Pedicel not protruding dorsally on to 1st flagellomere ... 10

10(9) A pair of fronto-orbital setae present halfway between vertex and antennae; arista apical ... 11
—No such fronto-orbital setae; arista various ... 12

11(10) Acrostichal setae uniserial, sparse; hypopygium not expanded; length approximately 3.0 mm
... ***Abatetia robusta*** (Parent) (Note 8)
—Acrostichal setae biserial, numerous; male postabdomen arched, scorpion-like, with expanded hypopygium; length approximately 4.5 mm
... ***Scorpiurus aenescens*** Parent (Note 15)

12(10) Postvertical setae located on occiput, not in line with postocular setae ... 13
—Postvertical setae located on top of vertex, in line with postocular setae ... 16

13(12) Eyes excavated at base of antennae; male arista with an ovate apical flag; all tarsomeres on male foreleg flattened, subtriangular, and basitarsus enlarged, with silvery pruinosity
... ***Helichochaetus discifer*** Parent
—Eye margin entire; males without the above characters ... 14

14(13) Fore femur and tibia with ventral spines; 1st flagellomere with a ventral incision; crossvein *m-cu* distinctly longer than distal section of vein *CuA*
... ***Hydrophorus praecox*** (Lehmann)
—Foreleg without ventral spines; 1st flagellomere without an incision; crossvein *m-cu* about as long as distal vein *CuA* ... 15

15(14) Palp large; a distinct frontoclypeal suture present; thorax metallic green-bronze
... ***Thinophilus (Parathinophilus) milleri*** Parent
—Palp relatively small; frontoclypeal suture faint, if visible; thorax chocolate brown with a distinct blue median stripe ... ***Tetrachaetus*** Bickel & Dyte (Note 9)

16(12) Fore coxa with a lateral row of strong, black setae and often with median setal fields ... 17
—Fore coxa without a lateral row of strong setae ... 18

17(16) Fore femur with a ventral row of spine-like setae, each arising on a small pedicel
... ***Scelloides*** Bickel & Dyte, 12 spp. (Note 10)
—Fore femur without ventral spine-like setae
... ***Ischiochaetus*** Bickel & Dyte, 3 spp. (Note 10)

18(16) Posterior mesoscutum distinctly flattened ... 19
—Posterior mesoscutum not flattened ... 21

19(18) Acrostichal setae present, biseriate; setae usually yellowish; thorax metallic green; female abdomen often with some yellow tergites
... ***Chrysotimus*** Loew, 4 spp.
—Acrostichal setae absent; setae mostly black ... 20

20(19) Male fore tibia with a strong, preapical anteroventral seta; postvertical setae in line with postocular series
... ***Micropygus*** Bickel & Dyte, 16 spp.
(*Micromorphus albipes* Zetterstedt?) (Note 11)
—Male fore tibia without such a seta, and without distinct postvertical setae
... ***Brevimyia pulverea*** (Parent) (Note 12)

21(18) Wing membrane smoky, with hyaline spots in distal third; male middle tarsus often modified, with flattened tarsomeres
... ***Filatopus*** Robinson, 3 spp. (Note 13)
—Wing membrane mostly hyaline ... 22

22(21) First flagellomere of male reniform, with arista dorsoapical ... ***Colobocerus*** Parent (Note 14)
—First flagellomere of both sexes subtriangular, with arista dorsal ... ***Sympycnus*** Loew, 20 spp. (Note 14)

NOTES TO THE KEY

1. The Dolichopodidae described from New Zealand's subantarctic islands are treated here.

(a) The winged *Aphrosylopsis lineatus*, described from the Bounty Islands (Lamb 1909), is close to genus *Thinophilus*.

(b) The stenopterous* *Schoenophilus pedestris* Lamb from Macquarie Island and its subspecies *S. p. campbellensis* Harrison (1964) from Campbell Island and the Auckland Islands are close, but specimens appear morphologically distinct enough to warrant separate species status. *Schoenophilus* is regarded as a subgenus of *Thinophilus*, but the species probably belongs in a different hydrophorine genus.

(c) *'Acropsilus' borboroides*, described from New Zealand subantarctic islands, definitely is not *Acropsilus*, and requires a new genus, as follows.

Apterachalcus new genus

Type species *Acropsilus borboroides* Oldroyd, here designated.

Etymology. *Apterachalcus* is derived from the stem *apter-* of *apteros* (Greek: 'wingless') and *Achalcus*, an existing dolichopodid genus; gender masculine.

Species included: *borboroides* Oldroyd, 1955: 243 *(Acropsilus)*.

Remarks. Oldroyd's (1955) well illustrated description of the type species serves as a description for this monotypic genus. *A. borboroides* lacks both wings and halteres, and is the only known apterous dolichopodid. Although this species was described from specimens taken on Campbell Island and the Auckland Islands, I have seen specimens (NZAC), either conspecific or of a closely related species, taken above 1100 m on the Paparoa Range (BR) and above 600 m on Stewart Island. This strange genus is thus apparently widespread in cold subalpine habitats of the South Island and on southern island groups. Hardy & Delfinado (1974) cite the absence of predaceous ants as allowing the development of wing-reduced insects in high-altitude, high-latitude, and oceanic island faunas. *A. borboroides* is slightly compressed laterally, and the loss of wings has resulted in a corresponding reduction of the thorax, giving the fly an overall flea-like appearance. The abdomen is shining black, with rather stout setae. Its extensive morphological modification and relative isolation argue strongly for *A. borboroides* being placed in a separate genus, and it certainly does not belong in *Acropsilus*. However, despite the absence of wings and characteristic venation, similarities of leg setation, relative podomere ratios, antennal shape, and especially hypopygial structure clearly indicate that *A. borboroides* is very close to *Achalcus*, and undoubtedly derived from that genus.

Achalcus is a characteristic and widespread element of the New Zealand fauna. Although some authors place it in the Diaphorinae, I feel that its inclusion greatly dilutes the concept of that subfamily, and both *Achalcus* and *Apterachalcus* are best left as unplaced within the Dolichopodidae.

2. The Neurigoninae in New Zealand are represented by the single species *Halteriphorus mirabilis* Parent. Its venation and general habitus are similar to the Australian *Arachnomyia*. Neurigonine adults are often found resting on tree trunks.

3. The monotypic genus *Ostenia* is perhaps New Zealand's most remarkable dolichopodid. It is large, black, robust, and bristly. Specimens often have a greasy appearance, which in other fly families indicates rich larval nutrition, sometimes as parasitoids. Discovery of its immature stages would therefore be of interest. The genus is undoubtedly derived from *Diaphorus*.

4. The cosmopolitan genera *Diaphorus* and *Chrysotus* have uncertain generic limits and are not always clearly separable elsewhere. However, the New Zealand species fit nicely into traditional generic concepts.

5. *Hercostomus* occurs on the Chatham Islands as well as the mainland. Its presence in New Zealand is somewhat anomalous, since it is recorded otherwise only from the Holarctic and Oriental regions, central Africa, and northern South America. It is surprising that Dolichopodinae even occur in New Zealand, since the subfamily is predominantly Holarctic. By comparison, the Australian dolichopodines are northern and coastal, of tropical Oriental origin, while only a few species in distinctly different genera occur in southern South America. However, *Hercostomus* is not strongly defined, and the New Zealand species must be compared with congeners before their generic placement is fully justified. With respect to problems concerning the generic limits of Holarctic *Hercostomus*, New Zealand speciers lack fine hairs in front of the posterior spiracles.

6. The subfamily placement of *Achalcus* is uncertain. Adults are commonly found resting on tree trunks in closed forest.

7. This species is not a *Syntormon*. The pedicel protrudes dorsally on to the 1st flagellomere, and is not enclosed by it as is characteristic of that genus. In antenna and venation it is simliar to the Chilean diaphorine genus *Somillus*

*Wings reduced to straps, but halteres present; see figures in Kohn (1962).

Brèthes (= *Ionthadophrys* Van Duzee). As well, its habitus and presence of strong apical setae on the male abdomen are in keeping with the Diaphorinae, despite the presence of a strong anterior preapical seta on the middle and hind femur.

8. *Abatetia* Miller is a replacement name for *Nelsonia* Parent.

9. *Tetrachaetus* was described by Parent (1933b), but the name was unavailable because no type species had been designated. Bickel & Dyte (1989) validated this name. The genus includes two species, and is common in New Zealand. Although placed in the Sympycninae, it has features which link it to such hydrophorine genera as *Thinophilus*.

10. Both *Scelloides* and *Ischiochaetus* were described by Parent (1933b), but the names were unavailable because no type species had been designated. Bickel & Dyte (1989) validated these names. The genera are very close, and should perhaps be placed in synonymy.

11. *Micropygus*, described by Parent (1933b), was an unavailable name because no type species had been designated. Bickel & Dyte (1989) validated this name. *Micromorphus albipes* Zetterstedt has been recorded as occurring in New Zealand, but could possibly be one of the small species Parent included in *Micropygus*.

12. *Brevimyia* is a replacement name for the preoccupied *Brachymyia* Parent.

13. *Filatopus* is a replacement name for the preoccupied *Nematopus* Parent (1933b). Robinson (1970) referred a southern Argentine species, *F. nigripalpis* (Van Duzee), to this genus.

14. Parent based *Colobocerus* on the distinctively modified male antenna of its single species, *C. alchymicus*. The female has a typical *Sympycnus*-like antenna, and the genus probably should be reduced to synonymy with *Sympycnus*. Five New Zealand species – *Sympycnus campbelli, S. distinctus, S. edwardsi, S. harrisi,* and *S. longipilus* – all have long cerci and a prolonged first flagellomere, and appear similar to the South American genus *Pseudargyra* Van Duzee. Their generic placement requires further investigation.

15. Parent (1932, 1933b) listed *Scorpiurus aenescens* as also occurring in Tasmania. However, I have seen neither the material he identified nor any other Tasmanian specimens of this distinctive species, and cannot confirm such a trans-Tasman distribution.

KEY TO MALE SCIAPODINAE OCCURRING IN NEW ZEALAND

This key is based on male characters. Females cannot always be accurately identified without associated males.

1 Wing with 2 dark brown transverse bands which are joined anteriorly; 5 dorsocentral setae present, with *dc3* reduced to a weak hair; cercus short, triangular; surstylus clavate. Auckland district; eastern Australia ... (p. 38) .. ***Austrosciapus proximus***

—Wing hyaline, or at most with a uniform brown wash ... 2

2(1) All dorsocentral setae strong; fore tibia with distinct anterodorsal and posterodorsal setae; hind tarsomeres 3-5 without a ventral pad-like surface; hypopygium as in Fig. 47. Canterbury district, South I. ... (p. 37) .. ***Naufraga hexachaeta***

—Dorsocentral series comprising 2 strong posterior setae and 4 or 5 weak, hair-like anterior setae; fore tibia without distinct anterodorsal and posterodorsal setae; hind tarsomeres 3-5 with a ventral pad-like surface ... ***Parentia*** .. 3

3(2) Ocellar tubercle with 3 or 4 pairs of long setae behind main pair; pedicel with a corona of long setae; head usually wider than high, with sides of face tapering ventrally (Fig. 3); lateral scutellar setae strong, more than half as long as median setae; supernumerary setae often present on mesothorax and scutellum; arista distinctly dorsal, never with an apical flag; male haltere usually black ... (*malitiosa* group) .. 4

—Ocellar tubercle with only short setae behind main pair; pedicel usually with only short setae; sides of face usually subparallel; lateral scutellar setae usually less than half as long as median setae; supernumerary setae never present on mesothorax and scutellum; arista various; haltere often yellow ... 13

4(3) Costa without modified setae ... 5

—Costa with a row of modified curved, capitate or spinose setae ... 7

5(4) Hypopygium entirely yellow, contrasting with dark body; proboscis black; middle leg with tibia and 1st tarsomere unmodified, and tibia with only a posterodorsal seta at one-fifth; hind tibia without a callus; hypopygium as in Fig. 32. Montane South I. ... (p. 30) .. ***P. modesta***

—Hypopygium black with only cercus yellow; proboscis yellow ... 6

6(5) Middle leg with tibia and 1st tarsomere bearing a posterodorsal row of erect, club-like setae, these mirrored by an anterodorsal row of curved, crocheted

setae; femora not swollen basally; hind tibia with a narrow callus; hypopygium as in Fig. 27. Widespread in N.Z. ... (p. 27) .. ***P. malitiosa***

—Middle leg with tibia and 1st tarsomere unmodifed; hind tibia without a callus; cercus with a lyre-shaped distal fork, its longer inner arm bearing a long, twisted seta (Fig. 23). South I. ... (p. 26) .. ***P. lyra***

7(4) At least some tibiae partially yellow ... 8

—All tibiae entirely black or dark brown ... 9

8(7) Palp with only short setae; abdominal segments 7 and 8 with normal short vestiture; middle tibia metallic green in basal third, becoming yellow distally, and with anterodorsal and anteroventral rows of long, curved setae forming a U-shaped arch; cercus elongate (Fig. 22). North I., northern South I. ... (p. 26) .. ***P. johnsi***

—Palp with 4 or 5 long, black setae; abdominal segments 7 and 8 with long hairs; middle leg with tibia bearing a dorsal seta at one-eighth, and 1st tarsomere covered in short, erect hairs; cercus with a clavate projection at one-third (Fig. 20, 21). Northland ... (p. 25) .. ***P. insularis***

9(7) Middle tibia and 1st tarsomere bearing an anteroventral row of slightly curved setae and a posteroventral row of short, pin-like setae; fore femur with long, black, ventral setae along entire length ... 10

—Middle tibia and 1st tarsomere lacking such modified setae, or covered only in short, erect hairs ... 11

10(9) Middle leg with 1st tarsomere longer than tibia; costa with capitate setae; surstylus with a distinctive curved cuticular projection; ventral cercal arm with a peduncle bearing 2 setae (Fig. 15). North I. and South I. ... (p. 22) .. ***P. cilifoliata***

—Middle leg with 1st tarsomere shorter than tibia; costa with short, spine-like setae; surstylus with a group of 3 strong lateral setae; ventral cercal arm without a peduncle (Fig. 16). South I. ... (p. 22) .. ***P. defecta***

11(9) Proboscis yellow; wing smoky; foreleg with 1st tarsomere bearing pale ventral pile, but not flattened; middle leg with tibia and 1st tarsomere bearing short, porrect setae; dosal surstylus not prolonged; cercus with elongate ventral arm bearing curved apical setae (Fig. 12). North and South Is ... (p. 21) .. ***P. calignosa***

—Proboscis black; wing hyaline; middle leg with tibia and tarsus various; dorsal surstylus prolonged, strap-like ... 12

12(11) Middle leg with tibia and tarsus bearing short, erect hairs, and tibia without an anterodorsal seta at one-fifth; cercus deeply forked, with ventral arm longer than dorsal arm (Fig. 6). North I. ... (p. 19) .. ***P. aotearoa***

—Middle leg with tibia and tarsus lacking short, erect hairs, but tibia with a strong anterodorsal seta at one-fifth; cercus deeply forked, with a pedunculate seta at base of fork; ventral cercal arm subequal in length to dorsal arm, with an apical beak (Fig. 24). North I. ... (p. 27) .. ***P. magniseta***

13(3) Fore coxa I and all femora and tibiae yellow ... 14

—Coxae, femora, and tibiae mostly dark metallic green or black ... 20

14(13) Proboscis black; cercus deeply forked (Fig. 14); hind tibia without a callus; costa without modified setae. Chatham Is ... (*fuscata* group, part) ... (p. 21) .. ***P. chathamensis***

—Proboscis yellow; cercus, hind tibia, and costa various. N.Z. mainland ... 15

15(14) Hind tibia with a distinct posterior groove from one-fifth to one-half ... (*tonnoiri* group) .. 16

—Hind tibia without a posterior groove ... (*gemmata* group) .. 18

16(15) Costa unmodified; femur I with long, pale ventral setae; foreleg without short, erect hairs; surstylus projecting, elbowed, with 2 strong, projecting setae; base of cercus enlarged, with elongate arm bearing a subapical blade-like seta (Fig. 45). North I. ... (p. 34) .. ***P. titirangi***

—Costa with modified setae; femur I with only short ventral hairs; at least 1st tarsomere of foreleg with short, erect hairs; cercus deeply forked ... 17

17(16) Costa with curved setae; both tibia and tarsus of foreleg with rows of short, black, erect hairs; middle tibia without erect hairs; apex of ventral cercal arm bearing an external thorn and 2 curved inner setae (Fig. 47). South I. ... (p. 34) .. ***P. tonnoiri***

—Costa with clavate setae; fore tarsus only with short, erect hairs; middle tibia and tarsus covered with short, black, erect hairs; epandrial lobe elongate; surstylus with strong external setae (Fig. 49). North I. ... (p. 35) .. ***P. whirinaki***

18(15) Costa unmodified; middle leg unmodified; foreleg with 1st tarsomere bearing pale ventral pile in basal third; face and clypeus with silvery pruinosity; cercus elongate, with a digitiform arm at midlength (Fig. 34). South I. ... (p. 30) .. ***P. nova***

—Costa with modified setae; middle leg modified; face and clypeus with at most a dusting of pruinosity... 19

19(18) Costa with a row of curved setae; middle tarsus covered with short, erect hairs; face glazed metallic blue-green; cercus with a strong basal cuticular projection bearing a hooked apical seta, and with 3 long,

black, undulating subapical setae (Fig. 18). North I. ... (p. 24) .. ***P. gemmata***

—Costa with curved setae becoming long and incurved just before apex (Fig. 8); middle leg with 1st tarsomere bowed, bearing short basal setae on concave surface and strong ventral setae along convex surface; middle tarsomeres 3–5 with a fringe of curved black setae, and tarsomeres 4+5 with white ventral pile; cercus with a basal L-shaped seta and 3 long, black, apical setae (Fig. 10). North I. and South I. ... (p. 19) .. ***P. anomalicosta***

20(13) Face polished, shining; haltere black; vein *M1* closely parallel to *R4+5* before joining margin (Fig. 28); costa without modified setae; hind tibia without a callus ... (*milleri* group) .. 21

—Face usually with dense pruinosity; haltere yellow; vein *M1* usually arching to *R4+5* before joining margin; hind tibia often with a swollen callus ... 22

21(20) Palp with a long, projecting seta; ventral postcranium with pale setae; fore tibia without dorsal setae; middle tibia without posterodorsal setae at two-thirds; cercus with a long ventral arm bearing 6 apical setae; hypopygium as in Fig. 43. Coastal North I. ... (p. 33) .. ***P. schlingeri***

—Palp with short setae only; ventral postcranium with short, black setae; fore tibia with 2 weak dorsal setae; middle tibia with posterodorsal setae at two-thirds; cercus setose, and with a short distal projection (Fig. 29). Coastal N.Z. ... (p. 28) .. ***P. milleri***

22(20) Arista with an expanded, white, ovate apical flag (Fig. 40); palp with a strong, L-shaped projecting seta (Fig. 41); thorax with faint bronze dorsal vittae; fore femur swollen basally, with a group of strong, brownish basoventral setae; costa unmodified; hypopygium as in Fig. 42. Widespread in N.Z. ... (p. 32) .. ***P. restricta***

—Arista unmodified, or if apical flag present, then lanceolate and at least basally black; palp unmodified; fore femur not swollen; costa often with modified, long, curved setae ... (*fuscata* group, part) .. 23

23(22) Arista elongate, with a lanceolate apical flag, usually black with a white tip ... 24

—Arista without an apical flag ... 26

24(23) Face and frons strongly bulging; scape vase-like (Fig. 35); face and clypeus shining emerald green, without pruinosity; 3rd tarsomere of foreleg distinctly flattened and wide; middle tibia flattened; cercus with a digitiform projection bearing a group of curved setae (Fig. 36). South I. ... (p. 31) .. ***P. pukakiensis***

—Face, frons, and scape not thus modified; 3rd tarsomere of foreleg and middle tibia not flattened; face and clypeus with some pruinosity ... 25

25(24) Femora dark green, with only knees of fore and middle femora yellow; tibiae dark brown; arista flag usually black with a white tip (Fig. 30); ventral cercal arm with a bean-shaped apical seta (Fig. 31). Widespread in N.Z. ... (p. 29) .. ***P. mobile***

—Distal quarter of all femora and tibiae yellow; aristal flag unicolorous brown; ventral cercal arm with a tuft of apical setae (Fig. 48). North I. ... (p. 35) .. ***P. varifemorata***

26(23) Hind tibia without a callus or posterior slit; wing apex distinctly subrectangular (Fig. 37); abdominal segments 4–8 with short, black, spine-like setae; segment 7 forming a peduncle for hypopygium (Fig. 38, 39). North I. ... (p. 31) .. ***P. recticosta***

—Hind tibia with a narrow callus and a distinct posterior slit; wing apex tapering; abdominal segments without spine-like setae ... 27

27(26) Clypeus extending well below base of eyes; face and clypeus with shining silvery pruinosity; proboscis yellowish; hypopygium as in Fig. 11. Northland ... (p. 20) .. ***P. argentifrons***

—Clypeus extending only to base of eyes; proboscis black. Widespread in N.Z. ... 28

28(27) Arista tapering distally to a thin thread; vertex and frons covered with dense grey pruinosity such that metallic cuticle hardly evident in anterior view; haltere club yellowish, with infuscation ... (p. 23) .. ***P. fuscata***

—Arista relatively thick, with apex slightly expanded; pruinosity of frons not dense – metallic green ground colour evident in anterior view; haltere club yellow to pale yellow ... (p. 24) .. ***P. griseicollis***

DESCRIPTIONS

Subfamily SCIAPODINAE

Most Sciapodinae are distinguishable from other dolichopodid subfamilies by the combination of vein *M* being branched and the vertex being excavated on either side of the ocellar tubercle. Sciapodines are highly diverse in the tropics, and recently have been the subject of a major review (see Bickel, in press).

Three genera occur in New Zealand, the trans-Tasman *Parentia* Hardy, which dominates the fauna, the newly described genus *Naufraga*, and *Austrosciapus*, represented by the Australian species *A. proximus* (Parent), which is almost certainly an accidental introduction into the Auckland area.

Genus *Parentia* Hardy

Parentia Hardy, 1935: 249. Type species *Condylostylus separatus* Parent, 1932 (= *Psilopus dispar* Macquart, 1850), by original designation.

Diagnosis. *Parentia* is characterised by the following features.

1. Strong vertical setae in both sexes.
2. Strong postvertical setae present as distalmost of postocular series.
3. Arista dorsal to dorsoapical; apical aristal flags (MSSC) developed on some species.
4. Ventral postcranium with pale hairs, except where otherwise noted.
5. Major setae of head and thorax black.
6. *Ac* usually present as 2–4 long pairs, but sometimes strongly reduced to absent.
7. Male with 2 strong posterior *dc*, and 3 or 4 distinctly weaker anterior *dc* (MSSC); female with 5 strong *dc*; (the Australian *centralis* group has 4 unmodified setae in both sexes).
8. Lateral scutellar setae varying from about half to two-thirds length of median setae to reduced or absent.
9. Male TIII often bearing a swollen callus at about one-fifth, with a smooth, excavated posterior groove, sometimes reduced only to a narrow posterior groove (MSSC), unmodified in female.
10. Male IIIt3–5 always flattened and pad-like ventrally (MSSC), unmodified in female.
11. *M2* usually arcuate with respect to *M1*.
12. Male costa often with an ad row of modified cilia (MSSC).
13. Crossvein *m–cu* straight.

Remarks. *Parentia* includes species from Australia, New Zealand, and New Caledonia. The genus is defined by the pad-like IIIt3–5 (MSSC) and a mosaic of character states which are not necessarily found on all species: modified costal setae (MSSC), the arcuate vein *M2*, TIII callus (MSSC), elongate aedeagus, and forked cercus.

Parent (1933b) referred the New Zealand Sciapodinae to three poorly defined widespread genera, *Sciapus*, *Chrysosoma*, and *Condylostylus*. These genera had been separated by a combination of aristal position and setal colour on the lower calypter and frons. However, Parent realised that these 'key' characters resulted in closely related species being placed in different genera. Sensing the inadequacy of traditional generic concepts when applied to the New Zealand fauna, he also provided a key for separating them together as a group of species, without preliminary generic determination. The New Zealand species were referred to *Parentia* in Bickel & Dyte (1989).

In Australia, the twenty-four *Parentia* species are distributed mainly along the southern half of the continent, and one of these also occurs on Norfolk Island (Bickel, in press). *Parentia* is the dominant sciapodine genus in New Zealand, with twenty-seven species. However, the New Zealand *Parentia* show much greater morphological diversity and innovation than the Australian fauna, both with additional MSSC (such as apical aristal flags) and more variable expression of such MSSC as the TIII callus and costal setae. Species of the rich undescribed New Caledonian fauna appear to be close to some New Zealand *Parentia*.

There are distinct habitat differences between Australian and New Zealand *Parentia*. In Australia the genus is characteristic of dry sclerophyll eucalypt forest, heath, and semi-arid habitats (see Bickel, in press). By contrast, most New Zealand species are found in moist forests, although some are primarily associated with coastal vegetation. Several widespread species also occur in association with disturbed or even agricultural habitats. The most marked difference between the two land-masses is the total absence of *Parentia* (and all other Sciapodinae) in the *Nothofagus* forests of Tasmania and the Australian mainland. Yet the genus is often abundant in New Zealand *Nothofagus* forests, even in cold subalpine South Island associations.

Although a few *Parentia* are widespread and recorded from numerous localities, most are known from only a few sites. More distribution data are required before the New Zealand biogeography of this genus can be confidently investigated. However, New Zealand *Parentia* show the following generalised distributions.

1. Widespread throughout both North and South islands: *malitiosa, griseicollis, fuscata, mobile,* and *restricta.*
2. Northern North Island: *aotearoa, magniseta, titirangi, recticosta, varifemorata,* and *whirinaki.*
3. Three Kings Islands: *insularis* and *argentifrons.*
4. South Island: *nova, tonnoiri, lyra, defecta, pukakiensis,* and *modesta.*
5. North Island and northern South Island: *johnsi, calignosa, cilifoliata,* and *anomalicosta.*
6. Primarily coastal, North Island and/or South Island: *milleri, schlingeri,* and *gemmata.*
7. Chatham Islands: *chathamensis.*

Phylogenetic analysis of Australian and New Zealand *Parentia*

This section provides a phylogenetic analysis of the major Australian and New Zealand *Parentia* species-groups (cladogram, Text-fig. 1). These groups are based largely on similar MSSC and genitalia. Most MSSC are considered to be apomorphies from a presumed unmodified ancestral state. Although distinctive hypopygial shape and structure are often diagnostic of species-groups or are shared between groups, they are almost impossible to confidently

polarise and are not used in the analysis. Sciapodine morphology is discussed extensively in Bickel (in press). The character states are listed below in the following format – character: plesiomorphic state / apomorphic state.

1. Male ocellar tubercle, pedicel, scutellum: unmodified / with groups of long or supernumerary setae (MSSC).
2. Male face: parallel-sided / tapering ventrally (MSSC).
3. Lateral scutellars: strong / reduced to weak hairs or absent.
4. Male TIII: unmodified / with a swollen callus or irregularity, often with a posterior slit (MSSC).
5. Male IIIt3–5: unmodified / flattened and pad-like (MSSC).
6. Male costa: unmodified / with crocheted or flattened setae (MSSC).

Parentia is defined by the apomorphy of the pad-like IIIt3–5 (MSSC) and apomorphies which are expressed in most but not all species: modified costal setae (MSSC) and TIII callus (MSSC).

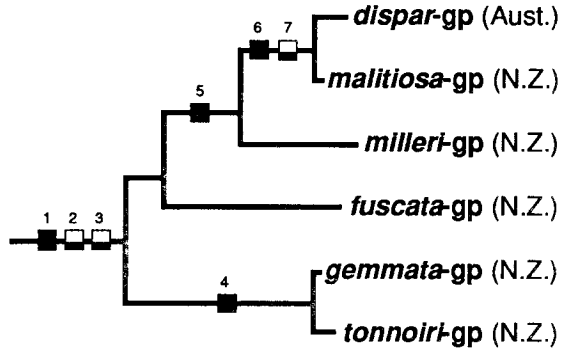
The *fuscata* group is the most plesiomorphic of the *Parentia* species-groups, and the included Chatham Island species *P. chathamensis* appears to be the most plesiomorphic in the genus. The *gemmata* and *tonnoiri* groups have similar pale coloration in addition to highly reduced lateral scutellar setae.

The Australian *dispar* and New Zealand *malitiosa* groups are very close, and species show similar development of MSSC and ventrally converging male face. The excessive male pilosity and supernumerary setae (sometimes also weakly expressed in females) found in all *malitiosa*-group species also occurs in some Australian species, such as *P. nigropilosa* (Macquart). A major difference between them is the presence of crocheted costal setae (MSSC) in all *dispar*-group species; in the *malitiosa* group modified costal setae are spine-like. The sister-group relationship of the *dispar* and *malitiosa* groups suggests the presence of a New Zealand / Australian fauna held in common before the opening of the Tasman Sea some 80 m.y. BP (Stevens 1988).

fuscata group

The *fuscata* group is characterised by the following features.

1. Ocellar tubercle with a single pair of strong, diverging setae and 2 pairs of very short posterior setae in both sexes.
2. Antenna black.
3. Sides of face and clypeus subparallel, not converging.
4. Face and clypeus often covered in dense pruinosity.
5. Pedicel with a corona of short setae only.
6. Arista distinctly apical on subtriangular 1st flagellomere, and sometimes with an apical lanceolate flag.
7. Two or three regularly paired, long *ac* present.
8. Lateral scutellars less than half as long as medians, and scutellum never with supernumerary setae.
9. CI and CII with pale anterior hairs, and CIII with a group of pale lateral setae.
10. It1 usually with some short, pale ventral pile (MSSC).
11. Male TIII usually with an elongate callus, only slightly swollen, and with a narrow posterior slit between one-fifth and one-third (MSSC).
12. Male costa usually with distinct curved setae (MSSC).
13. Lower calypter with a fan of black setae.
14. Haltere yellow in both sexes.
15. Abdomen metallic green with bronze reflections, and with a broad, matt brown band covering tergal overlap.
16. Cercus deeply forked, the 2 arms subequal.



Text-fig. 1 Cladogram of Australian and New Zealand *Parentia* groups. Key to character states (solid black, apomorphic; black/white, apomorphy not expressed in all taxa): 1, male IIIt3–5 pad-like; 2, male with TIII callus; 3, male costa with modified setae; 4, lateral scutellars reduced/lost; 5, male haltere black; 6, male face converging; 7, supernumerary setae on head, scutellum.

Remarks. The *fuscata* group is united by general facies, but noting especially the forked cercus. Three of the species, *P. fuscata, P. griseicollis,* and *P. mobile,* are especially widespread throughout both the North and South islands.

Species included: *argentifrons* n.sp., *chathamensis* n.sp., *fuscata* Hutton, *griseicollis* Becker, *mobile* Hutton, *pukakiensis* n.sp., *recticosta* Parent, *varifemorata* n.sp.

gemmata group

The *gemmata* group is characterised by the following features.

1. Ocellar tubercle with a pair of strong, diverging setae and only weak posterior setae.
2. Palp and proboscis yellowish.
3. Pedicel with short dorsal and ventral setae.
4. Arista dorsal to apical on short, rounded 1st flagellomere.

5. *Ac* distinctly developed, 3 or 4 pairs present.
6. Lateral scutellar setae reduced to tiny, weak hairs.
6. CI, femora, and tibiae mostly yellow.
7. Femora ventrally with only weak hairs, or bare.
8. Male TIII never with a callus.
9. Male It and IIt sometimes with modified setae (MSSC).
10. Male costa sometimes with modified setae (MSSC).
11. Lower calypter yellow, with a fan of brownish setae.
12. Haltere yellow in both sexes.

Remarks. Of the following three New Zealand species included in the *gemmata* group, *P. gemmata* and *P. anomalicosta* have similar leg MSSC and genitalia, while *P. nova* shows little MSSC modification. Some undescribed New Caledonian species also possibly belong in this group.

Species included: *anomalicosta* n.sp., *gemmata* (Walker), *nova* Parent.

***malitiosa* group**

The *malitiosa* group is characterised by the following features.

1. Cuticle on face, thorax, and abdomen usually metallic green, with little pruinosity.
2. Male ocellar tubercle with 3 or 4 pairs of long but weaker setae behind main ocellar pair (MSSC) (Fig. 5); female with only short setae behind the main ocellars (Fig. 6).
3. Head wider than high, and face tapering ventrally to clypeus, but more pronounced in males.
4. Clypeus often relatively narrow, flat, and sharply defined from face.
5. Proboscis often yellow in both sexes.
6. Antenna black.
7. Pedicel in male with a corona of long setae (MSSC); female pedicel with only short setae.
8. Arista distinctly dorsal to dorsoapical on short, subrectangular 1st flagellomere, and usually unmodified.
9. Thorax and scutellum setose, often with supernumerary setae, especially along scutellar margin (MSSC); females sometimes with supernumerary setae on scutellum.
10. Lateral scutellar setae strong, about half to two-thirds as long as medians.
11. CI and CII with pale anterior hairs, and CIII with a group of pale lateral setae.
12. Male TII and IIt often with rows of modified setae (MSSC).
13. TIII with a weakly developed narrow callus at one-quarter (MSSC) or unmodified.
14. IIIt3–5 flattened, and pad-like ventrally (MSSC).
15. Male costa with or without modified setae (MSSC).
16. Haltere usually black in males (MSSC), usually yellow in females.
17. Cercus forked.

Remarks. The *malitiosa* group comprises New Zealand species having strong male setation on the ocellar tubercle, pedicel, and scutellum (all MSSC), the face tapering ventrally to the clypeus (MSSC), and strong lateral scutellar setae. Some members of the Australian *dispar* group, such as *P. nigropilosa* (Macquart), show similar development of MSSC.

Species included: *aotearoa* n.sp., *calignosa* n.sp., *cilifoliata* Parent, *defecta* n.sp., *insularis* n.sp., *johnsi* n.sp., *lyra* n.sp., *magniseta* n.sp., *malitiosa* Hutton, *modesta* Parent.

***milleri* group**

The *milleri* group is characterised by the following features.

1. Face and clypeus polished, shining metallic blue-green.
2. Ocellar tubercle with a pair of strong, diverging setae and 2 pairs of short posterior hairs.
3. Sides of face and clypeus converging ventrally.
4. Clypeus not extending beyond base of eyes.
5. Palp, proboscis, and antenna black.
6. Pedicel with short dorsal and ventral setae.
7. First flagellomere subtriangular, with a dorso-apical arista slightly longer than head height.
8. Three pairs of long *ac* present.
9. Coxae and femora dark metallic green; tibiae and tarsi dark brown.
10. Some tarsomeres on male leg I flattened (MSSC).
11. TIII without a callus.
12. IIIt3–5 only slightly flattened, but ventrally pad-like (MSSC).
13. Costa unmodified.
14. *M1* closely paralleling *R4+5* to wing apex.
15. Haltere black in male (MSSC), yellow in female.

Remarks. The two species of the *milleri* group occur in New Zealand coastal habitats. The group is characterised by the polished metallic blue-green face and clypeus, unmodified TIII, flattened male tarsomeres on leg I, black halteres in males, and closely parallel *M1* and *R4+5* before the wing apex.

Species included: *milleri* Parent, *schlingeri* n.sp.

***tonnoiri* group**

The *tonnoiri* group is characterised by the following features.

1. A pair of strong, diverging setae and 2 pairs of short posterior setae on ocellar tubercle.
2. Sides of face subparallel.
3. Proboscis yellow.
4. Antenna black, and pedicel with short setae.
5. Arista dorsal, slightly longer than head height.
6. Lateral scutellar setae reduced to short, weak hairs.

7. CI and all femora and tibiae yellow.
8. CI and CII with pale anterior hairs, CIII with a pale lateral seta.
9. Male It1 very long on all species, almost as long as TI (MSSC).
10. TIII without a swollen callus, but sometimes with a weak though distinct posterior groove from one-fifth to one-half (MSSC).
11. Costa with or without curved setae (MSSC).
12. Lower calypter yellow or brownish, with a fan of pale setae.
13. Haltere yellow in both sexes.
14. Epandrial lobe elongate.

Remarks. The *tonnoiri* group comprises two North Island and one South Island species, and is fairly consistent in coloration and in overall genital structure. The species are relatively large, more than 4.5 mm in length. I collected both *P. titirangi* and *P. whirinaki* in mixed podocarp forest.

Species included: *titirangi* n.sp., *tonnoiri* Parent, *whirinaki* n.sp.

Parentia anomalicosta new species

Figures 6–9, Map 1

Description. Male. Length 4.8 mm; wing 4.1x1.4 mm.

Head (Fig. 6). Vertex, frons, face, and clypeus metallic green; clypeus extending beyond base of eyes; antenna dark brown; 1st flagellomere subtriangular; arista dorsoapical, distinctly curved, its length about twice head height (MSSC).

Thorax. Dorsum metallic blue-green, with a dusting of grey pruinosity; pleura covered with grey pruinosity; lateral scutellar setae reduced to tiny weak hairs, if at all visible.

Legs. CII and CIII dark brown with metallic green reflections; CI and remainder of legs yellow, except as noted; CI and CII with pale anterior hairs, and CI also with some stronger pale distolateral setae; CIII with a pale lateral seta; femora ventrally bare; It1 prolonged, only slightly shorter than TI (MSSC); both TII and IIt1 unusually long (MSSC); TII bare, without ad–pd setae but with apical setae; IIt1 bowed, its dorsal surface concave, with a row of short, black setae basally on concave surface and some strong, black ventral setae along distal half of convex surface (MSSC); IIt3–5 flattened, with an external fringe of curved black setae, and IIt4–5 with flattened ventral surface bearing white pile (MSSC).

I – 9.0; 9.5; 8.5/ 2.5/ 1.5/ 1.0/ 1.0
II – 12.5; 15.5; 10.5/ 5.5/ 2.5/ 2.0/ 1.0
III – 12.0; 17.0; 7.0/ 3.5/ 1.2/ 1.2/ 0.8

Wing. Costa with short, erect hairs (MSSC), but expanded and modified with long, incurved cilia just before junction with *R4+5* (MSSC) (Fig. 7); CuAx ratio 2.0; lower calypter yellow, with a fan of brownish setae.

Abdomen metallic green with bronze reflections, and with a broad, matt brown band covering tergal overlap; hypopygium dark brown, with cercus yellow, its basal projection bearing black, hooked setae (Fig. 9); epandrium subtriangular; hypandrial arm almost twice as long as hypandrial hood; surstylus with ventral lobe bearing a median projection, and dorsal lobe digitiform, with setae as figured; cercus digitiform, with 2 strong setae, its basal cuticular projection bearing a broad, L-shaped seta and 3 strong black setae, and with 3 long, black apical setae.

Female. Similar to male except lacking MSSC, otherwise as follows: face wider, and clypeus extending beyond base of eyes; TII with an offset ad–pd pair at one-fifth; both It1 and IIt1 about half as long as their respective tibiae; IIt unmodifed; costa unmodified (Fig. 8).

Type data. Holotype male (NZAC), SD, D'Urville Island, 14–24 January 1941, E.S. Gourlay; and 13 paratypes (NZAC) – 4 males, 3 females, same data as holotype, and 4 males, 2 females, SD, Stephens Island, 9–12 January 1931, 14–28 January 1933.

Material examined. Type series, plus 12 non-type examples (8 males, 4 females; NZAC, CMNZ): AK – Auckland, Mt Eden, 23 Oct 1949; Green Lane, 20 Dec 1940. BP – Rotorua, Forest Res. [Inst.], Feb 1981, Malaise trap. NN – Nelson, Paturau, 11 Jan 1966; Aniseed Vly, 6 Jan 1972; Nelson, 9 Dec 1923.

AK, BP / SD, NN.

Remarks. The male of *P. anomalicosta* has distinctive modifications on both the wing and leg II, which are remarkably similar to those found on male *P. hangayi* Bickel (in press) from the interior of New South Wales. However, the male genitalia and thoracic chaetotaxy are different, and the MSSC similarity must be regarded as convergence between two distinctly different genera. The male wing modification is also convergently similar to the wing of the Nearctic *Amblypsilopus costalis* (Aldrich).

Parentia aotearoa new species

Figure 10, Map 2

Description. Male. Length 5.1–5.3 mm; wing 4.7x1.8 mm.

Head. Frons metallic blue-green; face and clypeus slightly tapering, and covered with silvery pruinosity evident in anterior view; sides of face subparallel, and male clypeus extending beyond base of eyes (MSSC); palp black with

black setae; proboscis black; arista dorsoapical, long, about twice head height.

Thorax. Dorsum metallic blue-green; pleura metallic green, covered with grey pruinosity; 3 or 4 mostly regularly paired long ac present.

Legs. Coxae and femora metallic green; tibiae and tarsi dark brown; FI with short, pale av and pv setae in proximal half only, and with some dark pv setae distally; TII and IIt covered with short, fine, erect hairs (MSSC), and TII without ad–pd setae at one-fifth; TIII without evidence of a callus or a posterior slit.

I – 8.0; 9.0; 3.0/ 2.0/ 1.5/ 1.0
II – 11.0; 14.0; 9.0/ 3.5/ 3.0/ 1.5/ 1.0
III – 13.0; 19.0; 7.0/ 3.5/ 2.0/ 1.0

Wing hyaline; costa with distinct curved setae to *R1* (MSSC); *M* with a strong bend at juncture of *M2*; *M2* weak; CuAx ratio 1.6; haltere brown.

Abdomen. Hypopygium (Fig. 10) entirely black; epandrium subrectangular; hypandrial arm less than twice as long as hypandrial hood; 2 short epandrial setae present; surstylus distinctive, with dorsal lobe long, projecting, bearing strong, medially projecting setae, and ventral lobe bearing a median projection and setae as figured; cercus deeply forked, with ventral arm longer than dorsal arm.

Female. Similar to male except lacking MSSC, otherwise as follows: face and clypeus with some pruinosity; arista slightly longer than head height; TII with offset strong ad and weaker pd setae at one-fifth; TII and IIt unmodified; costa without curved setae; haltere yellow.

Type data. Holotype male and 8 paratypes (6 males, 2 females; NZAC), Three Kings Islands, Great Island, 1–3 January 1963, E. S. Gourlay.

Material examined. Type series, plus 11 non-type examples (5 males, 6 females; NZAC, AMSA, ZMKD): ND – Poor Knights Is, Tawhiti Rahi, 6–11 Dec 1980. AK – Riverhead S.F., reared ex pine litter, collected 30 Oct, emerged 7–31 Nov 1974. CL – Little Barrier I., Pohutukawa Flat, 19–23 Feb 1966, Malaise trap; road E of Tapu, along creek, 3 Dec 1989. BP – Rotorua, 12–13 Dec 1972.

ND, AK, CL, BP / —.

Remarks. *P. aotearoa* is very close to *P. magniseta*, but can be separated by the absence of a strong male ad seta on TII and by hypopygial differences. The two species are probably only recently evolved. Usually *P. aotearoa* has short, erect hairs on TII and IIt (MSSC), but specimens from the Poor Knights and the Coromandel Peninsula have less modified leg vestiture, with only slightly erect hairs.

Parentia argentifrons new species

Figure 11, Map 3

Description. Male. Length 3.2 mm; wing 3.0x0.8 mm.

Head. Frons metallic green, with a dusting of grey pruinosity; face and clypeus covered with shining silvery pruinosity; clypeus protruding, extending below base of eyes (MSSC); palp black, with a strong apical seta (MSSC); proboscis yellowish; 1st flagellomere short, subtriangular; arista apical, slightly longer than head height.

Thorax. Dorsum metallic blue-green; pleura metallic green, covered with grey pruinosity; 2 or 3 irregular pairs of long *ac* present; lateral setae weak, about one-quarter as long as medians.

Legs. Coxae dark, with grey pruinosity; femora metallic green, but FI and FII with knees yellow in distal one-fifth; tibiae and tarsi dark brown; FI with some pale ventral setae, decreasing in size distally; FII with 2 rows of short, pale ventral setae in proximal one-third; TII with a strong ad seta and a weaker pd seta offset at one-fifth; FIII with some pale ventral hairs; TIII with an elongate, narrow callus and a distinct narrow, posterior slit between one-fifth and one-third (MSSC).

I – 6.0; 5.0; 3.5/ 1.0/ 1.0/ 0.8/ 0.8
II – 7.0; 8.0; 4.2/ 2.0/ 1.2/ 0.8/ 0.5
III – 8.5; 9.2; 3.2/ 2.0/ 1.2/ 1.0/ 0.8

Wing hyaline; costa with distinct curved setae starting at one-third and extending to *R4+5* (MSSC); *M1* and *R4+5* subparallel near apex; CuAx ratio 1.3; haltere club pale yellow.

Abdomen. Hypopygium (Fig. 11) black, with cercus yellowish; epandrium subrectangular; surstylus with ventral lobe bearing a median projection and an apical seta, and dorsal lobe digitiform; cercus deeply forked, with dorsal arm strongly setose and longer ventral arm bearing 3 apical setae.

Female. Similar to male except lacking MSSC, otherwise as follows: clypeus shorter but still extending below eye margin, and also with shining silvery pruinosity; palp without strong apical setae; all femora with only short, pale ventral hairs; TIII with an anterior seta at one-fifth but lacking a callus; costa unmodified.

Type data. Holotype male and 4 paratypes (2 males, 2 females; NZAC), Three Kings Islands, Great Island, Castaway Camp, December 1970, DSIR Entomology Division Expedition.

Material examined. Type series only.

Three Kings Is / —.

Remarks. The prolonged silvery clypeus is diagnostic for both sexes of *P. argentifrons*.

Parentia calignosa new species

Figure 12, Map 4

Description. Male. Length 4.0 mm; wing 3.4x1.2 mm.

Head. Frons green, with a dusting of grey pruinosity; face bulging, polished metallic blue-green (MSSC); clypeus flat, with some pruinosity; clypeus extending beyond base of eyes (MSSC); palp black, with 3 long setae; proboscis yellow; arista length about 1.5x head height.

Thorax. Dorsum metallic blue-green; pleura metallic green, covered with grey pruinosity; 3 regularly paired long *ac* present; without supernumerary setae.

Legs. Coxae and femora dark metallic green; tibiae and tarsi dark brown; FI with only pale ventral hairs; It1 with pale ventral pile, but not flattened; FII with pale basoventral setae; TII and IIt1 covered with short, porrect setae (MSSC); FIII with scattered pale ventral hairs; TIII with an elongate, narrow callus, hardly visible in anterior view, and with a distinct, narrow, posterior slit between one-fifth and one-half (MSSC).

I – 6.0; 5.5; 3.0/ 1.2/ 1.0/ 0.8/ 0.5
II – 7.0; 8.0; 5.5/ 2.0/ 1.5/ 1.0/ 0.8
III – 8.0; 11.0; 4.0/ 2.5/ 1.5/ 1.0/ 0.8

Wing. Membrane smoky; costa with distinct, curved setae on *R2+3* (MSSC); *M2* weak; CuAx ratio 1.7; haltere black.

Abdomen. Hypopygium (Fig. 12) dark brown, with cercus yellowish; epandrium subtriangular; hypandrial arm relatively short; ventral lobe of surstylus with a median projection; surstylus with dorsal lobe bearing setae as figured; cercus elongate, with ventral arm elongate, digitiform, bearing 3 curved apical setae.

Female. Similar to male except lacking MSSC, otherwise as follows: face wider, and with a dusting of grey pruinosity; clypeus not extending below eyes; TII with an offset ad–pd pair of setae at one-fifth; TIII with an anterior seta at one-fifth, but lacking callus and posterior slit; costa unmodified.

Type data. Holotype male and 2 paratypes (1 male, 1 female; all NZAC), BP, Rotorua, Forest Res[earch Institute], February 1981, Malaise trap, J. Bain.

Material examined. Type specimens, plus 18 non-type examples (16 males, 2 females; NZAC, AMSA): CL – Little Barrier I., 18 Feb 1976, Malaise trap; Ohui, 2 Nov 1977. TO – Kaimanawa North F.P., 18 Dec 1971; Kopiko-piko Stm N of Minginui, 5 Dec 1989, yellow pan traps. HB – Puketitiri, Little Bush, 20 Feb 1986. WN – Paekakariki, Queen Elizabeth Park, 11 Nov 1977. MK – L. Tekapo, Jan 1981, Malaise trap.

CL, BP, TO, HB, WN / MK.

Parentia chathamensis new species

Figures 13, 14, Map 5

Description. Male. Length 4.0 mm; wing 3.3x1.2 mm.

Head. Frons metallic green, with a dusting of silvery pruinosity; face and clypeus with dense silvery pruinosity; clypeus extending beyond base of eyes; face not bulging; palp dark brown; proboscis black; 1st flagellomere short, subtriangular; arista dorsoapical, long, about 1.5x head height (Fig. 13).

Thorax. Dorsum metallic green; pleura with grey pruinosity; lateral scutellar setae about one-third as long as medians.

Legs. CII and CIII mostly metallic green-brown; CI and remainder of legs yellow, except distalmost tarsomeres darkened; CIII with a group of 4 or 5 pale lateral setae; FI with pale av and longer pv setae in proximal half (MSSC); It1 with very pale ventral pile, but tarsomere not flattened (MSSC); FII with some pale ventral hairs; TII with an offset ad–pd pair at one-fifth, ad longer than pd; FIII with some fine, pale hairs; TIII without any evidence of a callus, and with a strong av seta at one-fifth; IIIt3–5 only slightly flattened (MSSC).

I – 7.0; 7.5; 5.0/ 2.0/ 1.5/ 1.0/ 0.8
II – 9.0; 10.0; 7.0/ 3.0/ 2.0/ 1.2/ 1.0
III – 9.5; 13.0; 5.0/ 3.0/ 2.0/ 1.2/ 1.0

Wing. Costa unmodified; *M2* weak, only slightly bowed; CuAx ratio 1.2; haltere pale yellow.

Abdomen. Hypopygium (Fig. 14) brown; epandrium subtriangular; hypandrial arm extending only slightly beyond hypandrial hood; 2 short epandrial setae present; surstylus with ventral lobe large, bearing a median projection; cercus deeply forked, with dorsal arm distinctly setose and ventral arm bearing a tuft of apical setae.

Female. Similar to male except lacking MSSC, otherwise as follows: face wider; clypeus also extending below eye margin; arista length also about 1.5x head height; all femora with only short ventral hairs; TIII also with anterior seta at one-fifth.

Type data. Holotype male and 5 paratypes (3 males, 2 females; NZAC), Chatham Islands, Kiawhata, 19 Jan 1976, R.P. Macfarlane.

Material examined. Type series, plus 29 non-type examples (18 males, 11 females; NZAC): Chatham I. – Waitangi, on sand dunes, 8–9 Feb 1967, and ex *Olearia traversi*, 24 Feb 1967; Owenga Beach, 25 Feb 1967; Hapupu, ex *Juncus* and *Ammophila*, 27 Feb 1987; Limestone Quarry, 11 Feb 1967. Southeast I. – ex *Plagianthus*, 9 Nov 1976; on leg of 4-day-old Chatham I. tomtit in nest, 26 Nov 1987.

— / Chatham Is / —.

Remarks. The endemic *P. chathamensis* is the only sciapodine on the Chatham Islands, where it is associated with dune and coastal vegetation. The record of a female on the leg of a Chatham Island tomtit nestling is undoubtedly a fortuitous association.

Of particular interest is the very weak development of MSSC, such that the males have almost a female facies except for the hypopygium. *Parentia* MSSC such as curved costal setae and the TIII callus are absent. As well, males have characteristic female chaetotaxy on TII and TIII. Only the flattened IIIt3–5 (although very weakly flattened) is shared with other *Parentia*. Indeed, the placement of the species in *Parentia* might be doubtful were it not for the cercus, which is typical of the *fuscata* group.

P. chathamensis either is the most plesiomorphic member of the *fuscata* group, the MSSC not having been developed, or is highly derived, the MSSC being secondarily lost. I know of no instance in the Dolichopodidae where insular isolation has necessarily led to loss of MSSC, and I regard the species as plesiomorphic with respect to MSSC development. Its presence only on the isolated Chatham Islands is possibly a relict distribution.

Parentia cilifoliata (Parent)

Figure 15, Map 6

Chrysosoma cilifoliatum Parent, 1933b: 339.

Description. Male. Length 4.1–4.2 mm; wing 3.9x1.6 mm.

Head. Vertex, frons, face, and clypeus metallic blue-green in anterior view; palp black; proboscis dark brown; arista length about 2.5x head height (MSSC).

Thorax. Dorsum metallic blue-green; pleura metallic green, covered with grey pruinosity; 4 pairs of long *ac* present; scutellum with 1 or 2 additional pairs of supernumerary setae along margin, therefore 3 or 4 pairs of scutellar setae present.

Legs. Coxae and femora black with metallic green reflections; tibiae and tarsi dark brown; FI with long, black, ventral setae along entire length (MSSC); FII with long, dark pv setae, these decreasing in size distally (MSSC); IIt1 very long, longer than TII; TII and IIt1 with regular double ciliation along entire length, the weaker av row slightly curved, and the pv row comprising short, straight, pin-like setae (MSSC); FIII with some ventral setae, these pale basally and black distally; TIII with a callus, hardly visible in anterior view, but with a distinct narrow posterior slit between one-tenth and one-fifth (MSSC).

I – 7.0; 6.5; 4.5/ 1.0/ 0.8/ 0.8
II – 9.0; 11.0; 9.5/ 2.0/ 1.5/ 0.8/ 0.8
III – 10.0; 11.0; 5.5/ 3.0/ 2.0/ 1.5/ 1.0

Wing hyaline; costa with a row of distinct capitate (not curved) setae gradually decreasing in size to end at three-quarters on costa (MSSC); *M2* strong; CuAx ratio 2.2; haltere black.

Abdomen. Hypopygium black, with cercus yellow (Fig. 15); epandrium subrectangular; hypandrial arm slightly more than twice as long as hypandrial hood; 2 short epandrial setae present; surstylus with dorsal lobe expanded, bearing a distinctive curved cuticular projection and other setae as figured; cercus deeply forked, the ventral arm apically setose and with a peduncle on internal margin bearing 2 setae.

Female. Similar to male except lacking MSSC, otherwise as follows: face wider; arista slightly longer than head height; scutellum also with 1 or 2 pairs of supernumerary scutellar setae; all femora with only short ventral hairs; TII with an offset ad–pd pair at one-fifth; TII and IIt1 unmodified; IIt1 shorter than FII; TIII with anterior seta at one-fifth, and lacking a callus; costa without capitate setae; haltere yellow.

Type data. Parent described *Chrysosoma cilifoliatum* from a single male taken at Wellington (BMNH).

Material examined. Holotype, plus five non-type examples (NZAC, CNCI, UCNZ): NN – Tahunanui Beach, 24 Jan 1976, sweeping sand dunes; Takaka Hill, 2000 ft [600 m], 14 Dec 1976. WD – Greymouth, 21 Jan 1957; Kellys Creek campground, nr Otira, 20-23 Jan 1974. SC – Peel Forest, Scotsburn Stn, podocarp-broadleaf forest, 24-31 Dec 1975, Malaise trap. OL – Cardrona R., 800 m, 7 Dec 1977.

WN / NN, WD, SC, OL.

Remarks. *P. cilifoliata* is related to *P. defecta*. Isolated females of *P. cilifoliata* and *P. malitiosa* probably cannot be accurately separated. Similarly to males, females of both species have supernumerary setae on the scutellum.

Parentia defecta new species

Figure 16, Map 7

Description. Male. Length (thorax + abdomen only) 2.6 mm; wing 3.0x1.2 mm; similar to *P. cilifoliata* except as follows.

Head. Missing from specimen.

Thorax. Four pairs of short *ac* present; scutellum with a supernumerary marginal setal pair between medians.

Legs. Coxae and femora dark brown with metallic green reflections; tibiae and tarsi brown; FI with long, black, ventral setae along entire length (MSSC?); FII with long, dark pv setae, these decreasing in size distally (MSSC); IIt1 relatively long; TII and IIt1 with regular double ciliation along entire length, the weaker av row slightly curved and

the pv row comprising curved, slightly capitate setae (MSSC); FIII with some av setae, pale basally and black distally; TIII with a callus, hardly visible in anterior view, but with a distinct narrow posterior slit between one-tenth and one-fifth (MSSC).

I – 6.0; 6.0; 4.0/ 1.0/ 0.8/ 0.5
II – 8.0; 9.0; 8.0/ 1.2/ 1.1/ 0.9/ 0.5
III – 9.0; 10.5; 4.2/ 2.1/ 1.4/ 1.2/ 0.8

Wing hyaline; costa with short, spine-like setae (MSSC); *M1* almost meeting *R4+5* before apex; CuAx ratio 2.2; haltere black.

Abdomen. Hypopygium dark brown, with cercus yellow (Fig. 16); surstylus with a group of 3 strong lateral setae, and dorsal lobe bearing strong setae and a cuticular projection as figured; cercus deeply forked, with ventral arm apically setose but lacking a peduncle on internal margin.

Female. Unknown.

Type data. Holotype: male, CO, Tarras, 1000 ft [300 m], 16–22 January 1959, E. S. Gourlay (NZAC).

Material examined. Holotype only.
— / CO.

Remarks. *P. defecta* is very close to *P. cilifoliata*, both in leg II MSSC and hypopygial structure.

Parentia fuscata (Hutton)

Figure 17, Map 8

fuscatus Hutton, 1901: 32 *(Psilopus).*
huttoni Parent, 1933b: 336 *(Chrysosoma)* new synonymy.

Description. Male. Length 4.2–4.3 mm; wing 4.0x1.6 mm.

Head. Frons covered with dense grey pruinosity, such that metallic green cuticle hardly evident in anterior view; face and clypeus covered with dense, silvery pruinosity; clypeus extending only slightly beyond base of eyes; palp black, with black setae; proboscis black; 1st flagellomere subtriangular; arista apical, long (about half head height), tapering to a thin thread (MSSC).

Thorax. Dorsum metallic blue-green; pleura metallic green, covered with grey pruinosity; 3 regularly paired, long *ac* present; lateral scutellar setae about one-third as long as medians.

Legs. Coxae and femora metallic green; femoral knees yellow; tibiae and tarsi dark brown; FI with some pale ventral setae in proximal half; It1 with some ventral pale pile (MSSC); FII with some pale ventral hairs; TII with ad seta only at one-fifth, and with some short apical setae; TIII with a narrow callus between one-fifth and one-third, and with a distinct posterior slit (MSSC); FIII with white ventral hairs.

I – 8.0; 7.5; 4.5/ 1.0/ 0.8/ 0.8
II – 8.5; 9.5; 5.5/ 2.2/ 1.0/ 0.8
III – 10.0; 13.0; 3.0/ 1.8/ 1.2/ 1.0

Wing hyaline; costa with distinct curved cilia along entire length (MSSC); *M2* weak; CuAx ratio 2.0; haltere club yellowish.

Abdomen. Hypopygium (Fig. 17) entirely black; epandrium subrectangular; hypandrial arm less than twice as long as hypandrial hood; 2 short epandrial setae present; surstylus with ventral lobe large, bearing a median projection and an apical seta, and dorsal lobe digitiform, with setae as figured; cercus deeply forked, with dorsal arm setose and ventral arm bearing an apical tuft of setae.

Female. Similar to male except lacking MSSC, otherwise as follows: face wider; clypeus not extending below eye margin; arista unmodified, short, slightly longer than head height; femora with only short ventral hairs; TII with an offset ad–pd pair at one-fifth; TIII with an anterior seta at one-fifth, and lacking a callus; costa unmodified.

Type data. Parent (1933b) accurately distinguished the subtle differences separating two very closely related species, represented by his descriptions of *Chrysosoma fuscatum* (in the sense of Parent) and *Chrysosoma huttoni*. However, he was not able to directly examine the types of *Psilopus fuscatus* Hutton, and had to rely on Tonnoir's comparative notes. I have examined together the types of *Psilopus fuscatus* (lectotype here designated, male with the labels "Otago, Hutton" / "*Psilopus fuscatus* Hutt., F.W. Hutton, det." / "Type" / "1538") and *Chrysosoma huttoni* (male holotype from Nelson, CMNZ), and they are conspecific. Therefore Parent's description of *Chrysosoma huttoni* represents the species here regarded as *Parentia fuscata*, and his description of *Chrysosoma fuscatum* represents *Parentia griseicollis* (Becker), q.v.

Material examined. Type specimens, plus more than 400 non-type examples (NZAC, CNCI, BPBM, BMNH, UCNZ, USNM): HB – Puketitiri, Little Bush, 29 Feb 1986. RI – Ohakune, no date. WN – Days Bay, Wellington, Jan, Dec. SD – Stephens I., 14–28 Jan 1933; Ship Cove, 15 Feb 1973. NN – Cobb Reservoir, Jan 1981, Malaise trap; Cobb Ridge, 7 Jan 1959; Nelson, Nov. MB – Spenser Mtns, L. Tennyson, 21 Jan 1976; L. Tennyson, 1220 m, Malaise trap. BR – L. Rotoiti, 1–12 Jan 1976, 4 Feb 1976, 27 Dec 1976, 610 m, Malaise and light traps and sweeping *Hebe*; Punakaiki, Bullock Crk, 20 m, 23 Oct to 3 Dec 1983, Malaise trap; Blackball, 3 Jan. NC – Seward R., Hurunui, 5–7 Dec 1975. MC – Mt Algidus, 2000 ft [600 m], 2–13 Dec 1959; McLennans Bush, 9 Dec 1941; Christchurch, Cashmere, 13–15 Dec 1976; Bottle Lake, 22 Dec 1924; Banks Pen., Kaituna Bush, 21 Jan 1958, 13 Dec 1977; Banks Pen., Feb 1989; Peel Forest, Scotsbury Stn, podocarp / broadleaf

forest, 24–31 Dec 1957. WD – Westland N.P., 140 m, nr Canavans Knob, no date; South Westland, 3 Dec 1984 to 3 Jan 1985, Malaise trap; Jackson Bay, 13–14 Feb 1977; 5 km E of Abut Head, ex rushes, *Juncus* sp.; 2 km W of L. Matheson, 28 Feb 1976. MK – Tekohi, 1–21 Jan 1986; L. Tekapo, Jan 1981. DN – Leith Saddle, 20 Feb to 6 Mar 1977. SI – Lees Bay, 22–29 Jan 1976, 19–26 Dec 1975.

HB, RI, WN / South I. excl. SC, CO, OL, FD, SL / SI.

Remarks. *P. fuscata* is very closely related to *P. griseicollis*, such that the genitalia are almost identical, and the two species can be reliably separated only by the condition of the apex of the arista and the pruinosity on the frons in the male. An additional character used by Parent (to distinguish *Chrysosoma huttoni* from his concept of *C. fuscatum*), the relative lengths of the costa between *R2+3* and *R4+5*, is unreliable. Females are indistinguishable.

The two species are broadly sympatric, and often are taken together in large numbers at the same site.

Parentia gemmata (Walker)

Figure 18, Map 9

gemmatus Walker, 1849: 647 *(Psilopus).*

Description. Male. Length 3.5 mm; wing 2.8x1.0 mm.

Head. Frons metallic green; face and clypeus polished, glazed metallic blue-green (MSSC); clypeus extending slightly beyond base of eyes (MSSC); antenna dark brown; 1st flagellomere short, subtriangular; arista apical, curved, its length about equal to head height.

Thorax. Dorsum metallic green, with a dusting of grey pruinosity; pleura covered with grey pruinosity.

Legs elongate (MSSC); CII and CIII dark brown with metallic green reflections; CI and remainder of legs yellow, except distal tarsomeres darkened and IIIt3–5 dark brown; CI and CII with pale anterior hairs, CIII with a pale lateral seta; It1 without ventral pile; It with short, erect hairs (MSSC); TII bare, without ad–pd setae, and TII and IIt covered with short, erect hairs (MSSC).

I – 6.5; 6.0; 3.5/ 1.5/ 1.0/ 0.8/ 0.8
II – 7.0; 7.5; 5.5/ 3.0/ 2.0/ 1.5/ 1.0
III – 9.0; 11.0; 4.0/ 3.0/ 1.2/ 1.0/ 0.8

Wing hyaline; costa with an ad row of black setae (MSSC); wing slightly tapering at base, but anal angle distinct; wing apex slightly rectangular (MSSC); CuAx ratio 2.0; lower calypter yellow, with a fan of brownish setae.

Abdomen metallic green with bronze reflections, and with matt brown bands covering tergal overlap; hypopygium (Fig. 18) dark brown, with cercus yellow; epandrium subrectangular; hypandrial arm extending beyond hypandrial hood; 2 short epandrial setae present; surstylus with ventral lobe bearing a median projection and an apical seta, and dorsal lobe digitiform, with setae as figured; cercus broad, tapering distad, with a strong basal cuticular projection bearing a strong, hooked apical seta, and with 3 long, strong, black, undulating subapical setae.

Female. Similar to male except lacking MSSC, otherwise as follows: face with a dusting of pruinosity; clypeus not extending below eye margin; FI with a short, pale, ventral seta at one-eighth; TII with an offset ad–pd pair at one-fifth and some apical setae; It and IIt unmodifed; TIII with an ad seta at one-fifth; costa unmodified.

Type data. Walker described *Psilopus gemmatus* from a single female taken in New Zealand (BMNH). Parent (1934, p. 17) redescribed the specimen but was unable to place it to genus, considering it to belong either in *Condylostylus* or *Sciapus*. The type specimen is similar to females of the species here described.

Material examined. Type specimen, plus 120 non-type examples (NZAC, except where noted): ND – Spirits Bay, Nov 1967; Poor Knights Is – Aorangi I., on flowering *Cordyline kaspar*, 11 Nov 1981, Tawhiti Rahi I., sweeping grasses, 3–9 Dec 1980, and Urupa Point, on *Coprosoma macrocarpa*, 14 Nov 1981. AK – Noises Is, Motuhoropapa I. (Snail Flat and North End), 13–16 Dec 1977 and 13 Jan 1978, Maria I., 24 Oct 1976, Ohata I., 14 Jan 1978; Browns Bay, beach, 13 Jan 1946. CL – Little Barrier I., 21 Feb 1972, and on *Phormium*, 15 Nov 1949; Mayor I., 29 Nov 1948; Ohui, 2 Nov 1977. BP – Waihau Bay, 22 Jan 1969 (CNCI); 2 km S of Pikowai, on leaf of taupata, *Coprosma repens*, 7 Dec 1989 (AMSA).

ND, AK, CL, BP / —.

Remarks. *P. gemmata* has been recorded mostly from coastal habitats.

Parentia griseicollis (Becker)

Figure 19, Map 10

griseicolle Becker, 1924: 130 *(Chrysosoma).*
subnigrum Becker, 1924: 128 *(Chrysosoma)* new synonymy.
fuscatum in the sense of Parent (1933), not Hutton (1901).

Description. Male. Length 4.2–4.3 mm; wing 4.0x1.6 mm; similar to *P. fuscata* except as follows.

Head. Frons metallic green, covered with grey pruinosity, but this not dense – metallic green ground colour evident in anterior view; arista apical, long (about 2.5x head height), relatively thick, with slightly expanded clavate apex (MSSC).

Wing. Haltere club yellow to pale yellow.

Abdomen. Cercus (Fig. 19) possibly with a diagnostic strong seta at base of fork, absent in *P. fuscata*.

Female. Indistinguishable from female of *P. fuscata*.

Type data. Becker (1924) published descriptions of these two New Zealand species in a paper on the Dolichopodidae of Formosa, and they were overlooked by both Parent (1933b) and Miller (1956). These two 'lost' species were brought to my attention by C. E. Dyte.

I have examined the syntype series of two males and two females of *Chrysosoma griseicolle* and the unique male holotype of *Chrysosoma subnigrum* (all IFPE). They are in fact conspecific, and all males have a slightly expanded arista, matching precisely Parent's (1933b, p. 340) concept of *Chrysosoma fuscatum* but not Hutton's (see Remarks under *Parentia fuscata*).

A lectotype is here designated for *Chrysosoma griseicolle* Becker: a male bearing the label "Neuseeland / Coll. Osten-Sacken" (IFPE).

Material examined. Type specimens, plus more than 400 non-type examples (NZAC, UCNZ, CNCI, BPBM, BMNH, AMSA, ZMUC): AK – Warkworth, 29 Oct 1967; Auckland, Nov 1948; Browns Bay, 21 Oct 1941; Mt Albert, 25 Jan 1968, 3 Nov 1980; Sandringham, 25 Oct 1942; Owairaka, 29 Oct 1940; Lynfield, on window, 18–19 Jan 1984, 30 Oct 1984; Titirangi, 23 Dec 1952, 17 Jan 1953; Huia, 27 Dec 1967. BP – Rotorua, 15 Dec 1962; Rotorua, For. Res. [Inst.], Feb 1981. TO – Mangakino, 21 Nov 1968; Kopikopiko Stm N of Minginui, 5 Dec 1989, yellow pans. GB – Gisborne, 2 Jan 1976. HB – Little Bush, Puketitiri, 28 Nov 1981, 20 Feb 1986. RI – Ohakune, Nov. WN – Lower Hutt, 1 Jan 1968; Days Bay, Dec; Khandallah, Nov; Te Paki trig, nr *Leptospermum*, 22–25 Oct 1982. SD – Oruawairua I., Queen Charlotte Sd, 31 Jan to 4 Feb 1980. NN – Nelson, 4 Nov1955, 10 Dec 1953; Maitai Vly, 3 Jan 1968, 15 Jan 1975; Aniseed Vly, on *Nothofagus menziesii*, 14 Jan 1976; Nelson South, 23 Dec 1965; Dun Mtn, 2000 ft [600 m], 27 Jan 1953. BR – N of Woodpecker, 28 Nov 1977; L. Rotoiti, 1–12 Jan, 4 Feb, 27 Dec 1976, 610 m, Malaise and light trap and sweeping *Hebe*; Lewis Pass, 3500 ft [1000 m], 8–12 Dec 1975; Reefton, Jan. KA – Puhi Puhi Res., 3–6 Dec 1957. WD – Kellys Creek, nr Otira, 20–23 Jan 1974. NC – Arthurs Pass N.P., E of entrance, 25 Feb 1976. MC – Christchurch, 16–18 Dec 1959, 10–14 Jan 1979; Riccarton Bush, 1 Dec 1959; New Brighton, Nov; Cashmere, 6–24 Dec 1976; Purau R., Oct; Kaituna, 21 Jan 1958, 9 Dec 1962, 13 Dec 1977; Banks Pen. N of Akaroa, on grass, 22 Feb 1976. OL – Glenorchy, L. Wakitipu, 1 Jan 1923. DN – Leith Saddle, 20 Feb to 6 Mar 1977, 9–26 Dec 1975. SL – 10 km NW of Fortrose, 31 Jan 1976; Tiwai Pt, 26 Jan 1976; Greenhills Bluff, 6 Jan 1959. SI – Oban, 15 Dec 1965.

AK, BP, TO, GB, HB, RI, WN / South I. excl. MB, SC, MK, CO, FD / SI.

Remarks. *P. griseicollis* is widely sympatric with the closely related *P. fuscata*. The apex of the male arista is slightly widened, which makes it appear blunt. See also Remarks under *P. fuscata*.

Parentia insularis new species

Figures 20, 21, Map 11

Description. Male. Length 5.3 mm; wing 4.7x1.6 mm.

Head. Frons, face, and clypeus metallic blue-green, with only a dusting of grey pruinosity; sides of face slightly converging ventrally; male clypeus extending just beyond base of eyes (MSSC); palp black, with 4 or 5 long, black setae; proboscis yellowish; arista dorsal, curved, slightly longer than head height.

Thorax. Dorsum metallic blue-green; pleura metallic green, covered with grey pruinosity; 3 regularly paired, long *ac* present.

Legs. Coxae and femora metallic green; FI and FII yellow apically; TI and TII yellow, TIII brown; It and IIt yellowish, becoming dark brown distally, IIIt dark brown; all femora with only pale ventral hairs; TII with a single dorsal seta at one-eighth, and along with IIt1 covered with short, erect hairs (MSSC); TIII with an elongate, narrow callus and with a distinct, narrow, posterior slit between one-fifth and one-third (MSSC).

Wing hyaline; costa with distinct curved setae to *R2+3* (MSSC); *M2* weak; *R4+5* and *M1* subparallel in distal fifth of wing; CuAx ratio 1.7; haltere stalk brownish, club yellow.

Abdomen. Tergites 6–8 densely setose (MSSC), and segment 7 distinctly prolonged (Fig. 20); hypopygium (Fig. 21) black, with cercus dark brown; epandrium subrectangular; hypandrial arm less than twice as long as hypandrial hood; 2 short epandrial setae present; surstylus with ventral lobe rounded, bearing a basal pair of diverging pedunculate setae, and dorsal lobe digitiform; cercus elongate, with a distally setose, clavate projection at one-third.

Female. Similar to male except lacking MSSC, otherwise as follows: face wider, and clypeus not extending below eye margin; palp also with 4 or 5 long, black setae; TII with offset ad–pd setae at one-fifth, and with normal short vestiture; TIII with an anterior seta at one-fifth, and lacking a callus; costa unmodified.

Type data. Holotype male and 7 paratypes (1 male, 6 females; NZAC), Three Kings Islands, Great Island, Castaway Camp, December 1970, DSIR Entomology Div-

ision Expedition, various collectors.

Material examined. Type series only.
— / Three Kings Is / —.

Remarks. *P. insularis* is close to *P. johnsi*, but apart from hypopygial differences males have long hairs on abdominal segments 6 and 7 and distinctly different leg II MSSC.

Parentia johnsi new species

Figure 22, Map 12

Description. Male. Length 4.1–4.2 mm; wing 4.0x1.6 mm.

Head. Frons, face, and clypeus deep emerald green, with little pruinosity; face expanded laterally beneath antennae and tapering to clypeus; palp black; proboscis yellow; arista length about 1.5x head height (MSSC).

Thorax. Dorsum metallic blue-green; scutellum metallic blue; pleura metallic green, covered with a dusting of silvery pruinosity; thoracic setae long; 6 or 7 irregularly paired, long *ac* present; supernumerary setae present on mesoscutum.

Legs. Coxae and femora entirely dark metallic green, except FII knee yellow; TI yellow, black at base; It1 yellow, becoming black distally; TII metallic green basally, yellow in distal two-thirds (MSSC); IIt1 yellowish basally, becoming black distad; It and IIt distally, TIII, and IIIt black; FI with pale ventral hairs and a row of black pv setae in distal two-thirds (MSSC); TI with a pd seta at one-fifth; FII with some pale ventral hairs in proximal half and a row of black pv setae in distal third; TII with a long dorsal seta at one-fifth, and with distinctive paired ad and av rows of long, curved setae forming a U-shaped arch extending along the yellow distal two-thirds (MSSC); IIt with short, erect setae (MSSC); FIII with a row of pale ventral hairs in proximal two-thirds; TIII with a very weak swelling from one-third to two-fifths (MSSC).

I – 7.0; 7.0; 5.0/ 2.0/ 1.0/ 0.8/ 0.8
II – 10.0; 10.0; 7.0/ 3.5/ 3.0/ 2.0/ 1.0
III – 11.5; 13.0; 5.5/ 3.0/ 2.0/ 1.5/ 1.0

Wing hyaline; costa with a row of curved setae ending before *R1* (MSSC); CuAx ratio 1.2; haltere black.

Abdomen metallic emerald green with blue reflections, without matt bands at tergal overlap; terga 6 and 7 with strong distal setae; hypopygium (Fig. 22) black, with cercus brownish; epandrium subtriangular; hypandrial arm more than twice as long as hypandrial hood; 2 short epandrial setae present; surstylus with lobes expanded and with seta as figured; cercus with a digitiform ventral projection and an elongate distal extension.

Female. Similar to male except lacking MSSC, otherwise as follows: proboscis yellow; arista slightly longer than head height; lateral scutellars about one-third as long as medians; femoral knees I and II yellow; all tibiae yellow; all t1 yellowish, becoming darker distally; remaining tarsomeres black; femora with only pale ventral hairs; TII with a strong anterior seta at one-quarter; costa unmodified; haltere yellow.

Type data. Holotype male, WD, Harihari, mouth of Wanganui River, ex *Coriaria arborea*, 3 January 1977, P.M. Johns; and 4 paratypes, type locality, PMJ – 1 male, same data as holotype; 1 male, *Weinmannia*/broadleaf forest along road, 13–19 January 1979; 1 male, supralittoral dune vegetation, 3 January 1978; 1 female, *Weinmannia* / *Melicytus* / *Carpodetus* / *Schefflera* forest, 30 December 1976 to 1 January 1977 (all CMNZ, ex UMCM).

Material examined. Type series, plus 18 non-type examples (8 males, 10 females; NZAC, AMSA): AK – Karekare, on lupin flower, 21 Nov 1976. BP – 2 km S of Pikowai, 7 Dec 1989, on leaves of taupata, *Coprosoma repens*, and adjacent supralittoral vegetation. NN – Kaihoka Lake No. 1 Scenic Res., 21 Nov 1977; Karamea, Kangahu, Dec 1980, Malaise trap. BR – Nile Stm nr Charleston, beach, 20 Nov 1977.

AK, BP / NN, BR, WD.

Remarks. *P. johnsi* has been taken on coastal vegetation and in inland forest. The leg II MSSC are diagnostic for males, and the metallic green femora and yellow tibiae are diagnostic for females.

Parentia lyra new species

Figure 23, Map 13

Description. Male. Length 4.4 mm; wing 3.4x1.2 mm.

Head. Frons, face, and clypeus metallic blue-green; face slightly bulging; sides of face wide, converging somewhat ventrally; clypeus extending to base of eyes; palp black, with black setae; proboscis yellowish; arista slightly longer than head height.

Thorax. Dorsum metallic blue-green; pleura metallic green, covered with grey pruinosity; 3 regularly paired, long *ac* present; some specimens with a pair of short supernumerary setae between median scutellars (MSSC).

Legs. Coxae and femora dark metallic green; tibiae and tarsi dark brown; CI with a distolateral group of strong, pale setae contrasting with dark coxae and legs; FI with some weak, pale av setae and with a row of strong, black pv setae along entire length (MSSC); FII with strong, pale av and pv setae in basal third, and with a row of black pv setae extending almost to apex (MSSC); TII with a pd seta at one-fifth and with some short apical setae (MSSC); FIII with 4

or 5 strong, pale ventral setae in proximal two-thirds and 3 strong, black ventrals in distal third (MSSC); TIII without a callus.

I – 8.0; 7.5; 4.5/ 1.5/ 1.0/ 0.8/ 0.8
II – 8.5; 9.5; 5.5/ 2.2/ 1.8/ 1.0/ 0.8
III – 10.0; 13.0; 4.5/ 3.0/ 1.2/ 1.0

Wing. Membrane smoky; costa unmodified; *M2* weak; CuAx ratio 2.8; haltere black.

Abdomen. Hypopygium (Fig. 23) black, with cercus yellowish; hypandrium and aedeagus arching up from subrectangular epandrium; hypandrial arm more than twice as long as hypandrial hood; a single long epandrial seta present; surstylus projecting from curved indentation of epandrium, with setae as figured; cercus basally enlarged, setose, distally with a lyre-shaped fork, the longer inner arm bearing a distinctive long, twisted apical seta.

Female. Similar to male except lacking MSSC, otherwise as follows: femora with only short, pale ventral hairs; TII with an offset ad-pd pair at one-fifth; TIII with an anterior seta at one-fifth; haltere stalk brownish, club yellow.

Type data. Holotype male and 6 paratypes (3 males, 3 females; all NZAC), MC, Mt Somers, 18–19 January 1958, E.S. Gourlay.

Material examined. Type series, plus 8 non-type examples (5 males, 3 females; CNCI, NZAC): MB – Rainbow S.F., Wairau R., Chinaman Stm, 31 Dec 1976. MC – Cass, 2000 ft [600 m], 17–19 Jan 1974; Banks Pen., McLennans Bush, 16 Dec 1958. Also: possible females, MB, Island Saddle NE of L. Tennyson, 1372 m, 21 Jan 1976; L. Tennyson, 1220 m, 21 Jan 1976.

— / MB, MC.

Remarks. The specific name of *P. lyra* refers to the distinctively lyre-shaped cercus.

Parentia magniseta new species

Figure 24, Map 14

Description. Male. Length 5.6–5.8 mm; wing 4.7x1.9 mm; similar to *P. aotearoa* except as follows.

Head. Frons, face, and clypeus metallic blue-green; clypeus covered with only a dusting of silvery pruinosity, not evident in anterior view; sides of face slightly converging, and male clypeus extending beyond base of eyes (MSSC).

Legs. FI with short, pale ventral setae in proximal half and 5 or 6 long, black pv setae in distal half (MSSC); femora with short, pale av and pv setae only; TII with a very strong ad seta and a weaker pd seta at one-fifth.

Abdomen. Hypopygium as in Fig. 24; surstylus distinctive, with a long, projecting dorsal lobe bearing a strong median seta, and ventral lobe with a median projection and setae as figured; cercus deeply forked, with a pedunculate seta at base of fork, its ventral arm subequal in length to dorsal arm and bearing an apical beak and a subapical pedunculate seta.

Female. Similar to female of *P. aotearoa*.

Type data. Holotype male and 1 paratype female (NZAC), ND, Waipoua Forest Reserve, Kawerua River, 19 October 1966, J.S. Dugdale.

Material examined. Type specimens, plus 15 non-type examples (11 males, 4 females; NZAC): AK – Bethells, on scrubby pasture; Noises Is, Otata I., on beach, beating *Coprosma repens*, 1 Nov 1977; Browns Bay, 16–21 Oct 1948, 13–14 Nov 1949; Green Lane, 17 Oct 1949; Whatipu Beach, 28 Oct 1969. TK – Mokau, Fodder Crop Survey, 16 Mar 1959.

ND, AK, TK / —.

Remarks. *P. magniseta* is very close to *P. aotearoa* (q.v.).

Parentia malitiosa (Hutton)

Figures 25–27, Map 15

malitiosus Hutton, 1901: 33 *(Psilopus)*.
villanum Parent, 1933a: 17 *(Chrysosoma)* new synonymy.

Description. Male. Length 4.8–4.9 mm; wing 4.0x1.3 mm.

Head (Fig. 25). Vertex, frons, face, and clypeus metallic blue-green; face not bulging; clypeus extending only to base of eyes; palp brown; proboscis yellow to brownish; arista about 3x head height in length, tapering to a very thin thread apically (MSSC).

Thorax. Dorsum metallic emerald green; scutellum metallic blue; pleura metallic green, with a dusting of silvery pruinosity; 3 paired, long *ac* present; 3 or 4 supernumerary setae present mesad of humerus; scutellum with 1 or 2 pairs of supernumerary setae on margin.

Legs. Coxae and femora entirely dark metallic green; tibiae and tarsi black; legs relatively long; femora rather thin, not swollen basally; FI relatively thin, with black av setae along entire length to apex; FII with black ventral setae, these decreasing in size distally, and with a group of short, pale, ventral setae in basal third (MSSC); IIt1 very long (MSSC); TII and IIt1 bearing 2 continuous rows of modified setae, a pd row of erect, club-like setae mirrored by an ad row of curved, crocheted setae which alone continues through to IIt4 (MSSC); FIII with pale ventral

setae; TIII with a callus at one-quarter marked by a narrow slit on posterior surface (MSSC).

I – 8.0; 7.5; 5.0/ 1.5/ 1.0/ 0.8 / 0.5
II – 10.0; 12.0; 11.0/ 2.0/ 1.5/ 1.2/ 0.8
III – 12.0; 14.0; 6.0/ 3.0/ 2.0/ 1.5/ 1.0

Wing. Membrane with a smoky wash; costa unmodified; *M1* and *R4+5* closely approaching at wing apex; CuAx ratio 2.8; haltere black.

Abdomen metallic green with bronze reflections; terga 1–6 with short black and pale setae; hypopygium (Fig. 27) black, with cercus yellow; epandrium subtriangular; hypandrial arm extending well beyond apex of hypandrial hood; 2 epandrial setae present; surstylus with ventral lobe bearing a median projection and an external pedunculate seta, and dorsal lobe bearing a triangular projection and distinctive setae as figured; cercus with a distal projection bearing strong apical setae, and apically a setose ventral projection.

Female. Similar to male except lacking MSSC, otherwise as follows: distinctly smaller, body length 3.0 mm; wing 2.9x1.0 mm; face and clypeus with some pruinosity; face wider and not as strongly tapering (Fig. 26); proboscis distinctly yellow; pedicel with only short setae; arista unmodified, shorter; scutellum sometimes with an additional pair of short supernumerary setae along margin; femora metallic green with short, pale ventral hairs; tibiae brownish; TII–IIt unmodified; TII with an ad–pd pair at one-fifth; TIII without a callus, and with anterior seta at one-fifth; haltere yellow.

I – 6.5; 6.0; 3.5/ 1.1/ 0.8/ 0.5/ 0.5
II – 7.5; 7.0; 4.5/ 1.5/ 1.2/ 0.8/ 0.8
III – 7.0; 10.0; 3.5/ 2.2/ 1.2/ 1.0/ 1.0

Type data. Hutton described *Psilopus malitiosus* from females only, and stated that males were unknown. However, in the CMNZ a pink 'Type' label is on a male specimen of unknown provenance but which has the determination label "*Psilopus malitiosus* Hutt., F.W. Hutton det." This specimen is not a type. Two female specimens, from Ashburton and Christchurch, as noted in Hutton's original description, are regarded as part of the syntype series (additional female syntypes are at BMNH). A female bearing the labels "Christchurch, Hutton" and "*Psilopus malitosus* [sic] Hutt., F.W. Hutton det." is here designated as lectotype (CMNZ). Parent (1933b, p. 340) described males and referred the species to *Condylostylus*.

The female holotype of *Chrysosoma villanum* from Okere is similar to female syntypes of *P. malitiosus* (compared together at BMNH).

Material examined. Type series, plus more than 250 non-type examples (NZAC, CNCI, BMNH, USNM, UMCM, UCNZ, AMSA): AK – Avondale, 1 Jan 1950; Sandringham, on potatoes, 25 Oct 1942; Mt Eden, 23 Dec 1947; Bethells, on scrubby pastures, 23 Dec 1967. WO – Waipa Co. nr Hamilton, 29 Oct 1967; Eureka, fodder crop survey, 3 Mar 1959; Hamilton, on Jerusalem artichoke leaf, 29 Oct 1947. TO – Taupo, 24–26 Dec 1931; Whakamaru, 755 ft [225 m], 26 Nov to 23 Dec 1968; Kopikopiko Stm N of Minginui, 5 Dec 1989, yellow pan trap; Kaimanawa Forest Park, sweeping *Nothofagus*, 20 Feb 1979; Waikato/ Waipakihi junction, 914 m, on *Nothofagus*, 19 Feb 1979. TK – Ratanui, 23 Nov 1960. HB – Puketitiri, Little Bush, 28 Nov 1981, 20 Feb 1986. NN – Riwaka, 26 Nov 1941; Aniseed Vly, 29 Dec 1953; Nelson, Tahunanui, 12 Jan 1976; Takaka Hill, 2000 ft [600 m], 12 Jan 1976. BR – L. Rotoiti, 1–12 Jan 1976, and 610 m, 4 Feb 1976; Blackball, Mar 1920; Greymouth, 21 Jan 1957. WD – Kumara, 20 Feb 1929. MC – Christchurch, Feb 1924; Buckleys Bay Res., 14 Jan 1989; Sugarloaf, 15 Jan 1981. MK – Tarras, 1000 ft [300 m], 16–22 Jan 1954; Mt Cook NP, Tasman Vly W of Unwin Hut, 2200 ft [660 m], on low herbage, 31 Jan 1972; Tasman Vly, Ackland Lagoon, 2000 ft [600 m], 1 Feb 1972; S of Kea Point, 3000 ft [900 m], 8 Feb 1972; L. Tekapo, Jan 1981, Malaise trap; L. Pukaki, 29 Dec 1928; Tekohi, 27 Jan 1976. CO – Luggate, on *Kunzea ericoides*, 25 Feb 1980. OL – Cardrona Ra., 800 m, 7 Dec 1977. FD – Darran Mtns, Tutoko Bench, 1020 m, 14 Jan 1977, Malaise trap.

AK, WO, BP, TO, TK, HB / NN, BR, WD, MC, MK, CO, OL, FD.

Remarks. *P. malitiosa* occurs in a variety of native vegetation up to elevations of 1000 m, as well as in disturbed and agricultural habitats.

Parentia milleri (Parent)

Figures 28, 29, Map 16

milleri Parent, 1933b: 336 *(Chrysosoma)*.

Description. Male. Length 3.0–3.1 mm; wing 2.7x1.0 mm.

Head. Ocellar tubercle with a pair of strong, diverging setae and 2 pairs of short hairs; vertex and frons metallic blue-green, without pruinosity; ventral postcranium with short, black setae.

Thorax. Dorsum metallic blue-green; pleura metallic green, with grey-silvery pruinosity; thoracic setae black; lateral scutellar setae about one-third as long as medians.

Legs. CI and CII with dark anterior hairs, CIII with a pale lateral seta; femora without major ventral setae; TI with 2 weak dorsal setae; It3-5 slightly flattened, appearing curled in dried specimens (MSSC); TII with a strong ad–pd pair at one-fifth, pd at two-thirds, and some short apical setae; TIII without a callus, but with a strong ad seta at one-quarter.

I – 5.5; 5.0; 3.0/ 1.0/ 0.6/ 0.5/ 0.5
II – 6.5; 6.0; 3.5/ 1.5/ 1.2/ 0.8/ 0.8
III – 7.0; 9.0; 3.0/ 2.0/ 1.2/ 1.0/ 0.8

Wing as in Fig. 28; CuAx ratio 0.7; lower calypter brown, with a fan of black setae.

Abdomen shining metallic green with bronze reflections; terga 1–6 with short, black setae; hypopygium (Fig. 29) entirely black; epandrium subtriangular; hypandrial arm extending well beyond apex of hypandrial hood; 2 short epandrial setae present; surstylus with ventral lobe bearing a median projection and 4 external pedunculate setae, and dorsal lobe digitiform; cercus setose, tapering, with a short distal projection.

Female. Similar to male except lacking MSSC, otherwise as follows: ventral postcranium also with black setae; TI also with 2 dorsal setae; TIII with anterior seta at one-fifth.

Type data. Parent described *Chrysosoma milleri* from a single male collected from Heyward Point, Purakanui (NZAC).

Material examined. Holotype, plus 10 non-type examples (8 males, 2 females; UCNZ, NZAC): WI – S of Foxton, S.H. 1, dune area, 10 Nov 1977; Turakina Beach S of Wanganui, sand dunes, marshes, 10 Nov 1977. WN – 2 km S of Paekakariki, sand dunes, 13 Nov 1977. NN – Tahunanui, 13 Oct 1928. KA – Puketa, beach sand, 19 Nov 1977. MC – Banks Pen., Okains Bay, tussock grassland, 22 Dec 1960. SI – Codfish I., back dunes, 8 Nov 1981 to 12 Jan 1982.

WI, WN / NN, KA, MC, DN / SI.

Remarks. *P. milleri* is readily recognised by the black setae on the postcranium and the closely parallel *R4+5* and *M1*. Although Parent described this small species as having yellow halteres, the male halteres are in fact infuscated and greyish. It is very close to *P. schlingeri*.

Parentia mobile Hutton

Figures 30, 31, Map 17

mobilis Hutton, 1901: 32 *(Psilopus)*.

Description. Male. Length 4.7–4.9 mm; wing 4.0x1.5 mm; similar to *P. fuscata* except as follows.

Head (Fig. 30). Vertex and frons metallic blue-green, without pruinosity; face and clypeus covered with dense silvery pruinosity; clypeus extending beyond base of eyes (MSSC); pedicel with a strong dorsal seta and 4 or 5 shorter ventral setae; arista about 3x head height in length, with a small, white-tipped, lanceolate apical flag (MSSC) (see also Remarks, below).

Legs. Coxae and remainder of legs mostly dark metallic green, but femoral knees I and II yellow; femora with some pale ventral hairs; It1 with some short, pale ventral pile (MSSC); TIII with an elongate, narrow callus hardly visible in anterior view, and with a distinct, narrow posterior slit between one-fifth and one-third (MSSC).

Wing hyaline; costa with curved setae decreasing in size distally (MSSC); CuAx ratio 1.4.

Abdomen. Hypopygium (Fig. 31) black; epandrium subtriangular, with fine pubescence along distal margin; hypandrial arm not extending beyond hypandrial hood; ventral lobe of surstylus large, with a median projection and an apical seta; dorsal lobe of surstylus with setae as figured; cercus deeply forked, with dorsal arm bearing long, pale setae and ventral arm mostly bare, but with a distinctive pale, bean-shaped apical seta.

Female. Similar to male except lacking MSSC, otherwise as follows: face wider; arista unmodified, slightly longer than head height; femora with only short ventral hairs; TII with an offset ad–pd pair at one-fifth; TIII with an anterior seta at one-fifth; costa unmodified.

Type data. From the type series of *Psilopus mobilis* (CMNZ) I here designate a male lectoype bearing the labels "Christchurch, Hutton", "*Psilopus mobilis* Hutton, F.W. Hutton, det.", "594", and a pink label "type".

Material examined. Type series, plus more than 150 non-type examples (NZAC, CNCI, BMNH, UCNZ, AMSA): ND: Bay of Islands, 2 Jan 1958; Waipoua Forest, 1270 ft [380 m], 24 Dec 1968; Poor Knights Is, Tawhiti Rahi, 29 Dec 1980. AK – Lynfield, on window, 19 Jan 1984. TO – Taupo, 31 Jan 1943; Whakamaru, 755 ft [225 m], 23 Nov to 12 Dec 1968; Kopikopiko Stm N of Minginui, 5 Dec 1989, yellow pan traps. HB – Haumoana, 8 Nov 1979. TK – Paiaka, no date. RI – Ohakune, no date. WI – Halcombe, 23 Nov 1960. WN – Paekakariki, Queen Elizabeth Park, 11 Nov 1977; Wellington, Dec. SD – Stephens I., 9–12 Jan 1931. NN – Nelson, no date. KA – Kowhai R., Feb; Cheviot Co., Conway Flat, 15 Nov 1974. NC – Springerville, 15 Dec 1977. MC – Christchurch, Jan; Deans Bush, Jan; Sumner, 16 Dec 1965; Purau R., Oct; Kaituna Scenic Res., 23 Dec 1980. SL – Tiwai Point, 28 Jan 1976. SI: – Lees Bay, 19-23 Jan 1975; Codfish I., 8 Dec 1981 to 12 Jan 1982.

ND, AK, TO, HB, TK, RI, WI, WN / SD, NN, KA, NC, MC, SL / SI.

Remarks. The lanceolate male aristal flag of *P. mobile* is distinctive, and usually has a black base and a white tip. However, specimens from the Auckland and Northland districts have an entirely black flag. I regard this as intraspecific variation only, since in all other characters, including the diagnostic bean-shaped cercal seta, the speci-

mens are identical. Females of *P. mobile* cannot be separated reliably from females of *P. fuscata* and *P. griseicolle*.

Parentia modesta (Parent)

Figure 32, Map 18

modestus Parent, 1933b: 342 *(Condylostylus)*.

Description. Male. Length 4.5–4.8 mm; wing 3.8x1.4 mm.

Head. Frons, face, and clypeus metallic blue-green, with a dusting of grey pruinosity; face bulging; palp dark brown, with 2 strong setae; proboscis black; arista length about 1.5x head height.

Thorax dark metallic blue-green with little pruinosity, even on pleura; 4 pairs of long *ac* present; scutellum with supernumerary setae, 2 pairs on disc and a pair on margin laterad of lateral scutellars (MSSC).

Legs. Coxae and femora metallic green; tibiae and tarsi dark brown; FI with a row of black ventral setae, longer than femoral width (MSSC); FII with a few long, pale, ventral hairs basally, continuing as a row of black ventral setae to apex (MSSC); TII with a pd seta at one-fifth; FIII with some pale ventral setae along entire length; TIII without a callus; IIIt1 twice as long as IIIt2; IIIt3-5 only slightly flattened (MSSC).

Wing. Membrane with a faint smoky wash; costa unmodified; CuAx ratio 2.0; haltere black.

Abdomen dark metallic blue-green; hypopygium (Fig. 32) entirely yellow; epandrium subrectangular; hypandrial arm almost as long as aedeagus; only 1 epandrial seta present; surstylus with ventral lobe bearing a median projection, and dorsal lobe bearing 2 long setae and other setae as figured; cercus with a short distal projection bearing long setae, and with stout main arm bearing 3 or 4 flattened, incurved apical setae.

Female. Similar to male except lacking MSSC, otherwise as follows: face wider; supernumerary setae also present on disc and laterad of main scutellar setae; all femora with only short ventral hairs; TII with an offset ad-pd pair at one-fifth; IIIt unmodified; haltere also black.

Type data. The male holotype and female allotype of Parent's *Condylostylus modestus* are from Orita and Waiho respectively (NZAC). Additional female paratypes are from Mt Grey and Ohakune (BMNH; see Remarks, below) and Dart River, Wakatipu (CMNZ).

Material examined. Type series, plus seven non-type examples (NZAC, CNCI, BMNH): MB – L. Tennyson, 1200 m, sweeping bog, 21 Jan 1976. NC – Arthurs Pass, 3000 ft, 16–19 Dec 1959. WD – Kellys Creek campground, nr Otira, 20–23 Jan 1974. MK – Mt Cook N.P., Governors Bush, 2600 ft [780 m], ex *Dacrydium bidwilli*, 27 Jan 1972; S of Kea Point, 3000 ft [900 m], 8 Feb 1972; Tasman Vly, Unwin Hut, 2300 ft [690 m], ex low shrubs at margin of *Nothofagus* forest, 8 Feb 1972. FD – Tutoko Bench, 945 m, 9–16 Jan 1977, pan trap.

?RI / MB, NC, WD, MK, OL, FD.

Remarks. *P. modesta* is a striking dark metallic green with strongly contrasting entirely yellow hypopygium, and is unmistakeable among the New Zealand fauna. It appears to be most closely related to *P. malitiosa*.

All reliable records are from montane South Island sites. Although Parent listed Ohakune as the locality of a paratype, the specimen is an isolated female, and such a North Island record needs to be confirmed by males.

Both males and females have black halteres, whereas in all other *malitiosa*-group species females have yellow halteres. Also, contrary to Parent's description, female *P. modesta* have supernumerary hairs on the disc of the scutellum.

Parentia nova (Parent)

Figures 33, 34, Map 19

novum Parent, 1933b: 344 *(Leptorhethum)*.

Description. Male. Length 3.0 mm; wing 2.4x1.0 mm.

Head (Fig. 33). Vertex and frons metallic green, with a dusting of pruinosity; face and clypeus covered with silvery pruinosity; clypeus extending to base of eyes; palp dark brown, with black setae; antenna dark brown; 1st flagellomere short, subtriangular; arista distinctly dorsal, its length about equal to head height.

Thorax. Dorsum metallic blue-green, with a dusting of grey pruinosity; pleura covered with grey pruinosity.

Legs. CII and CIII brown with metallic green reflections; CI and remainder of legs yellow, except IIIt2–5 dark brown; CI and CII with pale anterior hairs, and CIII with a single pale, lateral seta; It1 with pale ventral pile in basal third (MSSC); TII with a strong ad seta and a weaker pd seta at one-fifth, and with apical setae.

I – 5.0; 5.2; 3.0/ 1.2/ 0.8/ 0.5/ 0.5
II – 7.0; 7.5; 4.0/ 2.0/ 1.1/ 1.0/ 0.8
III – 7.0; 9.0; 3.5/ 2.0/ 1.0/ 1.0/ 0.8

Wing hyaline; costa unmodified; CuAx ratio 1.3; lower calypter yellow, with a fan of brownish setae.

Abdomen metallic green with bronze reflections, and with matt brown bands covering tergal overlap; hypopygium (Fig. 34) dark brown, with cercus pale yellow; epandrium subrectangular; hypandrial arm less than twice as long as hypandrial hood; 2 short epandrial setae present; surstylus with ventral lobe bearing a median projection, and dorsal lobe bearing distal setae as figured; cercus with pale setae and a digitiform arm at midlength.

Female. Similar to male except lacking MSSC, otherwise as follows: TII with an offset ad–pd pair at one-fifth.

Type data. Parent described *Leptorhethum novum* from a single female taken at Purau Creek, Banks Peninsula (NZAC). The species is not a *Leptorhethum* (see discussion of this genus in Bickel, in press), but is referred to *Parentia*. Males associated with similar females are described here.

Material examined. Type specimen, plus 4 non-type examples (2 males, 2 females; CMNZ, NZAC): MC – Banks Pen., Rhodes Scenic Res., swept ex grass and bushes, 1 Jan 1981. Also: no label data, ex Miller Collection.

— / MC.

Remarks. The male legs in *P. nova* lack strong MSSC (except for the IIIt3–5 pads) and have a chaetotaxy similar to that of females.

Parentia pukakiensis new species

Figures 35, 36, Map 20

Description. Male. Length 3.3 mm; wing 2.6x1.0 mm; similar to *P. fuscata* except as follows.

Head. Frons, face, and clypeus metallic emerald green, with only a slight dusting of grey pruinosity; clypeus extending slightly below eyes; face and frons strongly bulging, forming a projecting shelf on which antennae arise (MSSC) (Fig. 35); scape globular, vase-like (MSSC); 1st flagellomere triangular; arista dorsoapical, long (about 4x head height), with a small, white-tipped, lanceolate apical flag (MSSC).

Thorax. Dorsum metallic green; 2 irregularly paired long *ac* present; lateral scutellar setae reduced to weak hairs, about one-fifth as long as median setae.

Legs. Coxae and femora metallic green; femoral knees yellow; TI and It1 yellowish; TII metallic green; TIII brownish; remainder of tarsomeres brown; FI with some pale ventral hairs in proximal half, other femora mostly bare; It1 with ventral pale pile (MSSC); It3 flattened, wider than either It2 or It4 (MSSC); TII dorsoventrally flattened (MSSC), with a pair of strong apical setae; TIII with a narrow callus, hardly visible in anterior view, and with a distinct posterior slit between one-fifth and one-third (MSSC).

Wing somewhat expanded distally (MSSC); costa with distinct curved setae to *R2+3* (MSSC); *M* with a strong bend at juncture of *M2*; *R4+5* and *M1+2* almost meeting at wing apex; CuAx ratio 1.3; haltere with club pale yellow.

Abdomen. Hypopygium (Fig. 36) entirely black; epandrium subrectangular; hypandrial arm less than twice as long as hypandrial hood; 2 short epandrial setae present; surstylus with dorsal lobe bearing 5 or 6 strong distal setae; cercus with a digitiform projection at one-third bearing a distinctive group of strong, curved setae at midlength, distally elongate and bearing long setae.

Female. Similar to male except lacking MSSC, otherwise as follows: face not strongly protruding; scape not swollen; 1st flagellomere subtriangular; arista unmodified, short (only slightly longer than head height); all femora ventrally bare; tibiae and all t1 yellowish; tarsi becoming dark distally; It unmodified; TII not flattened, but with an offset ad–pd pair at one-fifth; costa unmodified.

Type data. Holotype male, MK, Mt Cook National Park, Tasman Valley, 4 miles [6.4 km] S of Ball Hut, 3400 ft [1020 m], low shrubs near lateral moraine, 4 February 1972, R.A.F.M.A. Mt Cook Expedition, W.J. Knight & P.S. Broomfield (BMNH); and 15 paratypes (BMNH, NZAC) – 4 males, 9 females, same data as holotype; 1 female, same data except Tasman Valley, Ackland Lagoon, 2000 ft [600 m], 1 February 1972; 1 female, same data except Tasman Valley W of Lake Pukaki, 2000 ft [600 m], 2 February 1972.

Material examined. Type series, plus 2 non-type examples (1 male, 1 female; UCNZ), MC, Banks Peninsula Survey, Mt Fitzgerald Scenic Res., exposed shrubs, 14 Jan 1981.

— / MC, MK.

Remarks. In *P. pukakiensis* TII and It show distinctive MSSC modifications. The strongly bulging face and vase-like antennal scape (both MSSC) are unusual in *Parentia* and more characteristic of the widespread Old World tropical genus *Plagiozopelma* or such species as *Chrysosoma crinicorne* Wiedemann.

Parentia recticosta (Parent)

Figures 37–39, Map 21

recticosta Parent, 1933: 340 *(Condylostylus).*

Description. Male. Length 4.8 mm; wing 4.0x1.8 mm.

Head. Frons, face, and clypeus metallic green, covered with silvery grey pruinosity; clypeus extending slightly beyond base of eyes; palp black, with black setae; proboscis dark brown; 1st flagellomere short, subrectangular; arista distinctly dorsal, its length about 1.5x head height.

Thorax. Dorsum metallic blue-green; pleura metallic green, covered with grey pruinosity; thoracic setae black; 3 regularly paired long *ac* present; lateral scutellar setae about one-fifth as long as medians.

Legs. Coxae and femora metallic green; femoral knees

I and II yellow only at tip; remainder of legs black; CI and CII with pale anterior hairs, and CIII with a group of pale lateral setae; FI with some pale ventral setae and 2 black setae in proximal half; FII with some pale ventral hairs to one-third, and a few black ventrals to one-half; TII with an ad seta at one-fifth; FIII with scattered pale ventral setae to one-half; TIII without a callus.

Wing (Fig. 37). Apex distinctly subrectangular, with *R2+3*, *R4+5*, and *M1* subparallel to apex (MSSC); costa with a row of curved setae to *R2+3* (MSSC); CuAx ratio 1.8; lower calypter brown, with a fan of black setae; haltere brown, with club yellowish.

Abdomen. Segments 4-8 covered with short, black, spine-like setae (MSSC); segment 7 forming an elongate peduncle for hypopygium (Fig. 38); hypopygium black, with cercus brownish (Fig. 39); surstylus elongate, with an apical U-shaped indentation; cercus distinctive, with 2 elongate subparallel arms, the dorsal arm bearing strong marginal setae and the ventral arm bearing fine distal hairs.

Female. Similar to male except lacking MSSC, otherwise as follows: arista slightly longer than head height; all femora ventrally with only weak pale hairs; TII with an offset ad–pd pair at one-fifth, the ad seta particularly strong; IIIt unmodified; wing with normal apical curvature but *R2+3*, *R4+5*, and *M1* also subparallel to apex (MSSC); costa unmodified; abdominal setation unmodified.

Type data. Parent based *Condylostylus recticosta* on two males, holotype and paratype, from Ohakune (BMNH).

Material examined. Type specimens, plus 42 non-type examples (NZAC, AMSA, ZMUC, BPBM): ND – Puketi Forest, Waipapa R., 1 Dec 1989. CL – Little Barrier I., Turners Stm, 29 Nov 1954; road E of Tapu, 3 Dec 1989. BP – Rotorua, 12-13 Dec 1979. TO – Kopikopiko Stm N of Minginui, yellow pans, 5 Dec 1989. TK – Mt Egmont, Stratford House, 2775 ft [830 m], 31 Nov 1967. HB – Puketitiri, Little Bush, 20 Feb 1986, Malaise trap.

ND, CL, BP, TO, TK, RI, HB / —.

Remarks. I collected a large series of *P. recticosta* in yellow pans along Kopikopiko Stream, a fast-moving open creek. Although its cercus is somewhat modified from the usual *fuscata*-group form, *P. recticosta* is placed in that group on the basis of head characters.

Parentia restricta (Hutton)

Figures 40–42, Map 22

restrictus Hutton, 1901: 33 *(Psilopus).*

dichaetum Parent, 1933b: 334 *(Chrysosoma)* new synonymy.

Description. Male. Length 4.1-4.5 mm; wing 2.9–3.4 x 1.2–1.3 mm.

Head (Fig. 40, 41). Ocellar tubercle with a pair of strong diverging setae and 2 pairs of short posterior setae; frons metallic green, covered with dense grey pruinosity; face and clypeus metallic green with bronze reflections and with grey pruinosity; sides of face parallel; clypeus extending beyond base of eyes (MSSC); palp black, bearing a distinctive strong, L-shaped apical seta projecting beyond proboscis (MSSC); proboscis black; antenna black; pedicel with a strong dorsal seta and 4 or 5 shorter ventral setae; 1st flagellomere short, triangular; arista apical, long (about 2.5x head height), with a distinctive expanded, white, ovate apical flag (MSSC).

Thorax. Dorsum metallic blue-green, with faint bronze vittae over dc row; pleura with grey-silvery pruinosity; 3 paired, long *ac* present; lateral scutellar setae about one-third as long as medians.

Legs. Coxae and femora metallic green; femoral knees yellow; TI and TII varying in colour from yellowish to brown, TIII dark brown; It and IIt yellowish to brown, IIIt dark brown; CI and CII with pale anterior hairs, CIII with a group of pale lateral setae; FI swollen basally, with strong pale to brownish ventral setae in proximal half, some almost as long as half length of FI (MSSC); It1 with pale ventral pile along entire length (MSSC); FII with an av row of short, black setae and a group of longer, pale ventral setae basally (MSSC); TII with a strong ad seta and weaker pd setae at one-fifth; FIII with a group of white ventral setae along basal one-third (MSSC); TIII without a callus; IIIt3–5 only slightly flattened, but ventrally pad-like (MSSC).

I – 7.0; 6.0; 4.5/ 1.5/ 1.0/ 0.8/ 0.8

II – 7.0; 8.5; 5.5/ 2.0/ 1.2/ 0.8/ 0.8

III – 10.0; 12.0; 4.0/ 2.5/ 1.5/ 1.0/ 0.8

Wing hyaline; veins strongly melanised; costa unmodified; *M2* weak; CuAx ratio 1.7; lower calypter brown, with a fan of black setae; haltere yellow.

Abdomen metallic green with bronze reflections; terga 1–6 with short black and pale setae; hypopygium (Fig. 42) entirely black; epandrium subrectangular; hypandrial arm with 2 relatively short epandrial setae; surstylus thick, clavate, with setae as figured; cercus with a strongly setose distal projection and an emarginate, hood-like ventral projection enclosing a digitiform projection which bears pinnate apical setae.

Female. Similar to male except lacking MSSC, otherwise as follows: face wider, and clypeus not extending below eye margin; palp without a strong apical seta; arista unmodified, short, only slightly longer than head height; femora with short ventral setae; It1 unmodified; TIII with an anterior seta at one-fifth; IIIt unmodified.

Type data. Hutton described *Psilopus restrictus* from a

single female taken at Christchurch (CMNZ). The species was overlooked in Parent's (1933b) monograph, and remained unrecognised. However, the holotype is a specimen of the widespread and common New Zealand species Parent described as *Chrysosoma dichaetum* (holotype male Nelson; NZAC). The Parent species is here placed in synonymy.

Material examined. Type specimens, plus more than 600 non-type examples (NZAC, CMNZ, CNCI, BPBM, BMNH, AMSA, ZMKD, USNM, CASC): ND – Omahuta Kauri Sanctuary, 9 Mar 1977. AK – Noises Is, Motuhoropapa I., Snail Flat, 2–5 Nov 1977; Mt Albert, no date; Mt Eden, 5 Oct 1949, 8 Apr 1950, 12 Jan 1969; Lynfield, on porch, in garden, on tree trunk, 12 Dec to 20 Jan, various years; Titirangi, 30 Jan 1963; Huia, May 1975. CL – Little Barrier I., 20 Feb 1976, 25 Nov 1954. WO – Eureka, fodder crop survey, 3 Mar 1959; Waipa Co., 4 Nov 1967; Hamilton, 31 Oct 1967. BP – Rotorua, 12–13 Dec 1972; Rotorua, For. Res. [Inst.], Feb 1989; L. Tikitapu, 350 m, 4 Nov 1977. TO – Taupo, 23 Feb 1941; Whakamaru, 760 ft [230 m], 26 Nov to 4 Dec 1968; Kopikopiko Stm N of Minginui, 5 Dec 1989, yellow pan trap; Kaimanawa For. S of Turangi, *Nothofagus* forest, 24 Mar 1988; Kaimanawa North, 762 m, sweeping *Hebe*, 20 Feb 1979. GB – Gisborne, 2 Jan 1976; East Cape, Hicks Bay, 25 Nov 1959. HB – Puketitiri, Little Bush, 17 Feb 1982, 20 Feb 1986, 28 Feb 1984, 9 Nov 1981, Malaise trap. RI – Ohakune, no date. WI – Foxton, 25 Mar 1957. WN – Paekakariki, Queen Elizabeth Park, 11 Nov 1977; Pori, 21–28 Feb 1956. SD: Chetwode I., 15–16 Jan 1964; Okiwi Bay, Mar 1984. NN: Caanan Saddle, 1000 m, 1 Feb 1976; Nelson, Nov. BR – L. Rotoiti, 610 m, 1–12 Jan 1976, 4 Feb 1976; Lewis Pass, 500 m, sweeping grass, 19 Jan 1976. MB – Rainbow Vly, Coldwater Hut, 914 m, sweeping *Nothofagus cliffortioides*, 22 Jan 1976; L. Tennyson, 1220 m, 21 Jan 1976; Molesworth, 24 Mar 1976; Hanmer Springs, Jollies Pass, 840 m, 20 Jan 1976; Altimarlock, 4600–5550 ft [1380–1665 m], 16 Feb 1959. KA – The Dooge, Inland Road. NC – Hurunui, Seward R., 5–7 Dec 1975; Mt Grey, 16 Jan 1958. MC – Banks Pen.: Montgomery Res., Mt Fitzgerald, Te Oka, Kennedys Bush, Peraki Saddle, Sugarloaf Res., Kaituna Vly, Mt Sinclair, Ahurini Res., Teddington, Purau Stm 200 ft [60 m], Hilltop, and Kaituna on *Leptospermum scoparium*, *Nothopanax*, and *Pittosporum tenuifolium*, from 24 Oct to 24 Jan, various years; Mt Somers, 18–19 Jan 1958; Cass; Peel Forest, Scotsburn Stn, podocarp/broadleaf forest, 24–31 Dec 1975. WD – Galbreath Ra., Onewhato, 27 Jan 1985; road to Franz Josef Glacier, 27 Feb 1976; 5 km E of Abut, 7 Dec 1976. MK – Mt Cook N.P., Tasman Vly nr Unwin Hut, 2300 ft [690 m], low shrubs at *Nothofagus* forest margin, 30 Jan 1972; Ahuriri Vly nr Ben Avon, 2 Feb 1976; L. Tekapo, Jan 1981. OL – L. Moke, nr Queenstown, 6 Dec 1977. DN – Dunedin: Mt Cargill, Nov; Leith Saddle, 19 Jan to 3 Feb 1977, 26 Feb to 6 Mar 1977, 22–29 Jan 1976, 19–26 Dec 1975. FD – Milford, Fiordland N.P., 3 Feb 1976. SL – Roslyn, Nov; Clifton, 26 Jan 1976; Hokonui Hills, Hedgehope, 460–610 m, 10 Feb 1976; Invercargill, Queens Park, 14 Mar 1977; Waimatua, 31 Jan 1976. SI – Lees Bay, 4–29 Jan 1975. Also (indeterminate): Barlows Bay, 30 Oct 1940.

Throughout, excl. WA / SC, CO.

Remarks. *P. restricta* occurs in a wide variety of natural habitats as well as disturbed cultivated and urban areas. Individuals are sometimes seen resting head-up on such vertical surfaces as tree trunks and windows. The clypeus is prolonged well below eye level in males, unusual in *Parentia*.

The large, white male aristal flag makes this species immediately recognisable. Females too are distinctive, with pruinose thorax and bronze reflections, and with yellowish tibiae and knees.

P. restricta shows intraspecific variation in size and coloration. Male wing length in a large sample from Rotorua varies from 2.9 mm to 3.3 mm. As well, the angle of the *M1–M2* juncture varies from sharp to smooth. The intensity of melanisation of the wing veins is also variable, and in some specimens the melanisation extends somewhat on to the membrane. Tibiae I and II vary in colour from yellow to brown, and show a general geographic trend: specimens from lowland North Island areas tend to be yellowish, whereas specimens from higher elevations and the South Island are more infuscate.

Although isolated with respect to other New Zealand *Parentia*, it shows similarities to some undescribed New Caledonian species.

Parentia schlingeri new species

Figure 43, Map 23

Description. Male. Length 3.0–3.1 mm; wing 2.7x1.0 mm; similar to *P. milleri* except as follows.

Head. Palp with a long, projecting seta, almost as long as proboscis (MSSC?); ventral postcranium with short, pale setae.

Legs. TI bare, without dorsal setae; It1 and It2 with pale ventral pile; It2–4 flattened, with some short, black ventral setae (MSSC); TII with a strong ad-pd pair at one-fifth, lacking pd at two-thirds; TIII also lacking a callus, and lacking ad seta at one-quarter.

Wing. *M1* and *R4+5* also closely parallel, but for a shorter distance; CuAx ratio 1.1.

Abdomen. Hypopygium (Fig. 43) also black; surstylus with ventral lobe bearing a median projection and a row of

4 external setae; cercus setose, with a short distal projection and a long ventral arm bearing 6 strong apical setae.

Female. Unknown.

Type data. Holotype male, CL, Ohui, 2 November 1977, E. Schlinger; and 1 paratype male, WN, 2 km south of Paekakariki, sand dunes, 13 November 1977 (NZAC).

Material examined. Type specimens only.
CL, WN / —.

Remarks. *P. schlingeri* is very close to *P. milleri*, and the two species' ranges overlap at least in the Wellington district, where they were collected together. Both occur in coastal dune and littoral habitats. Although approximately the same in body size, *P. schlingeri* has a distinctly larger hypopygium than *P. milleri*.

Parentia titirangi new species

Figures 44–46, Map 24

Description. Male. Length 5.8 mm; wing 5.0x1.6 mm.

Head (Fig. 44). Frons and face metallic blue-green, with a dusting of pruinosity; clypeus with dense silvery pruinosity, evident in anterior view; face below antenna distinctly bulging; sides of face slightly converging; clypeus extending slightly beyond base of eyes; palp dark brown; pedicel with a strong dorsal seta and shorter ventral setae; 1st flagellomere rounded, subtriangular; arista dorsal, its length about 1.5x head height.

Thorax. Dorsum metallic blue-green; pleura metallic green, covered with grey pruinosity; 3 regularly paired, long *ac* present.

Legs. CII and CIII metallic green-brown; It1 and IIt1 yellow, remainder of tarsomeres brownish; CIII with a group of pale lateral setae and a strong outstanding seta; FI with some long, pale ventral setae in basal half (MSSC); FII with 4 or 5 strong, pale ventral setae in basal half (MSSC); TII with only a pd seta at one-fifth, and with some short apical setae; FIII with some pale ventral hairs; TIII without evidence of a callus or a posterior slit.

I – 9.5; 9.5; 8.0/ 3.0/ 3.0/ 1.0/ 0.8
II – 10.0; 13.0; 10.0/ 3.5/ 2.5/ 1.0/ 0.8
III – 13.0; 18.5; 8.0/ 4.0/ 1.5/ 1.5/ 0.6

Wing elongate; costa unmodified; M2 weak; CuAx ratio 2.6.

Abdomen dark metallic green with bronze reflections, and with a broad, matt brown band covering tergal overlap; hypopygium (Fig. 45) black, but surstylus and cercus yellow; epandrium subrectangular; hypandrial arm narrow, only slightly longer than hypandrial hood; a single long epandrial seta present; surstylus projecting, elbowed, with ventral lobe rounded and with 2 strong, projecting setae; cercus enlarged and setose basally, with an elongate arm bearing a distinctive subapical, laterally projecting blade-like seta (Fig. 46).

Female. Similar to male except lacking MSSC, otherwise as follows: face not bulging; 5 strong *dc* present; all femora ventrally with only short, pale hairs; TII with an offset ad–pd pair at one-fifth; TIII with an anterior seta at one-fifth.

Type data. Holotype male and 7 paratypes (3 males, 4 females; all NZAC), AK, Titirangi, light trap, 15 January 1953 (HT), 26 December 1952, 11 and 16 January 1953, 11 February 1953, R. Thomas.

Material examined. Type series, plus 19 non-type examples (13 males, 6 females; NZAC, AMSA): ND – Puketi Forest, Waipapa R., 1 Dec 1989, sweeping vegetation. AK – Waitakere, 8 Feb 1960; Avondale, Nov 1949; [Auckland?], 19 Dec 1949. WO – Raglan, Mt Karioi, Waieni Stm, 30 Nov to 7 Dec 1986, Malaise trap. TO – Kopikopiko Stm N of Minginui, 5 Dec 1989, yellow pan traps. Also: possible female, CL, Little Barrier I., 29 Nov 1954.
ND, AK, ?CL, WO, TO / —.

Remarks. I collected specimens of *P. titirangi* resting on leaves at the edge of forest along the Waipapa River.

Parentia tonnoiri (Parent)

Figure 47, Map 25

tonnoiri Parent, 1933: 332 *(Sciapus)*.

Description. Male. Length 5.6 mm; wing 4.8x1.5 mm.

Head. Frons metallic green, with some grey pruinosity; face slightly bulging (MSSC); face and clypeus covered with silvery pruinosity; sides of face subparallel; clypeus extending to base of eyes; palp yellow, with 2 strong black setae; pedicel with short setae; 1st flagellomere short, triangular; arista dorsal, slightly longer than head height.

Thorax. Dorsum metallic blue-green; pleura metallic green, covered with grey pruinosity; 4 regularly paired, long *ac* present.

Legs. CII and CIII yellow in distal one-third; all t1 basally yellow, becoming darkened distally; remaining tarsomeres black; all femora ventrally bare; TI and It with rows of short, black, erect hairs (MSSC); It1 also with pale ventral pile (MSSC); TII without ad–pd setae, without erect hairs; TIII with a weak posterior groove from one-fifth to one-half (MSSC).

I – 9.5; 11.0; 3.5/ 3.0/ 2.0/ 1.0
II – 10.0; 12.0; 8.0/ 3.0/ 2.5/ 1.2/ 0.8
III – 11.5; 16.5; 8.0/ 4.0/ 2.0/ 1.0

Wing. Costa with curved, almost crocheted setae to *R2+3* (MSSC); CuAx ratio 2.3.

Abdomen metallic green with bronze reflections; hypopygium (Fig. 47) brown, with surstylus and cercus yellow; epandrium subrectangular; 2 epandrial setae present; epandrial lobe elongate; surstylus with rounded lobes, and between them a pair of setae arising from a single peduncle; cercus deeply forked, with distal arm setose and ventral arm bearing apically a distinctive dark external thorn and 2 curved inner setae.

Female. Similar to male except lacking MSSC, otherwise as follows: leg I without erect hairs; TII with an offset ad-pd pair at one-fifth; costa with unmodified cilia.

Type data. The male holotype of *Sciapus tonnoiri* is from Aniseed Valley (NZAC). Paratypes: a female from the type locality (NZAC), and a female from Deans Bush (CMNZ).

Material examined. Type specimens, plus a non-type male from MC, Banks Pen., Montogomery Scenic Res., ex forest understorey, 27 Jan 1987 (UCNZ).

— / NN, MC.

Remarks. *P. tonnoiri* is closely related to the North Island species *P. whirinaki.*

Parentia varifemorata new species

Figure 48, Map 26

Description. Male. Length 4.2 mm; wing 3.8x1.3 mm.

Head. Vertex and frons metallic green, covered with grey pruinosity, but this not dense – green ground colour evident in anterior view; face and clypeus covered with dense, silvery pruinosity; clypeus extending below base of eyes (MSSC); palp black; 1st flagellomere short, subtriangular; arista apical, long (about 2.5x head height), with a brown, ovate apical flag (MSSC).

Thorax. Dorsum metallic blue-green; pleura metallic green, covered with grey pruinosity; 3 regularly paired long *ac* present; lateral scutellar setae reduced to tiny hairs.

Legs. Coxae metallic green; femora basally metallic green, with distal third of FI and FII and distal quarter of FIII strongly contrasting yellow; tibiae yellow; It1 and IIt1 yellow, remaining tarsomeres dark brown-black; FI with a group of pale ventral setae at base; FII with pale ventral hairs to one-half; TII bare or with only a very weak pd seta at one-fifth; FIII with pale ventral hairs; TIII slightly swollen and with a narrow posterior slit from one-fifth to one-third (MSSC).

Wing. Costa with curved setae from near base to *R2+3* (MSSC); CuAx ratio 1.2.

Abdomen. Hypopygium (Fig.48) dark brown; epandrium subrectangular; surstylus with ventral lobe large, bearing a median projection and a short seta, and dorsal lobe digitiform, bent, with a distinctive strong external seta; cercus with dorsal arm setose, ventral arm with a tuft of apical setae.

Female. Unknown.

Type data. Holotype male and 1 paratype male (NZAC), BP, Rotorua, Forest Res[earch Institute], February 1981, Malaise trap, J. Bain.

Material examined. Type specimens only.

BP / —.

Remarks. *P. varifemorata* is close to *P. mobile* but has a brown, ovate aristal flag and the tibiae and apices of all femora yellow.

Parentia whirinaki new species

Figure 49, Map 27

Description. Male. Length 4.8 mm; wing 4.6x1.4 mm.

Head. Frons metallic green, with some grey pruinosity, but this not dense – metallic green ground colour evident in anterior view; face bulging (MSSC); face and clypeus covered with dense silvery pruinosity; sides of face parallel; clypeus extending to base of eyes; palp yellowish; pedicel with short setae; 1st flagellomere short, triangular; arista dorsal, slightly longer than head height.

Thorax. Dorsum metallic blue-green; pleura metallic green, covered with grey pruinosity; 3 regularly paired, long *ac* present.

Legs. CIII and distal CII yellow; all t1 yellow basally, but tarsi becoming black distally; femora ventrally with only weak hairs; tibiae, It1, and IIt1 unusually prolonged (MSSC); It with short, black, erect hairs (MSSC); TII and IIt covered with short, black, erect hairs (MSSC); TII lacking ad–pd setae; TIII with a weak posterior groove from one-fifth to one-half (MSSC).

I – 8.0; 9.0; 7.5/ 2.5/ 2.0/ 1.5/ 1.0

II – 11.0; 15.5; 9.0/ 4.5/ 3.5/ 2.5/ 1.2

III – 13.5; 18.0; 7.0/ 4.0/ 2.0/ 2.0/ 1.0

Wing. Costa with clavate setae to *R2+3* (MSSC); CuAx ratio 2.6.

Abdomen metallic green with bronze reflections; hypopygium (Fig. 49) dark brown, with cercus yellow; epandrium subtriangular; 2 short epandrial setae present; epandrial lobe elongate; surstylus bilobed, with strong external setae as figured; cercus deeply forked, with distal arm setose, bearing several projections and arms, and with setae as figured.

Female. Similar to male except lacking MSSC, other-

wise as follows: legs II and III shorter; It without erect hairs; TII and IIt without short, erect hairs; TII with an offset ad–pd pair at one-fifth; costa unmodified.

I – 8.5; 9.5; 7.5/ 2.5/ 2.0/ 1.0/ 0.8
II – 9.5; 13.0; 8.5/ 3.5/ 2.5/ 1.2/ 0.8
III – 12.0; 17.0; 6.0/ 4.0/ 2.5/ 1.5/ 1.0

Type data. Holotype male and 1 paratype female (NZAC), TO, Whirinaki Forest S of Minginui, along Whirinaki River, sweeping vegetation, 5 December 1989, D.J. Bickel.

Material examined. Type specimens only.
TO / —.

Remarks. *P. whirinaki* is closely related to the South Island species *P. tonnoiri*, with which it might be confused.

Naufraga new genus

Type species *Condylostylus hexachaetus* Parent, 1933, here designated.

Etymology. *Naufraga* is from the Latin *naufragus*, meaning 'shipwrecked'. The isolated position of this monotypic genus is as if it were shipwrecked on the shores of New Zealand. Gender feminine.

Diagnosis. The genus *Naufraga* is characterised by the following features.
1. Strong vertical setae present in both sexes.
2. Sides of face converging (cf. subparallel in most Sciapodinae), approaching each other ventrally (Fig. 50, 51).
3. Pedicel with a ring of setae.
4. First flagellomere subrectangular but projecting ventrally; arista distinctly dorsal (Fig. 52).
5. Mesonotum broad, rounded, without any prescutellar flattening.
6. *Ac* developed as 2 or 3 strong, irregular pairs.
7. Five strong *dc* present, not sexually dimorphic.
8. Scutellum of both sexes with 3 pairs of marginal setae: inner pair about half as long as medians, median pair strong, and lateral pair also about half as long as medians.
9. Propleuron without a strong seta.
10. Femora without anterior preapical setae.
11. All tibiae with distinct paired or offset ad-pd setae.
12. *M2* slightly bowed with respect to *M1* (Fig. 53).
13. Abdomen appearing slightly annulate.
14. Abdominal plaques present on tergites 2–5 of female only, apparently absent in male.
15. Hypandrium asymmetrical, with left lateral arm and hood.
16. Aedeagus elongate, but lacking dorsal angle.
17. Cercus elongate, with a shallow apical bifurcation.
18. Hemitergites of female oviscapt each with 2 spatulate apical setae.

Remarks. Parent described *Condylostylus hexachaetus* from a single female. Because it has three pairs of scutellar setae it was referred to *Parentia* by Bickel & Dyte (1989), in that some females of the *malitiosa* group show supernumerary setae on the scutellum (a weakened expression of the MSSC). However, examination of the holotype along with discovery of additional females and associated males revealed it to be distinctive and isolated in both the New Zealand and world sciapodine faunas, and requiring generic status, here as the monotypic genus *Naufraga*.

In monotypic genera it is often difficult to determine which character states are of generic significance and which are only of specific importance. Listed above are the features important in characterising *Naufraga* with respect to other sciapodine genera.

The phylogenetic position of *Naufraga* within the Sciapodinae is unclear. A preliminary analysis of world sciapodine genera was presented in Bickel (in press), and is followed here.

1. The following character states are plesiomorphic with respect to the sciapodine ground-plan: strong vertical setae present in both sexes; arista dorsal; *ac* well developed, paired; all *dc* strong, not sexually dimorphic; hypandrium asymmetrical, with left lateral arm and hood; aedeagus without a dorsal angle.
2. The following character states are apomorphic with respect to the sciapodine ground-plan: FII and FIII without anterior preapical setae; abdominal plaques present on tergites 2–5 of female only, absent in male.
3. The following characters are distinctive in *Naufraga*:
(a) The sides of the face approach each other ventrally (Fig. 50, 51), as opposed to the subparallel face sides in most Sciapodinae. A different facial convergence is found in males of the *Parentia malitiosa* group (Fig. 25) as a MSSC.
(b) The three pairs of strong marginal scutellar setae found in both sexes of *N. hexachaeta* are distinctive and unique within the Sciapodinae. These are primary setae, not to be confused with the supernumerary scutellar setae (MSSC) found on males and sometimes in a weakened expression on females of some species of the *Parentia malitiosa* and *dispar* groups. The presence of three pairs of scutellar setae on *Naufraga* is probably autapomorphic.
(c) Strong offset, paired ad–pd setae on all tibiae are unusual, since such setae are usually well developed only on TII and to a lesser extent on TIII of other sciapodine genera. Their presence on TI is considered plesiomorphic, since the general tendency is to lose such setae, especially in males.

(d) The almost total absence of leg and thoracic MSSC on *N. hexachaeta* is unusual. Possibly the distal male antenna is modified, but it was missing on all male specimens.

The position of *Naufraga* within the Sciapodinae is unclear. The absence of the dorsal angle on the aedeagus would have excluded it from the tribes Sciapodini + Chrysosomatini as previously defined. However, the absence of both an FIII anterior preapical seta and male abdominal plaques would tend to associate it with the diverse and complex tribe Chrysosomatini.

Naufraga hexachaeta (Parent) new combination

Figures 50–54, Map 28

hexachaetus Parent, 1933b: 343 *(Condylostylus).*

Description. Male. Length 4.2 mm; wing 3.7x1.3 mm.

Head. Setae black; a pair of strong, diverging setae and 3 pairs of short posterior setae on ocellar tubercle; strong postverticals present as continuation of postorbitals; vertex, frons, face, and clypeus dull metallic violet-bronze, covered with dense grey pruinosity; sides of face strongly converging ventrally (Fig. 50); palp black, with strong black setae; proboscis yellowish; ventral postcranium with abundant pale hairs; scape and pedicel black; pedicel with a ring of setae, as in female; distal antenna missing on male specimens, possibly similar to that of female (Fig. 52).

Thorax. Mesonotum dull metallic bronze-violet, with grey pruinose stripes anteriorly between *ac* band and *dc* row; setae black; 1 *pa*, 2 *sa*, 2 *sr*, 2 *np*, 1 *hm*, 1 *pm* present; scutellum with 3 pairs of marginal setae, the inner and lateral pairs about half as long as the strong medians.

Legs entirely metallic black-violet and without pruinosity, except knees slightly yellow; CI and CII with pale anterior hairs, and CIII with a group of pale lateral setae; FI with a single strong, pale ventral seta and some short, pale hairs in basal third; TI with pd setae at one-sixth (weak) and one-half, a strong ad at one-half, and a ventral seta at one-half; It1–2 with very short, pale ventral pile (MSSC); FII with short, pale hairs in proximal one-third; TII with ad setae at one-sixth (weak), one-fifth, and two-fifths, and pd setae at one-sixth (weak), one-fifth, and one-half; FIII ventrally bare; TIII with an ad seta at one-fifth and pd setae at one-third and three-quarters.

I – 7.0; 7.0; 4.5/ 2.0/ 1.2/ 1.0/ 1.0
II – 9.0; 9.5; 5.5/ 2.5/ 2.0/ 1.2 / 1.0
III – 9.5; 13.0; 5.0/ 3.0/ 2.0/ 1.2/ 1.0

Wing (Fig. 53). Membrane hyaline, somewhat darkened; CuAx ratio 2.8; lower calypter yellow, with a fan of pale setae; haltere yellow.

Abdomen shining metallic black-violet, appearing slightly annulate; tergites 1–6 each with strong, black marginal and pale hairs along sides and ventrally; hypopygium (Fig. 54) black, with cerci yellow; epandrium elongate, subrectangular; hypandrial arm longer than hood; aedeagus elongate, extending well beyond surstylus, and without a dorsal angle; 2 short epandrial setae arising within genital chamber; epandrial lobe with strong apical and shorter subapical setae; surstylus with ventral arm lobate and dorsal arm digitiform, bearing setae as figured; cercus elongate, parallel-sided, with a shallow apical bifurcation.

Female. Similar to male except lacking MSSC, otherwise as follows: face wider but also converging ventrally (Fig. 51); antenna black; pedicel with a ring of setae; 1st flagellomere subrectangular but projecting ventrally; arista distinctly dorsal (Fig. 52); coxae and femora metallic black-violet; TI, TII, and their basal tarsomeres yellow, and distal tarsomeres I and II dark brown-black; TIII yellow from near base almost to apex, and distalmost TIII and IIIt black; It1–2 without pale pile.

Type data. Parent described *Condylostylus hexachaetus* from a single female taken at Christchurch (CMNZ).

Material examined. Holotype, plus 4 non-type examples (2 males, 2 females; CNCI, NZAC): NC – Waiau Vly, 1 km E of Montrose, swept from *Prunus mahlaleb* flowers, 8 Oct 1975. MC – Sumner, 7 Oct 1962.
— / NC, MC.

Genus *Austrosciapus* Bickel

Although more than 35 species of *Austrosciapus* are known from Australia, only *A. proximus* (Parent) occurs in New Zealand. It is almost certainly an accidental introduction from Australia.

Austrosciapus proximus (Parent)

Map 29

proximus Parent, 1928: 191 *(Sciapus).*

Diagnosis. Male. Length 5.1–5.4 mm; wing 4.2x1.7 mm.

Head. Frons blue-green; vertical seta weak; clypeus with silvery pruinosity; proboscis yellow; antenna black; arista dorsal.

Thorax metallic green with bronze reflections; 3 pairs of long *ac* present; 5 *dc* present, with *dc3* reduced to a weak hair (MSSC); lateral scutellar setae reduced to tiny weak hairs, or absent.

Legs. CI and trochanter yellow, CII and III and trochanters black; remainder of legs yellow, except distal tarsomeres darkened; CI with 3 black anteroapical setae; IIt2–5 black, glabrous, with rows of erect, crocheted black hairs (MSSC).

Wing with 2 brown bands fused anteriorly to *R4+5; m–cu* straight; haltere yellow.

Abdomen. Hypopygium black; epandrial lobe with a long and a short apical bristle; surstylus elongate, with a distinctive club-like ventral projection; cercus short, subtriangular.

Female. Similar to male but lacking MSSC; 5 strong *dc* present.

Type data. Parent described *Sciapus proximus* on the basis of male and female syntypes from New South Wales (Hamburg Zooligical Museum; specimens destroyed). A male neotype has been designated (Bickel, in press).

Material examined. Three non-type examples (1 male, 2 females; NZAC): AK – Mt Albert, 15 Dec 1976; Remuera, 27 Mar 1962.

AK / —.

Remarks. *A. proximus* occurs in eastern Australia from Victoria to south-eastern Queensland, and is common in a variety of habitats, ranging from sclerophyll woodland to subtropical closed forest.

The New Zealand specimens were collected in Auckland gardens (B.A. Holloway, pers. comm.), and I have not seen specimens from natural habitats. The restriction of this species to disturbed sites in a port city suggests that it was accidentally introduced from Australia, probably in soil. For further discussion, see Bickel (in press).

Subfamily MEDETERINAE

Diagnosis. The Medeterinae are distinguished from other dolichopodid subfamilies by the following combination of characters: posterior mesoscutum distinctly flattened; FII and FIII lacking anterior preapical bristles; hypopygium large, on an elongate peduncle formed by abdominal segment 7; antennal scape without dorsal setae; dorsal postcranium strongly concave; vein *M* unbranched, and lacking flexion in distal sector; frontoclypeal suture distinct.

For additional information on Australasian Medeterinae, see Bickel (1986, 1987).

Remarks. The Medeterinae are diverse in Australia, but only the stem-mining genus *Thrypticus* occurs in New Zealand. Although *Medetera* is not known from New Zealand, the common Indo-Pacific tramp species *M. grisescens*, found in eastern Australia, Melanesia (including New Caledonia), and much of Polynesia is the most likely to be accidentally introduced.

KEY SEPARATING *THRYPTICUS* AND *MEDETERA*

Wing vein *M* distinctly curving towards *R4+5* beyond *m-cu* cross-vein; CIII with only 1 lateral seta; eyes bare; FII without a posterior subapical seta; anal vein usually distinct; thorax usually black or dark metallic green, and setae usually black; hypandrium arising midway along epandrium. Not in N.Z. ... ***Medetera***

R4+5 and *M* parallel up to wing apex; CIII with 2 lateral setae; eyes with short hairs between facets; FII with a strong posterior subapical seta; anal vein indistinct or absent; thorax usually bright metallic green, and setae yellowish; hypandrium arising basally from epandrium; female oviscapt blade-like, sclerotised, narrow in dorsal view ... ***Thrypticus***

Genus *Thrypticus* Gerstaecker

Thrypticus Gerstaecker, 1864: 43. Type species *Thrypticus smaragdinus* Gerstaecker, by monotypy.

Remarks. The systematics of *Thrypticus* is reviewed in Bickel (1986). This nearly cosmopolitan genus is unique among the Dolichopodidae in that its larvae are phytophagous stem-miners in the monocotyledonous families Cyperaceae, Poaceae, and Juncaceae (Dyte 1959). All other known dolichopodid larvae are predatory or opportunistic saprophages. Females have a sclerotised, blade-like oviscapt for piercing and ovipositing in stems. The rather small adults are generally taken in wet grassland or marshy habitat.

The sympycnine genus *Chrysotimus* is a common New Zealand genus easily confused with *Thrypticus,* being also small, with similar flattened mesoscutum and pale thoracic setae. However, *Chrysotimus* has distinct anterior preapical setae on FII and FIII, lacking on *Thrypticus.*

The New Zealand species described as *Thrypticus nigrichaetus* by Parent (1933b) was referred to *Chrysotimus* by Bickel (1986).

Thrypticus arahakiensis new species

Figures 55, 56, Map 30

Description. Male. Length 1.2–1.8 mm; wing 1.0–1.4 x 0.4-0.5 mm.

Head. Frons and face metallic green with blue reflections, and with a dusting of grey pruinosity; palp and proboscis dark brown; antenna brown; 1st flagellomere short, subrectangular, with arista apical.

Thorax metallic blue-green, with a dusting of grey pruinosity dorsally and with silvery pruinosity on pleura;

setae yellow; 5 or 6 pairs of weak *ac* present; 5 strong *dc* present, decreasing in size anteriorly; 1 *pa*, 1 *sa*, 1 *hm*, 1 *pm*, 1 *sr*, and 2 *np* present; only 1 pair of strong scutellar setae present; 1 propleural seta present.

Legs. Setae pale; coxae metallic green; trochanters yellowish; femora dark green to three-quarters; femoral 'knees', TI, TII, and proximal quarter of TIII yellowish; distal TIII and tarsomeres dark brown; CII with a lateral seta, CIII with 2 lateral setae; FII with a strong posterior subapical seta; TII with an ad seta at one-third and a strong ventral apical seta.

Wings. CuAx ratio 0.4; lower calypter pale yellow, with pale setae; haltere yellow.

Abdomen bright metallic green, with pale setulae and little pruinosity; abdominal terga 2–5 with 3 or 4 ovate depressions along lateral margins; hypopygial foramen left basal; hypopygium dark metallic green, appendages brownish (Fig. 55); epandrium pyriform, wide basally, narrowed distally, with dorsally deflexed, lobate surstyli and conformably oriented cerci; hypandrium arising basoventrally, with a distinct flexion at two-thirds; hypandrium beyond flexion triangular, but not wider than base of hypandrium, and heavily melanised (Fig. 56); aedeagus apically cleft; a strong epandrial seta arising from lateral walls of genital chamber; epandrial lobes fused into an elongate collar, bearing 2 strong bristles distally; surstylus lobate, distally melanised, with a strong ventral seta at two-thirds and 2 short distal setae; cercus sparsely haired in apical section.

Female. Similar to male except as follows: face slightly wider; oviscapt blade-like, dark brown.

Type data. Holotype male (NZAC) and 31 paratypes (23 males, 8 females; NZAC, AMSA, CMNZ, BPBM), TO, Whirinaki Forest south of Minginui, Arahaki Lagoon, swept off *Baumea rubiginosa*, 4 December 1989, D.J. Bickel.

Material examined. Type series, plus 4 non-type examples (3 males, 1 female; NZAC): AK – Waiheke I., Palm Beach, sweeping in swamp, 27 Aug 1977. WD – 1 km S of Hokitika, sweeping grass, 27 Feb 1976. Also noted: "North Island Pasture Survey, D 19, 10RD" = 1, Gisborne–Tiniroto, 12 Feb 1957; 1, Tolaga Bay, 12 Feb 1957; 1, Masterton, 25 Mar 1957.

AK, GB, WA / WD.

Remarks. The type series of *T. arahakiensis* was taken at Arahaki Lagoon, a shallow swamp surrounded by mixed podocarp forest. Individuals were swept in large numbers from the emergent sedge *Baumea rubiginosa* (Cyperaceae), which grows in shallow water along the shore, and the larvae are probably miners in the sedge stems.

The series from near Hokitika are distinctly smaller (length 1.2 mm) than the North Island specimens (length 1.8 mm). However, they are identical in coloration and genital structure, and I regard them as conspecific.

T. arahakiensis is most closely related to *T. australis*, which occurs across much of Australia and also on Norfolk Island. Although Bickel & Dyte (1989) recorded *T. australis* from New Zealand, this was a misidentification on my part, and the specimens represent the new species *T. arahakiensis*. *T. australis* has the heavily melanised distal section of the hypandrium wider than the base of the hypandrium and all tibiae yellowish, whereas in *T. arahakiensis* the distal hypandrium is much narrower and the distal three-quarters of TIII is dark brown.

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ILLUSTRATIONS

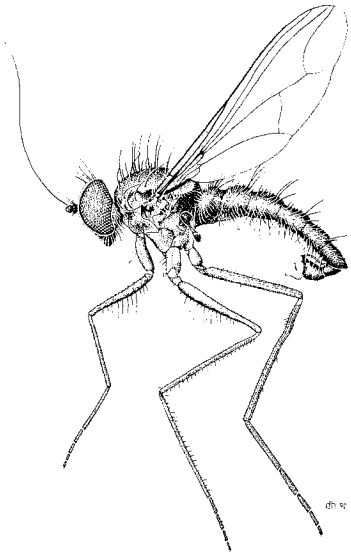


Fig. 1 *Parentia malitiosa*, male, habitus, x15. *Artist: Des Helmore, DSIR Plant Protection*

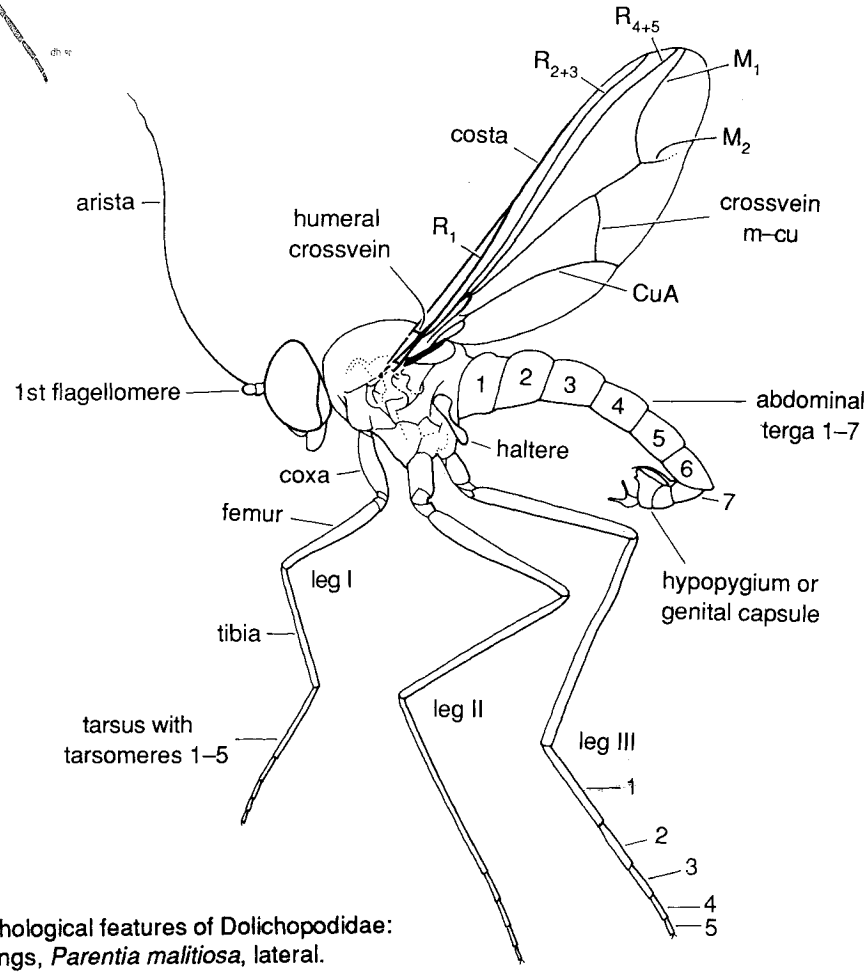


Fig. 2 Morphological features of Dolichopodidae: body and wings, *Parentia malitiosa*, lateral.

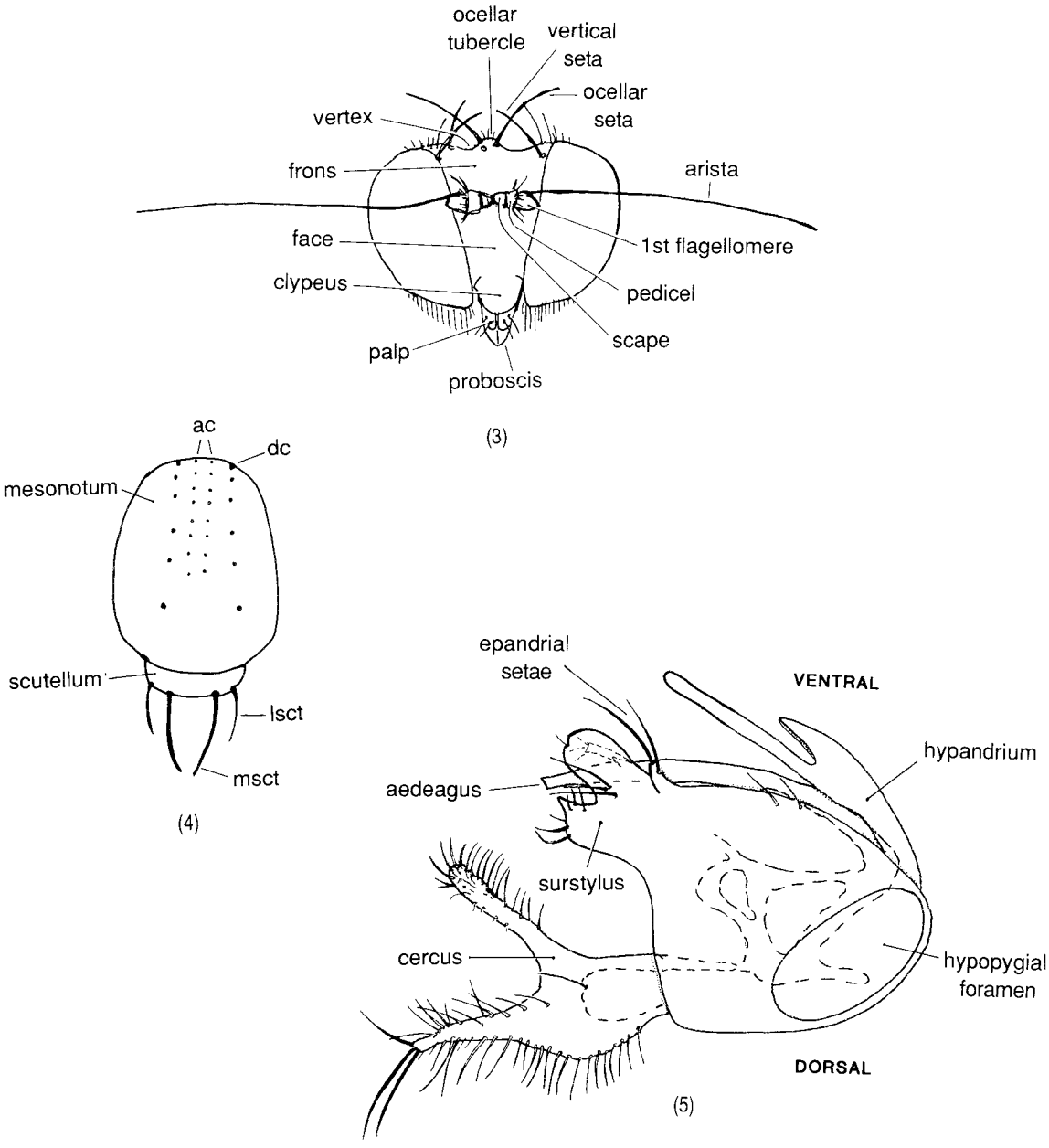


Fig. 3–5 Morphological features of Dolichopodidae (schematic): (3) head, *Parentia* sp., anterior; (4) thorax, dorsal; (5) hypopygium, male, *Parentia* sp., left lateral. **Key**: ac, acrostichal setae; aed, aedeagus; cer, cercus; dc, dorsocentral setae; epl, epandrial setae; hyf, hypopygial foramen; hyp, hypandrium; lsct, lateral scutellar seta; msct, median scutellar seta; sur, surstylus.

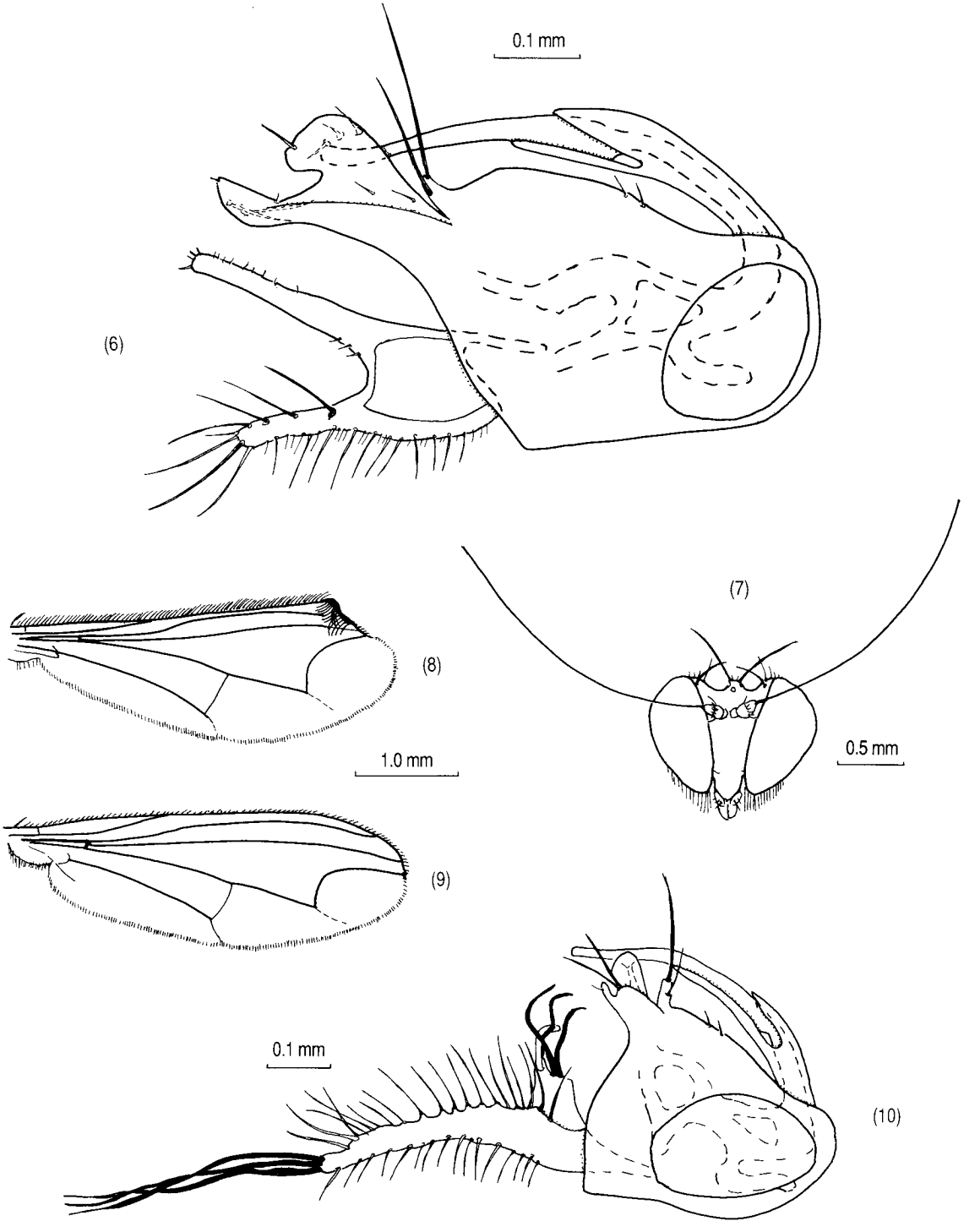


Fig. 6–9 *Parentia anomalicosta*, Stephens I.: (6) head, anterior, male; (7, 8) wing, dorsal, male and female; (9) hypopygium, left lateral. **Fig. 10** *P. aotearoa*, Three Kings Is: hypopygium, left lateral.

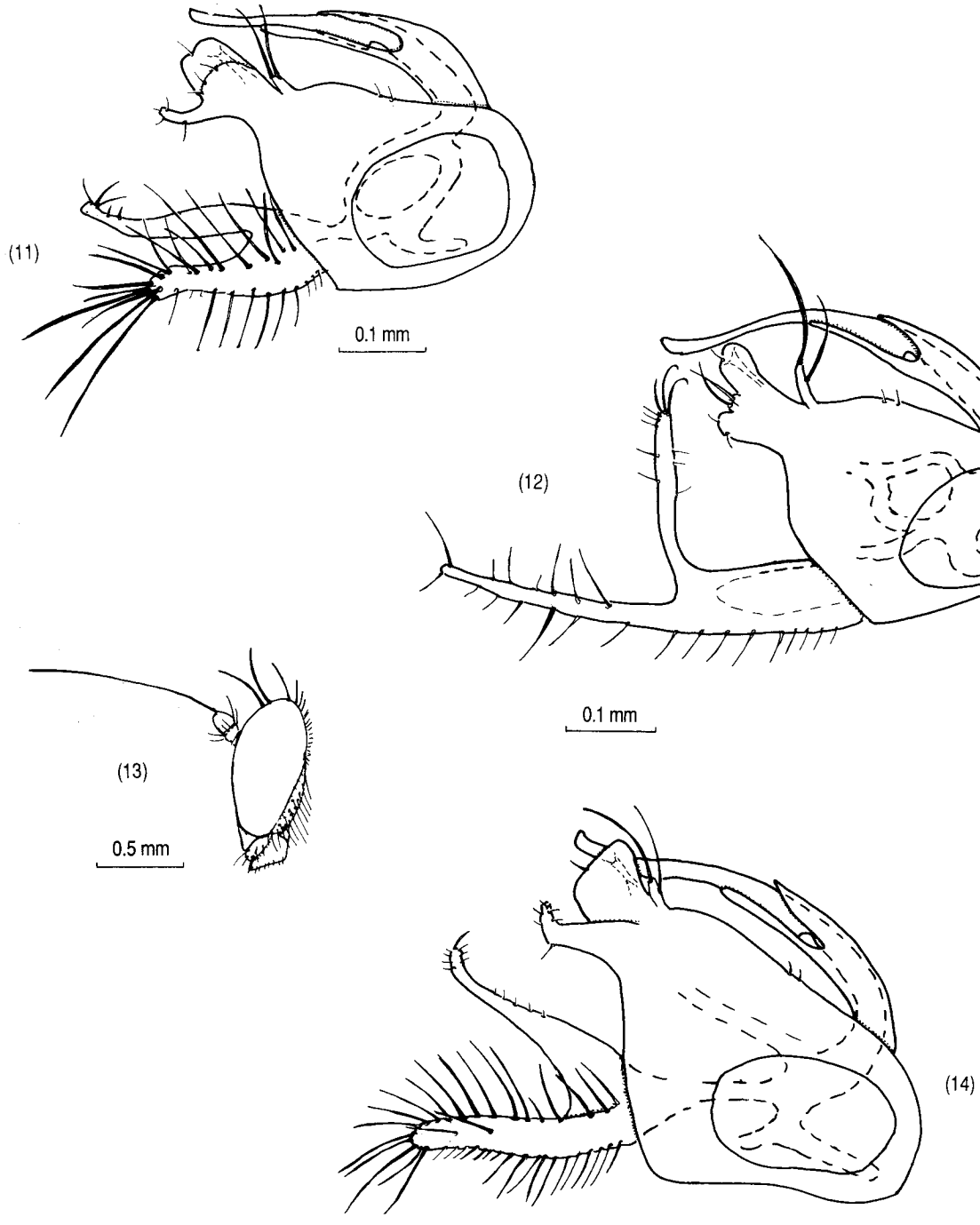


Fig. 11 *Parentia argentifrons*, Three Kings Is: hypopygium, left lateral. **Fig. 12** *P. calignosa*, Little Barrier I.: hypopygium, left lateral. **Fig. 13, 14** *P. chathamensis*, Chatham Is: (13) head, left lateral, male; (14) hypopygium, left lateral.

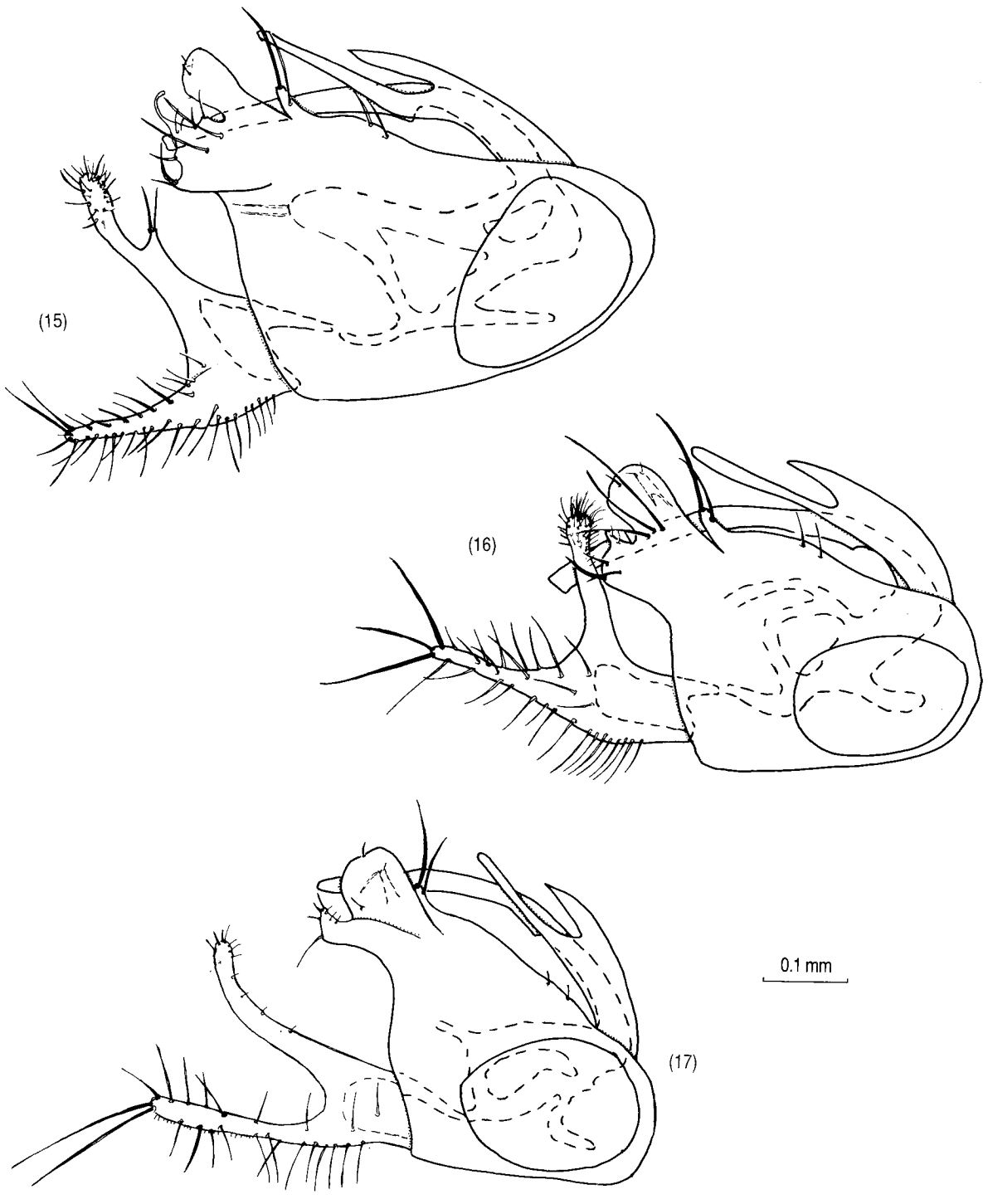


Fig. 15 *Parentia cilifoliata*, Tahunanui: hypopygium, left lateral. **Fig. 16** *P. defecta*, Rotorua: hypopygium, left lateral. **Fig. 17** *P. fuscata*, L. Rotoiti: hypopygium, left lateral.

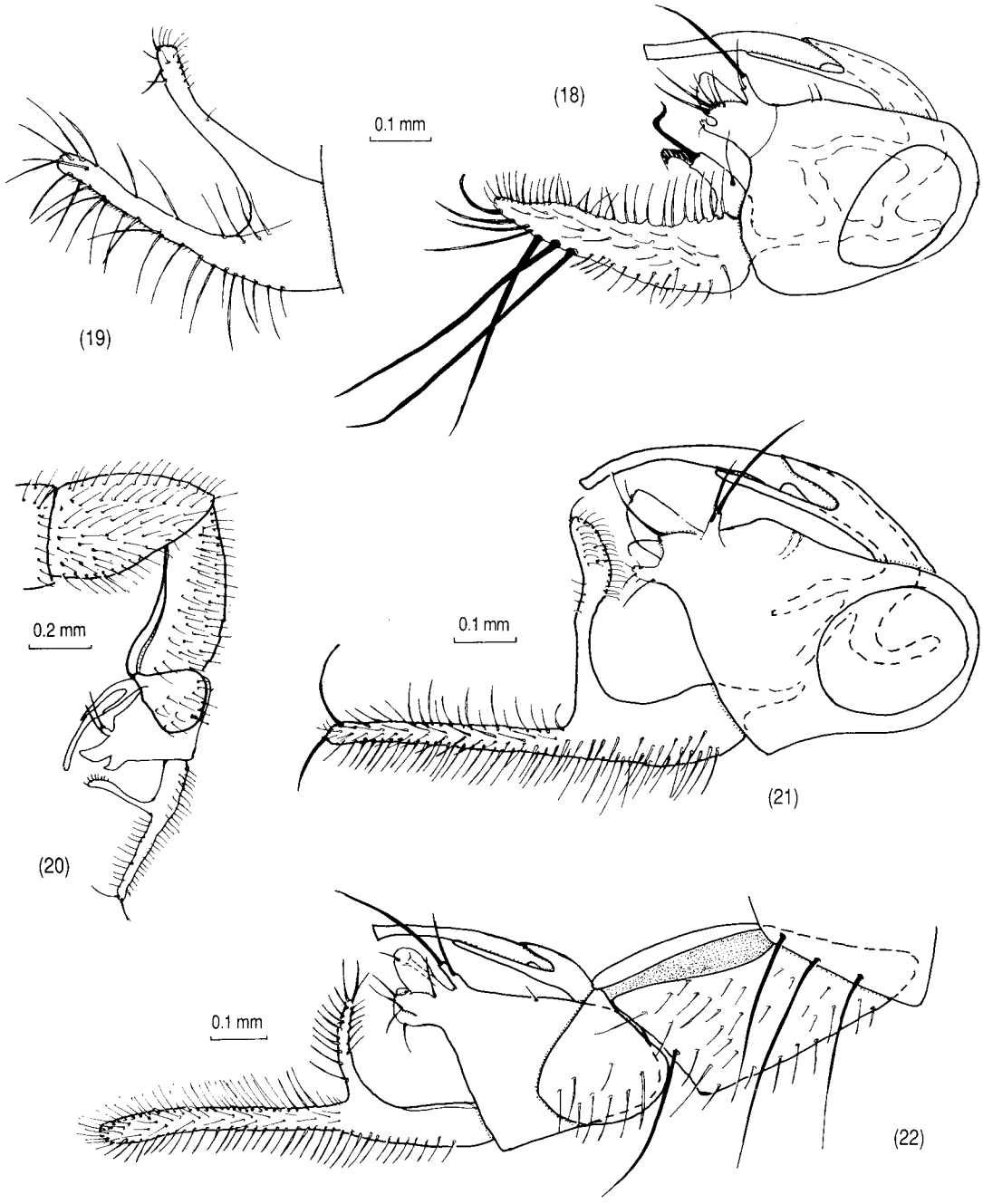


Fig. 18 *Parentia gemmata*, Noises Is: hypopygium, left lateral. **Fig. 19** *P. griseicollis*, L. Rotoiti: cercus, left lateral. **Fig. 20, 21** *P. insularis*, Three Kings Is: (20) postabdomen, left lateral, male; (21) hypopygium, left lateral. **Fig. 22** *P. johnsi*, Wanganui R.: postabdomen, left lateral, male.

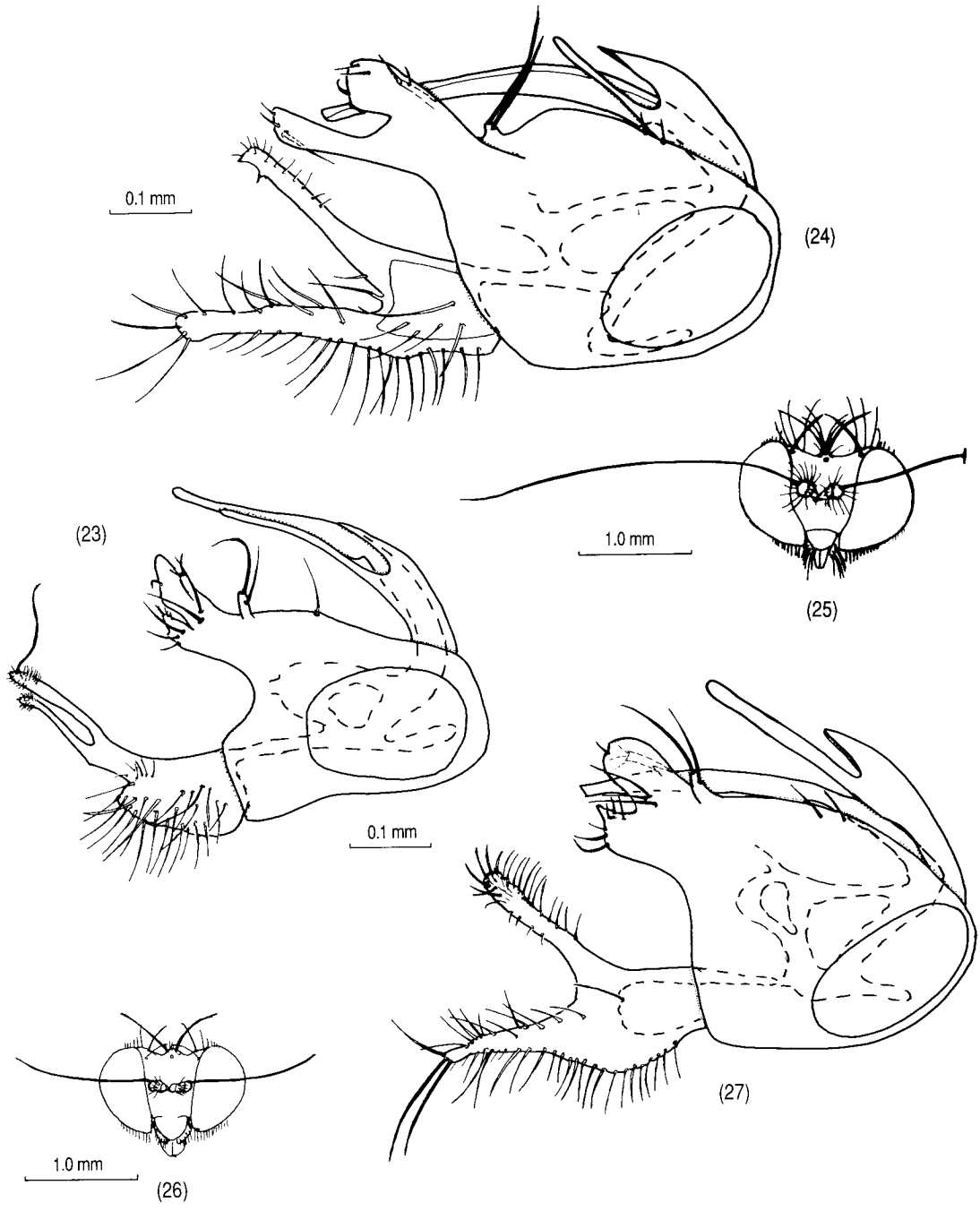


Fig. 23 *Parentia lyra*, loc. indet.: hypopygium, left lateral. **Fig. 24** *P. magniseta*, Browns Bay: hypopygium, left lateral. **Fig. 25–27** *P. malitiosa*, Whakamaru: (25, 26) head, anterior, male and female; (27) hypopygium, left lateral.

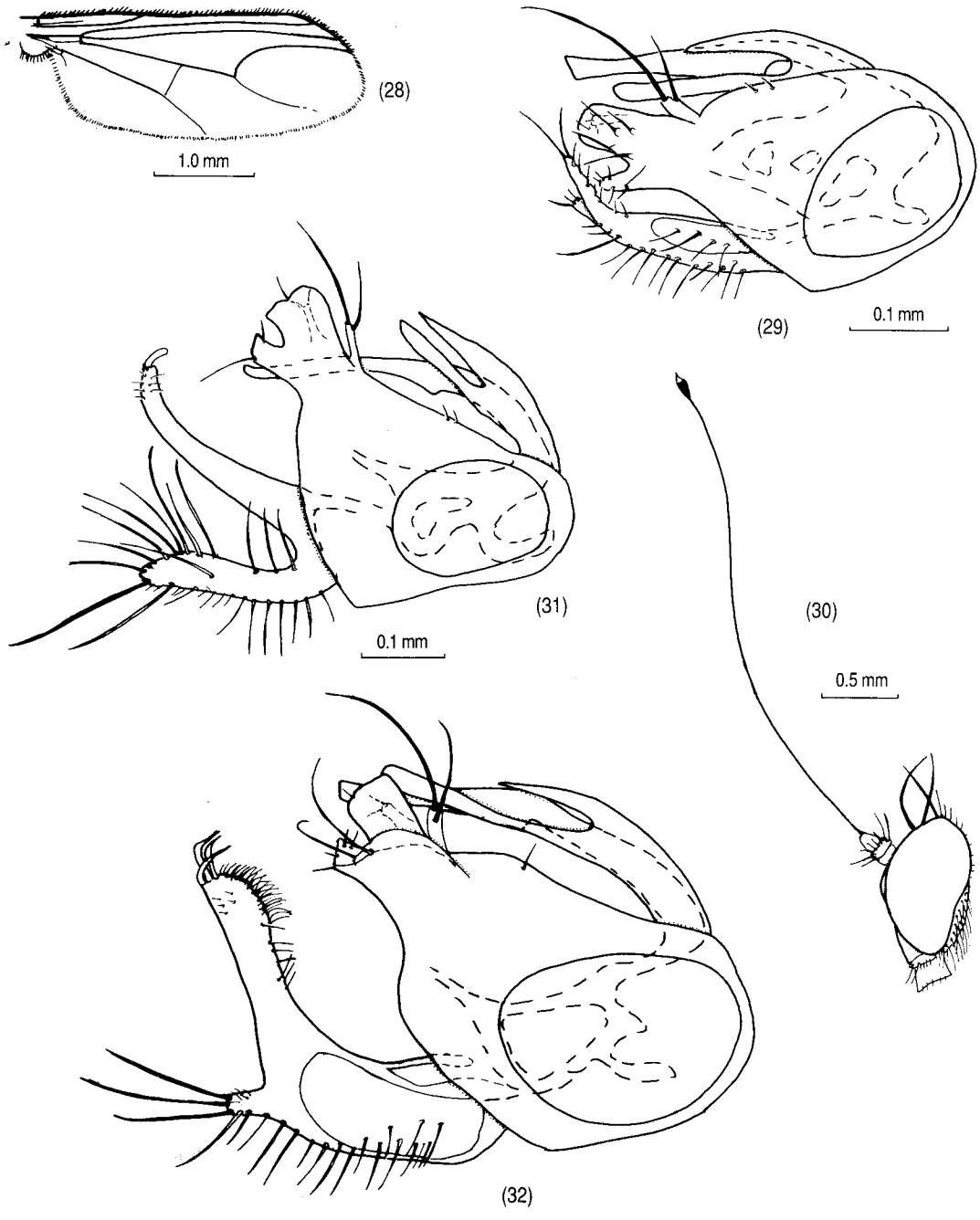


Fig. 28, 29 *Parentia milleri*, nr Foxton: (28) wing, dorsal, male; (29) hypopygium, left lateral. **Fig. 30, 31** *P. mobile,* Stephens I.: (30) head, left lateral, male; (31) hypopygium, left lateral. **Fig. 32** *P. modesta*, Fiordland: hypopygium, left lateral.

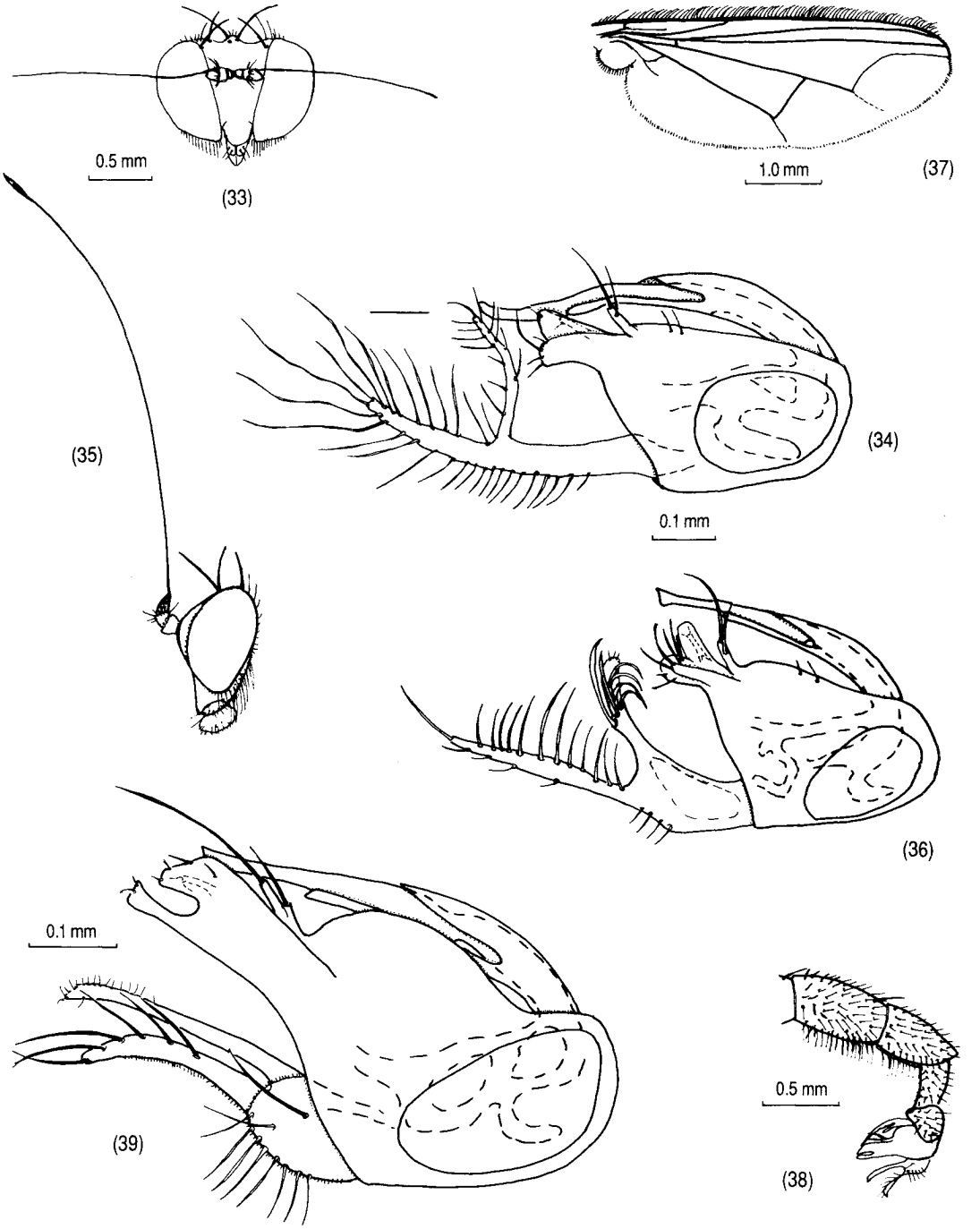


Fig. 33, 34 *Parentia nova,* no label: (33) head, anterior, male; (34) hypopygium, left lateral. **Fig. 35, 36** *P. pukakiensis,* L. Pukaki: (35) head, left lateral, male; (36) hypopygium, left lateral. **Fig. 37–39** *P. recticosta,* Kopikopiko Stm: (37) wing, dorsal, male; (38) postabdomen, left lateral, male; (39) hypopygium, left lateral.

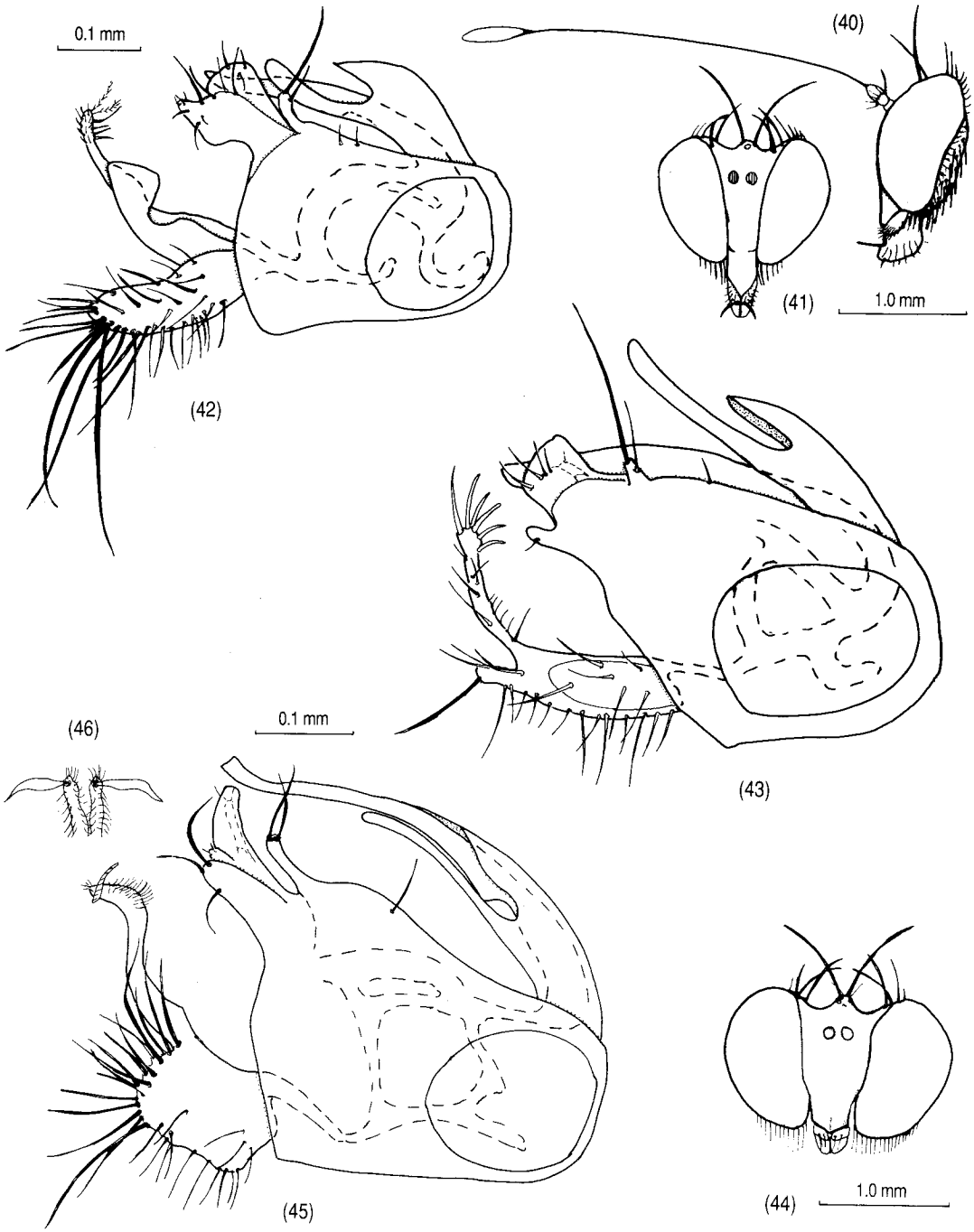


Fig. 40–42 *Parentia restricta*, Whakamaru: (40, 41) head, left lateral and anterior, male; (42) hypopygium, left lateral. **Fig. 43** *P. schlingeri*, nr Paekakariki: hypopygium, left lateral. **Fig. 44–46** *P. titirangi*, Titirangi: (44) head, anterior, male; (45) hypopygium, left lateral; (46) cercal apices, ventral.

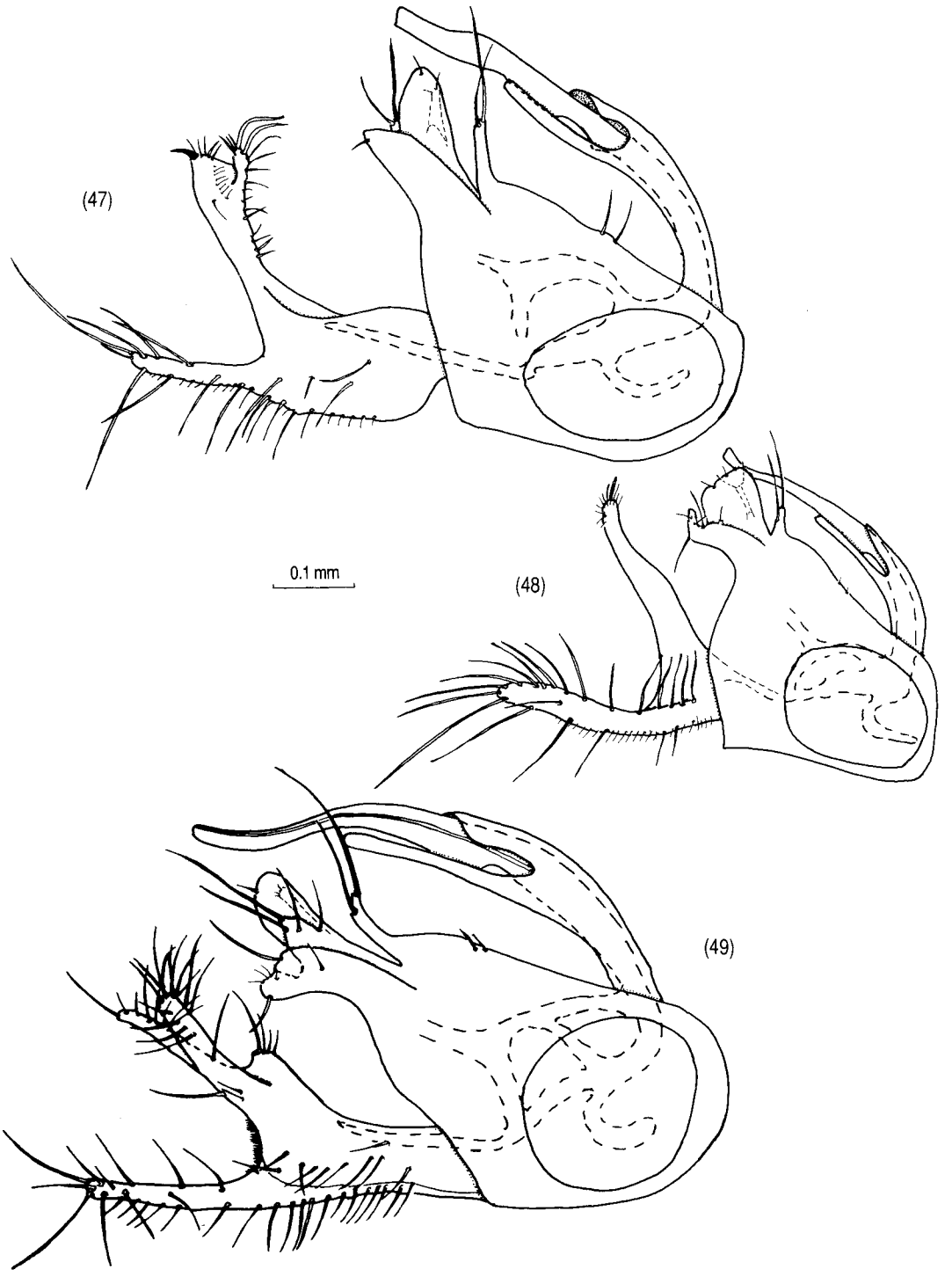
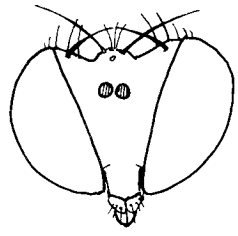


Fig. 47 *Parentia tonnoiri*, Banks Pen.: hypopygium, left lateral. **Fig. 48** *P. varifemorata*, Rotorua: hypopygium, left lateral. **Fig. 49** *P. whirinaki*, Whirinaki Forest: hypopygium, left lateral.



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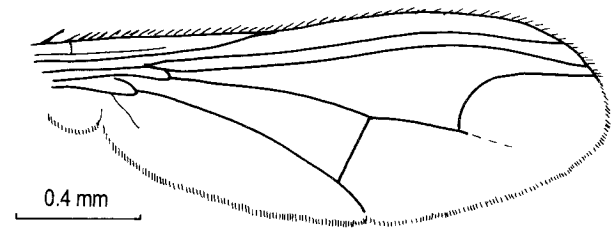

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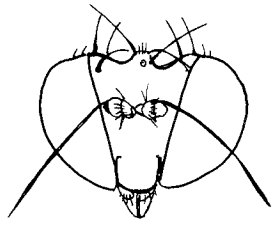

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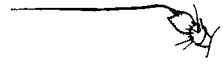

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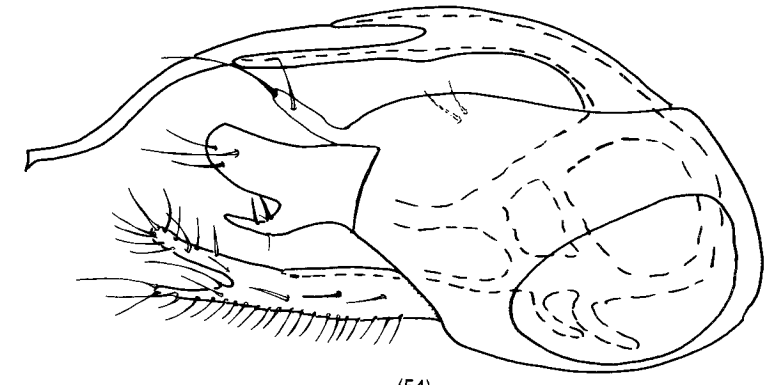

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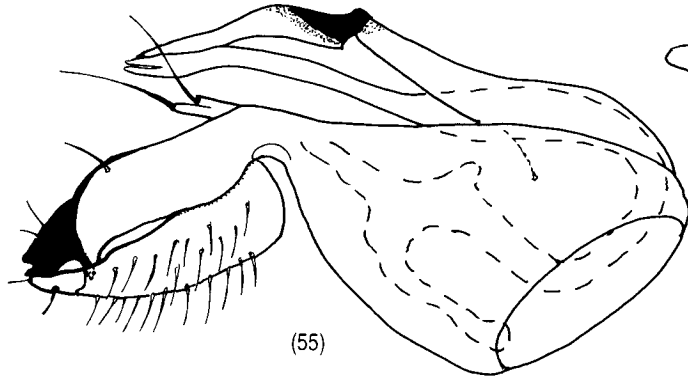

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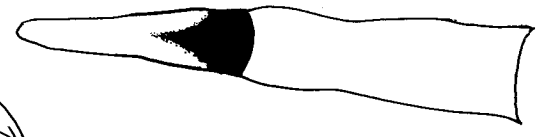
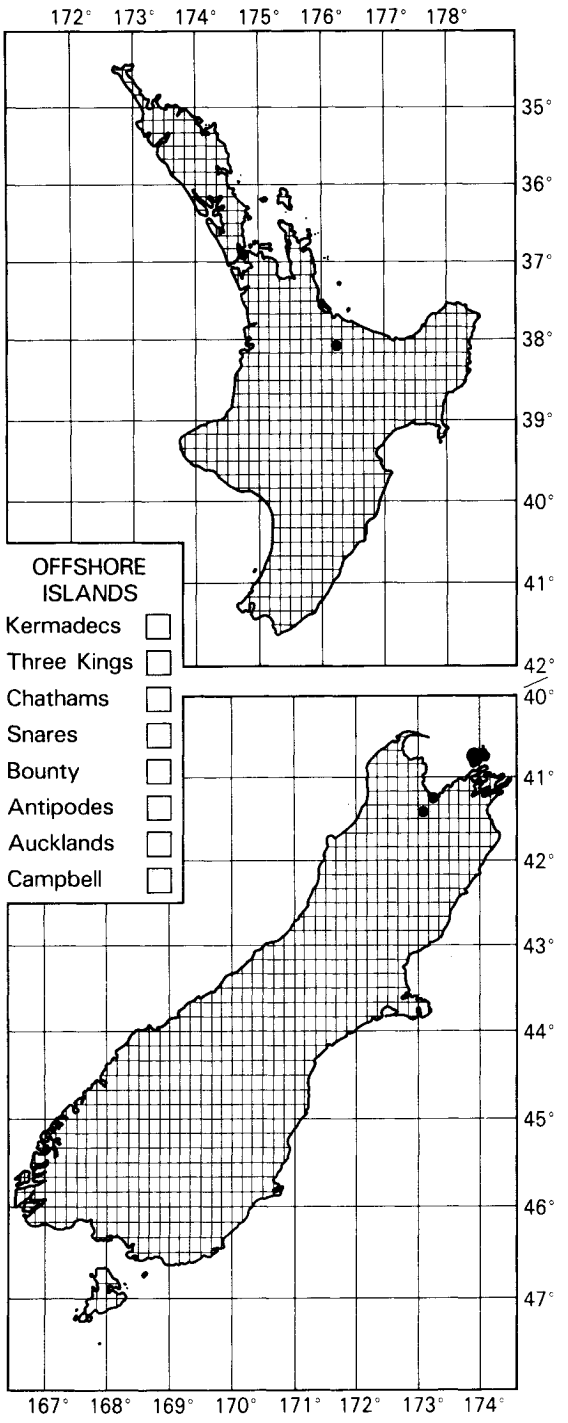


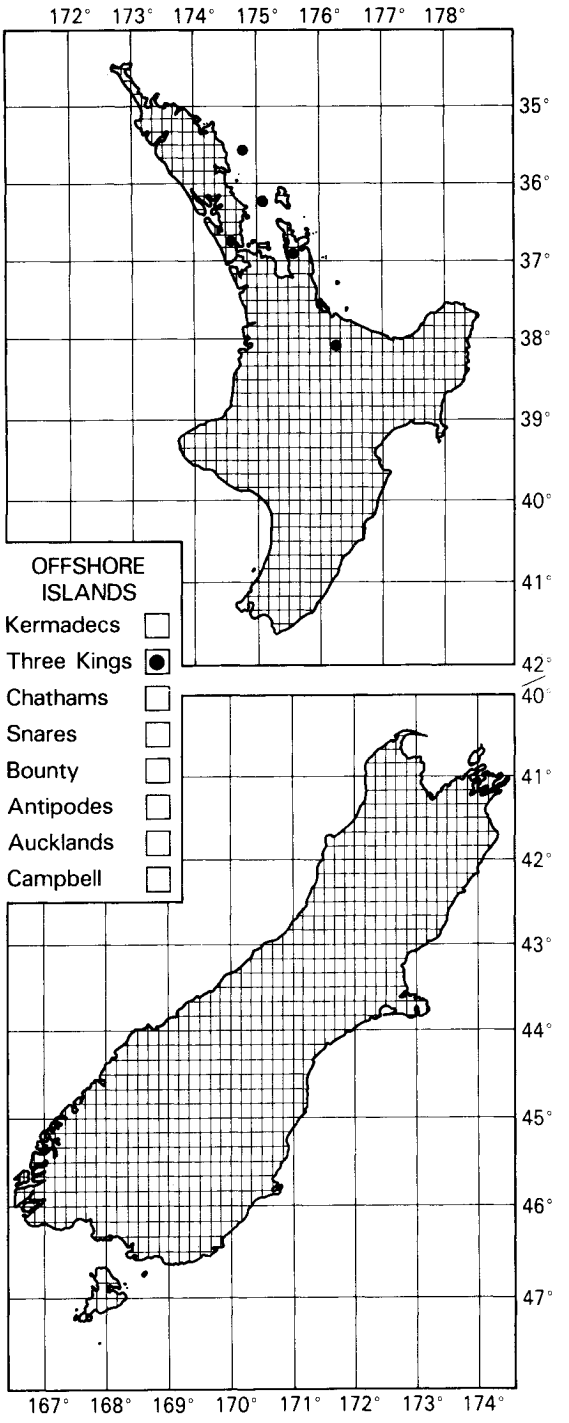
(56)

Fig. 50–54 *Naufraga hexachaeta*, Sumner: (50, 51) head, anterior, male and female; (52) antenna, left lateral, female; (53) wing, dorsal, male; (54) hypopygium, left lateral. **Fig. 55, 56** *Thrypticus arahakiensis*, Whirinaki Forest: (55) hypopygium, left lateral; (56) hypandrium, ventral.

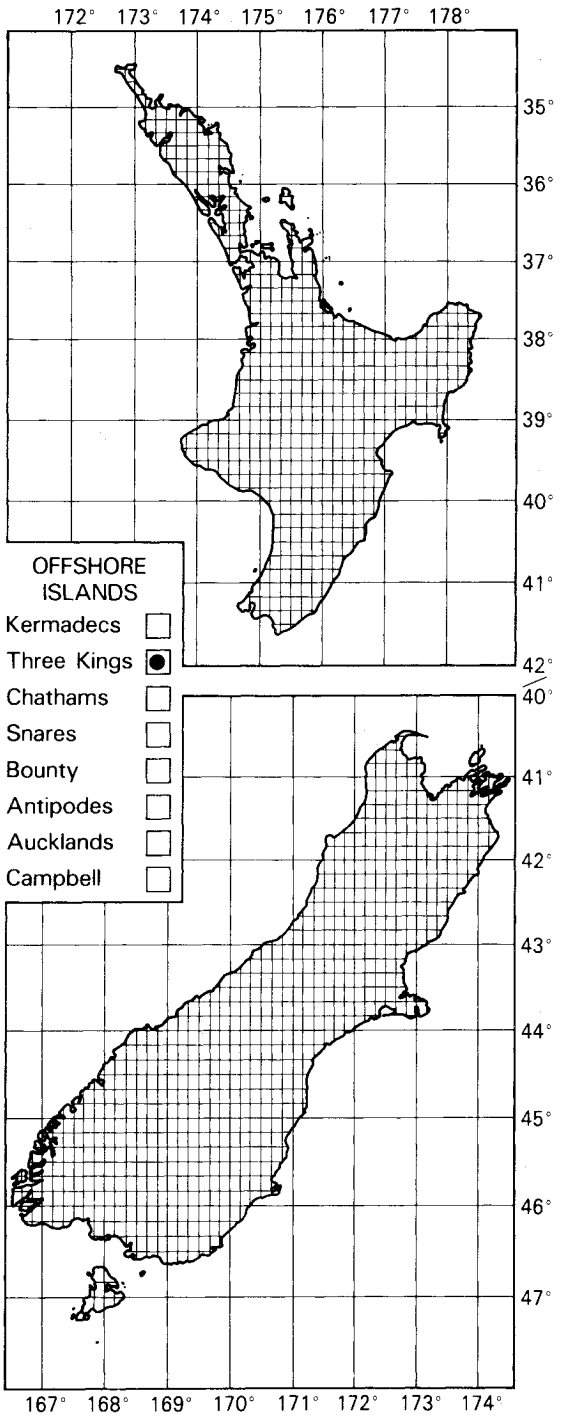
DISTRIBUTION MAPS



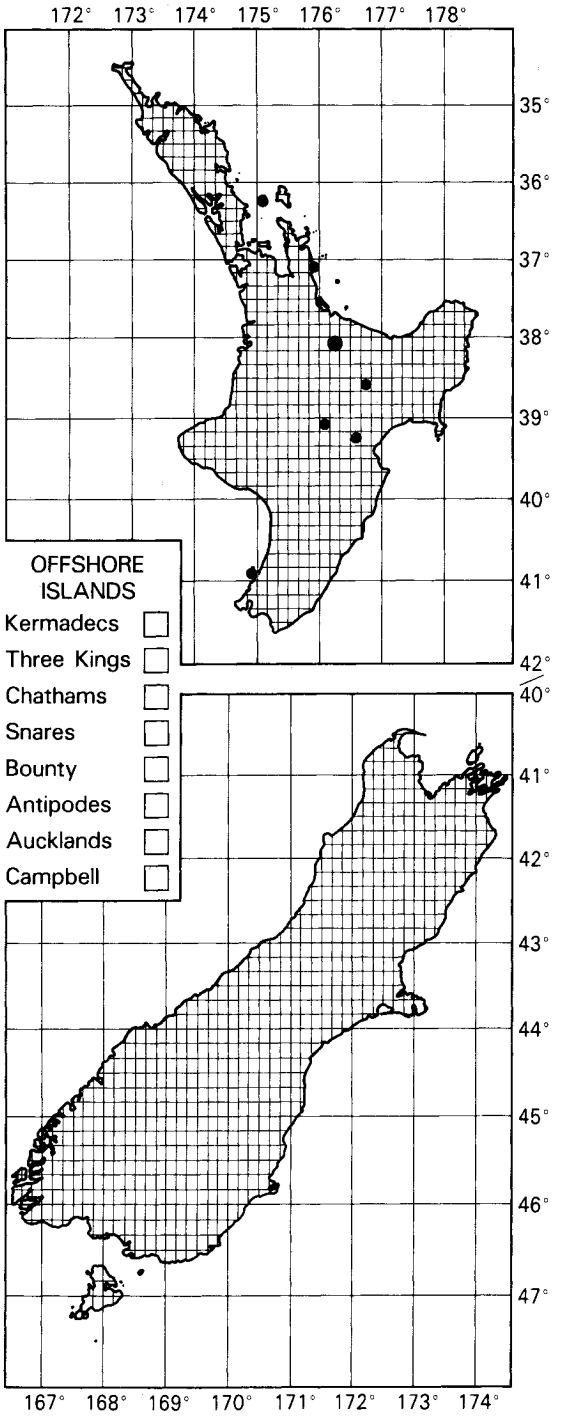
• **Map 1** Collection localities, *Parentia anomalicosta* •



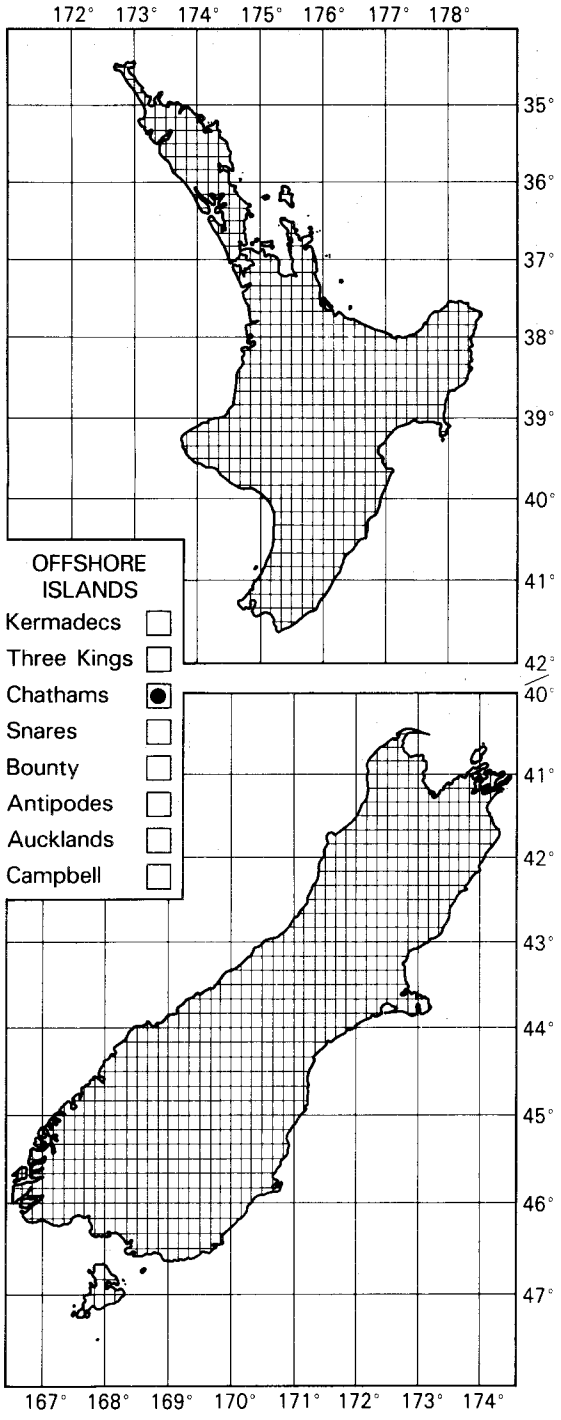
• **Map 2** Collection localities, *Parentia aotearoa* •



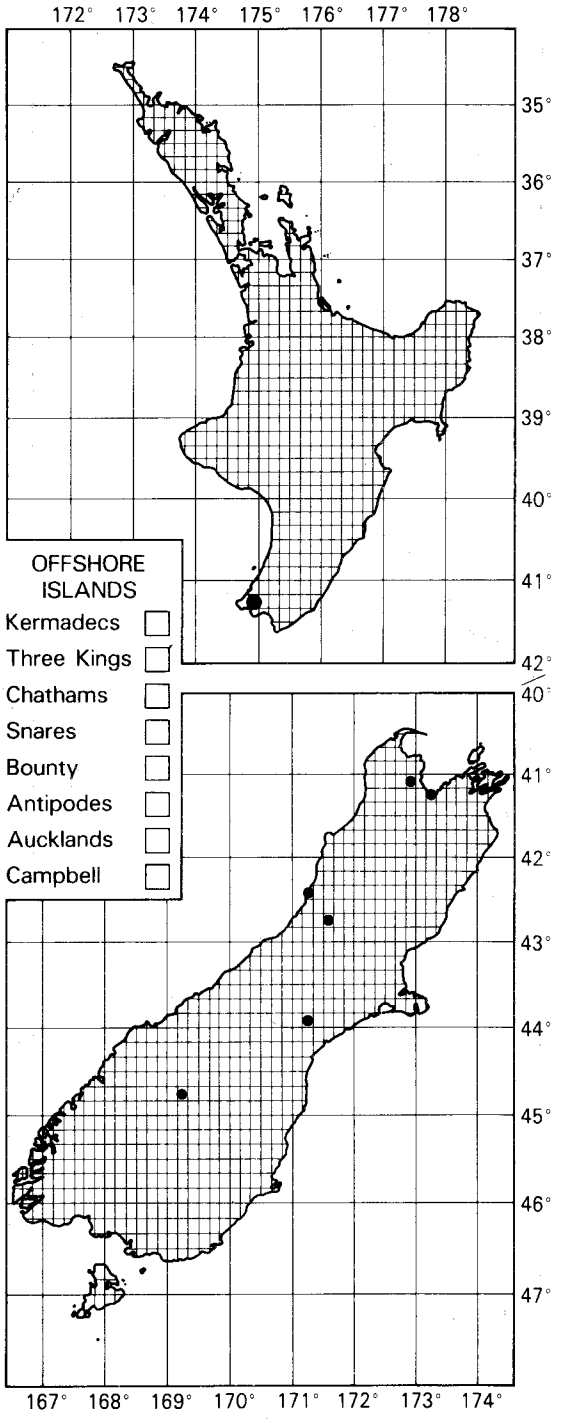
• **Map 3** Collection localities, *Parentia argentifrons* •



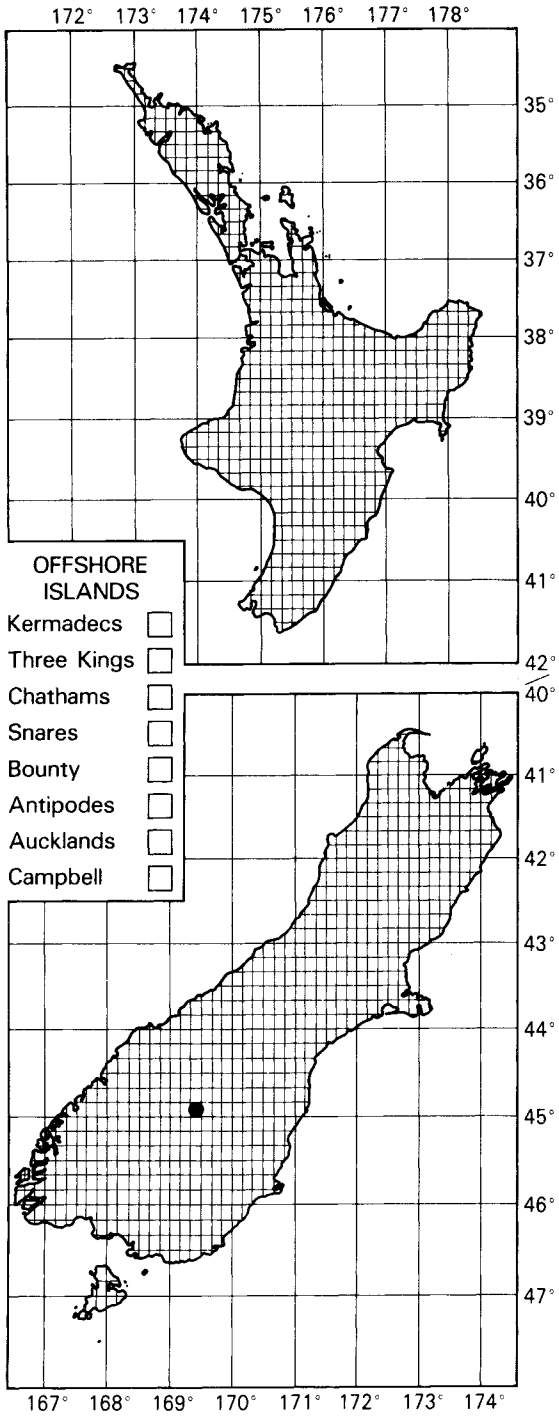
• **Map 4** Collection localities, *Parentia calignosa* •



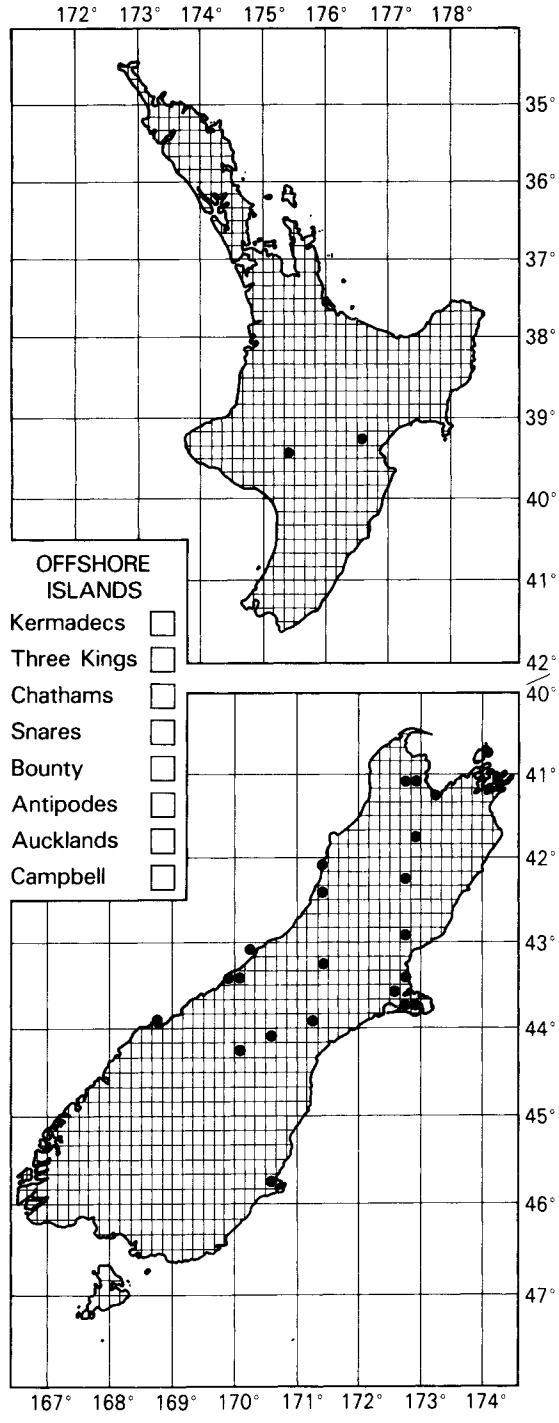
• **Map 5** Collection localities, *Parentia chathamensis* •



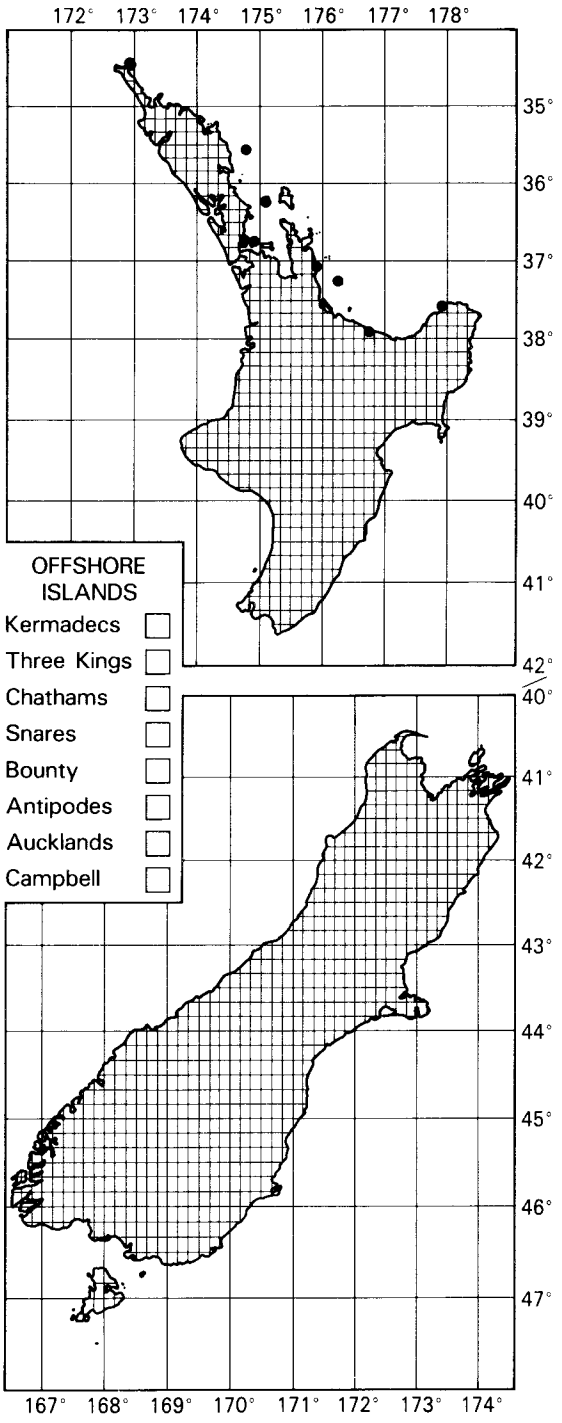
• **Map 6** Collection localities, *Parentia cilifoliata* •



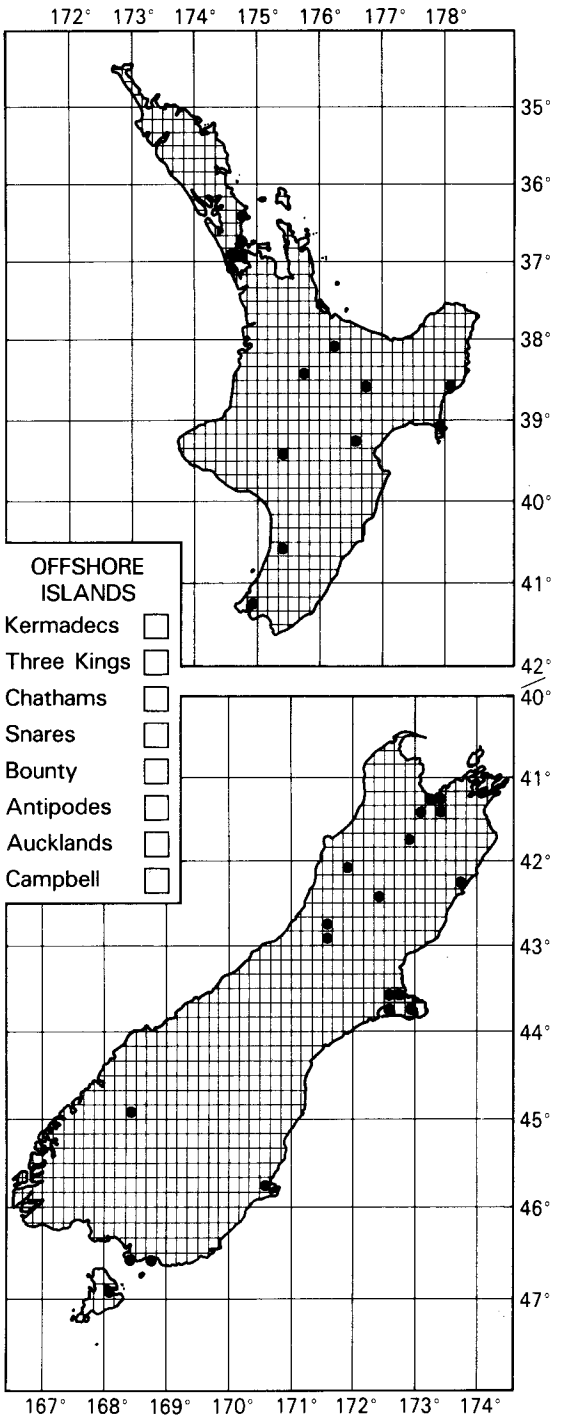
• **Map 7** Collection localities, *Parentia defecta* •



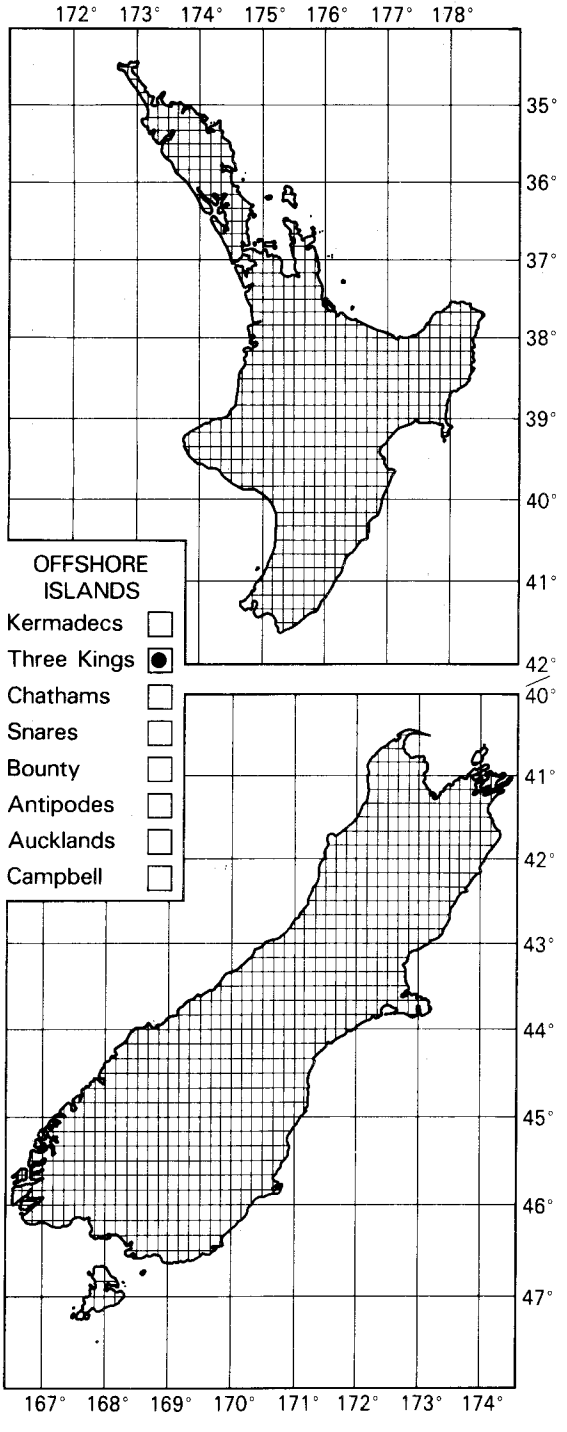
• **Map 8** Collection localities, *Parentia fuscata* •



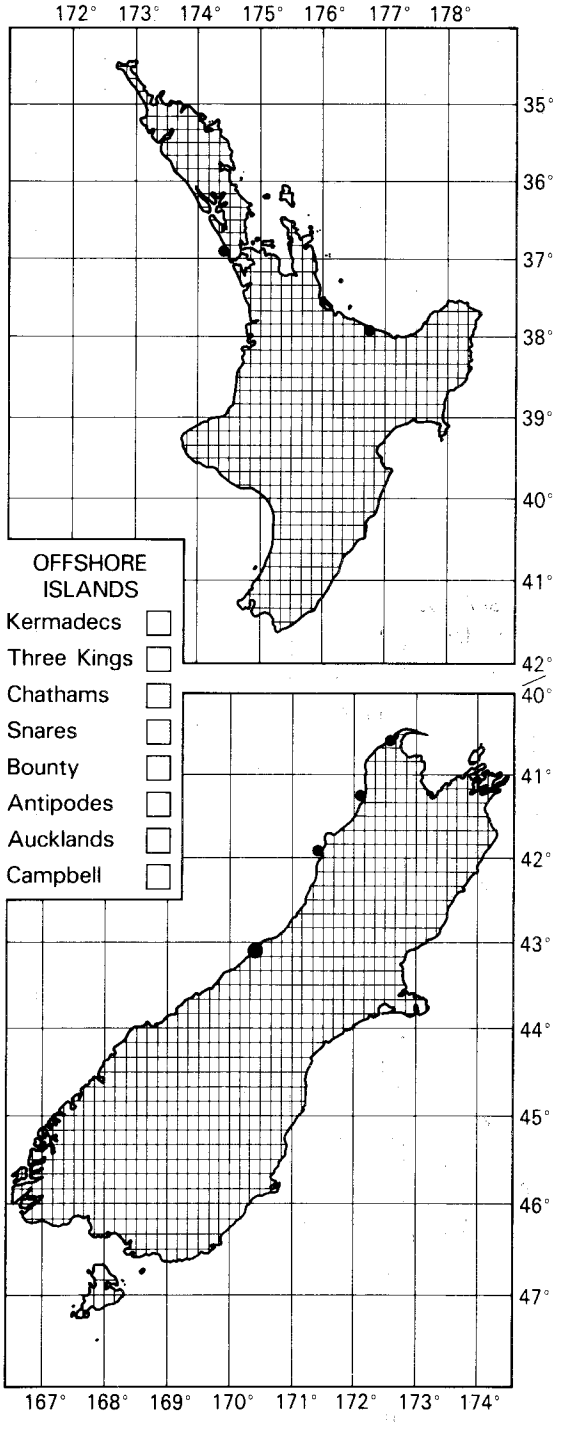
• **Map 9** Collection localities, *Parentia gemmata* •



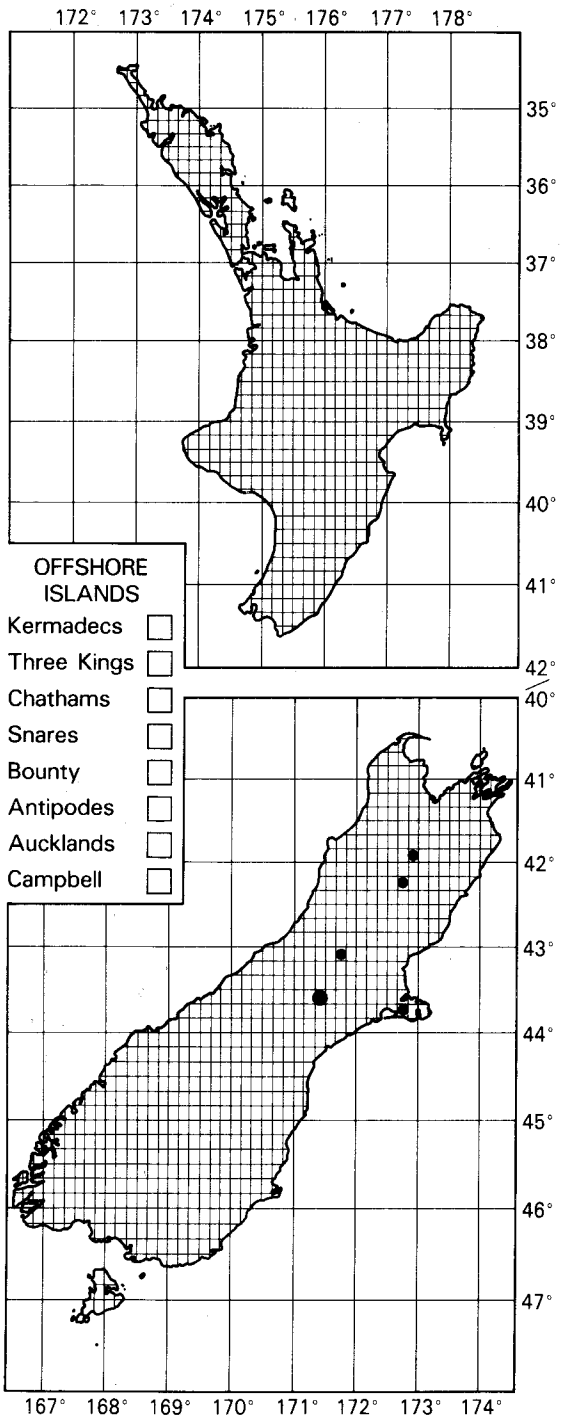
• **Map 10** Collection localities, *Parentia griseicollis* •



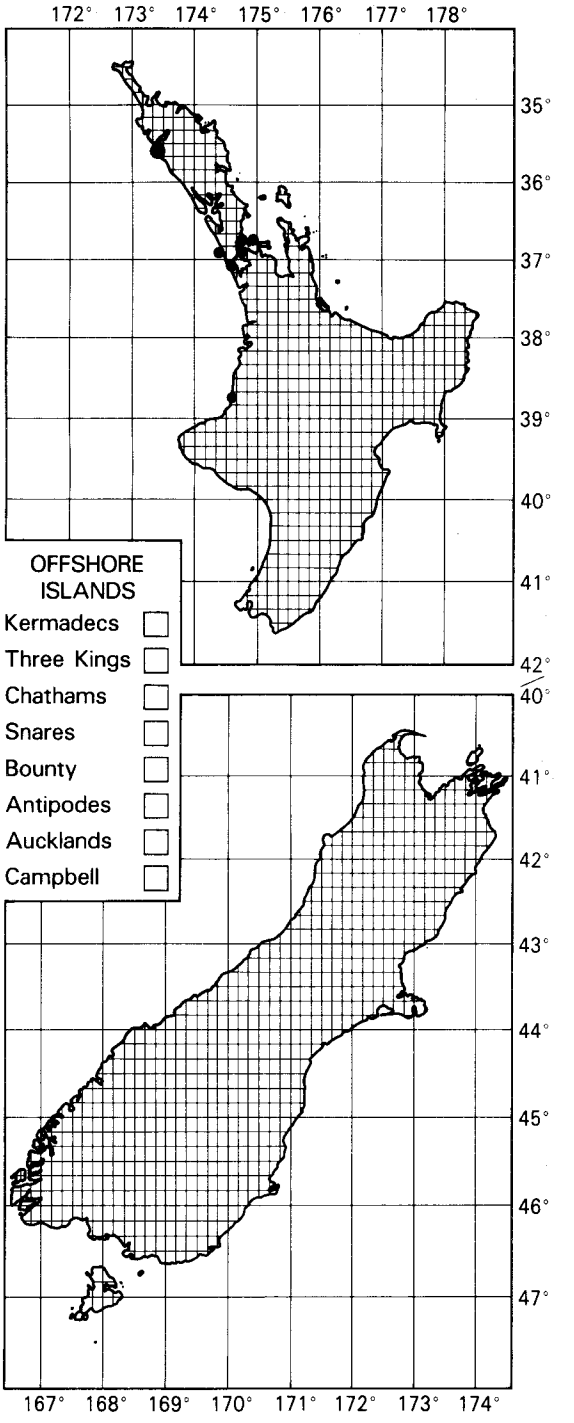
• **Map 11** Collection localities, *Parentia insularis* •



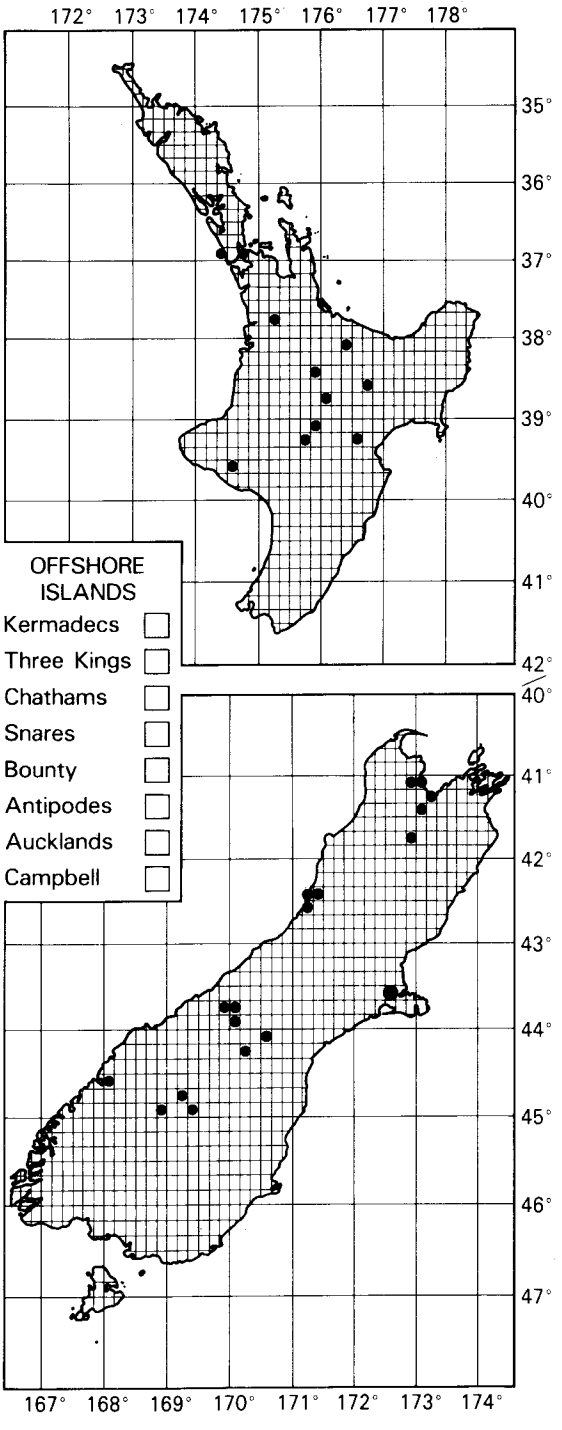
• **Map 12** Collection localities, *Parentia johnsi* •



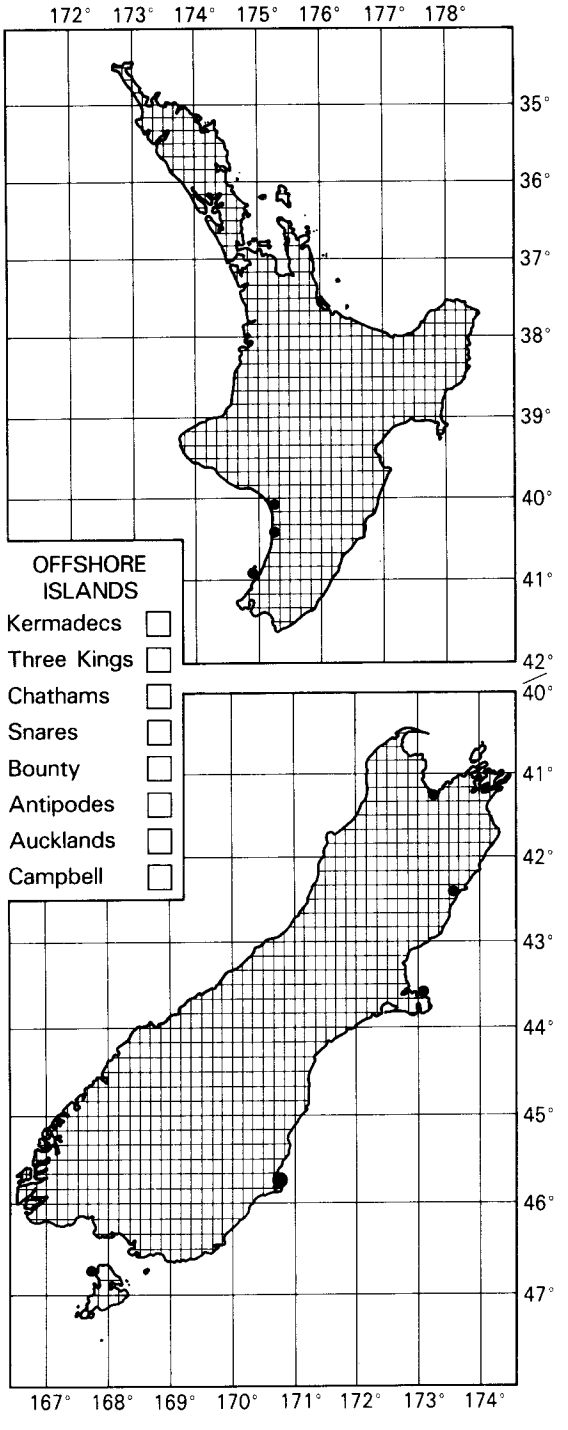
• **Map 13** Collection localities, *Parentia lyra* •



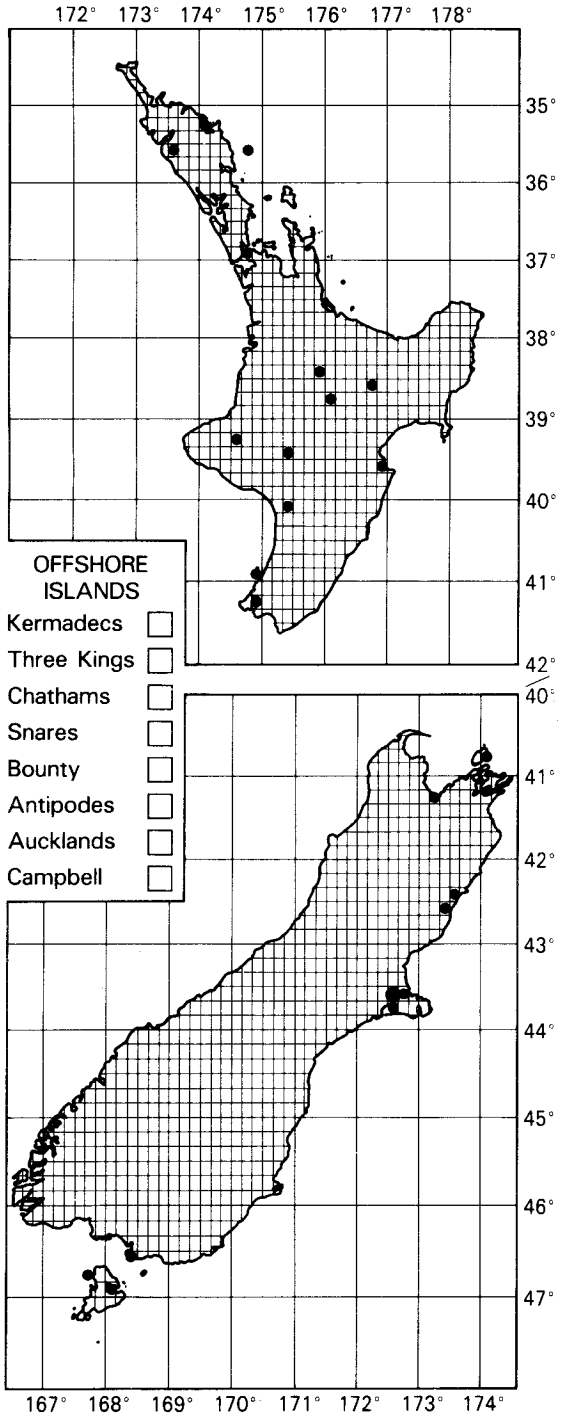
• **Map 14** Collection localities, *Parentia magniseta* •



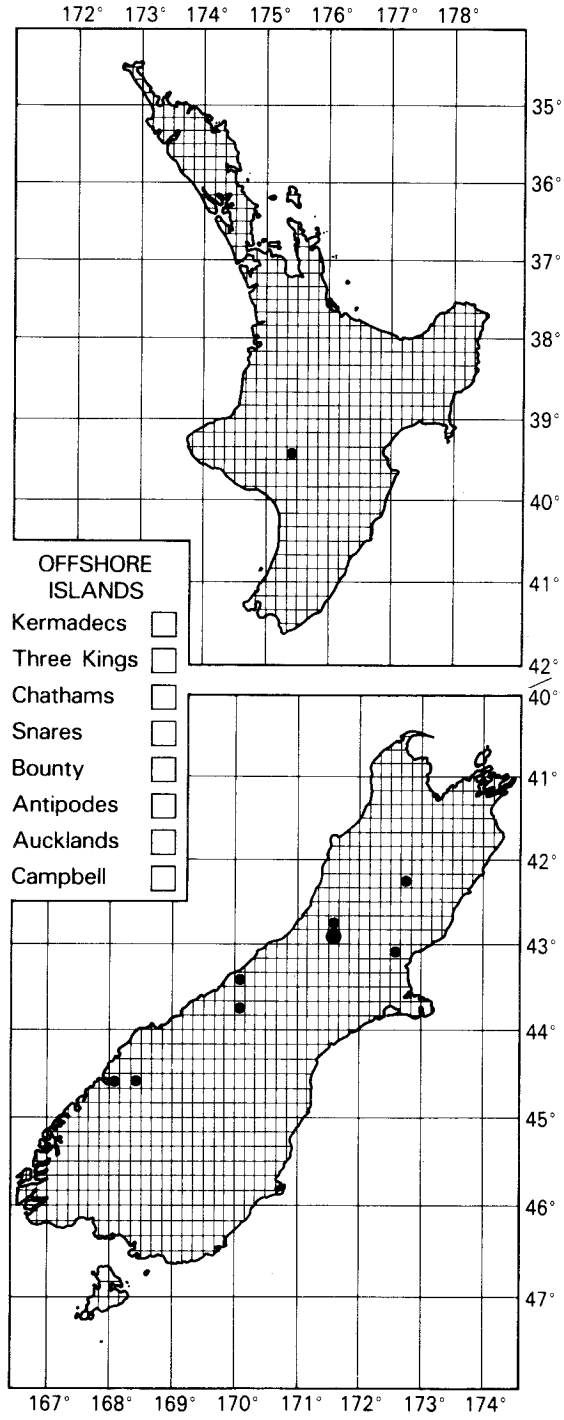
• **Map 15** Collection localities, *Parentia malitiosa* •



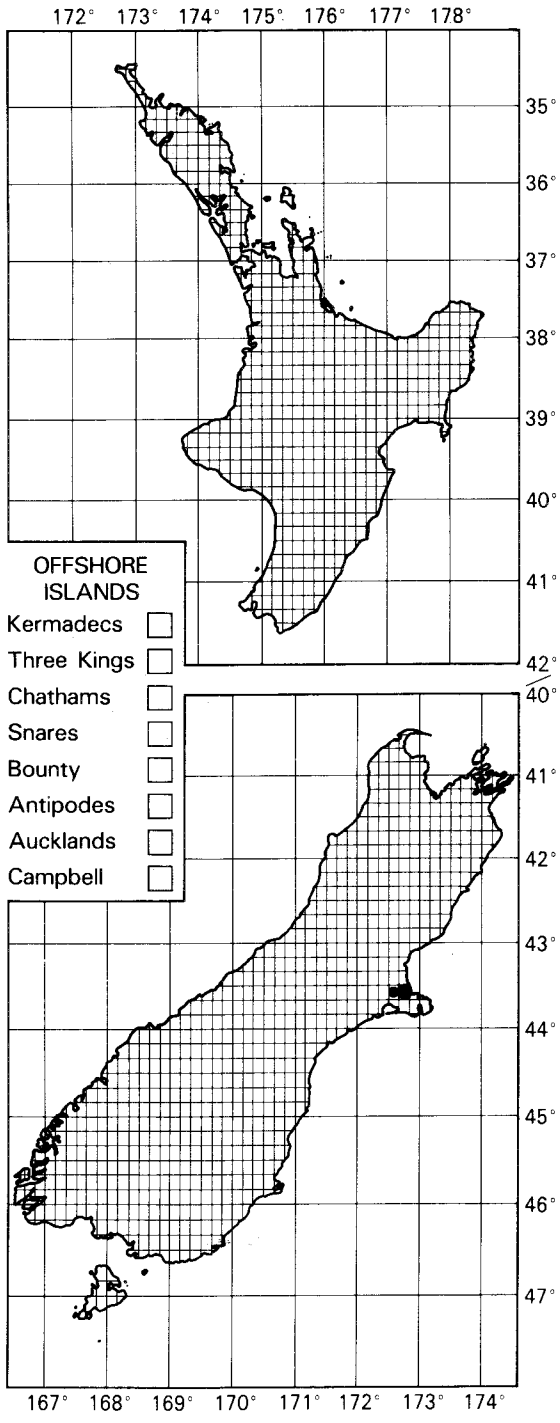
• **Map 16** Collection localities, *Parentia milleri* •



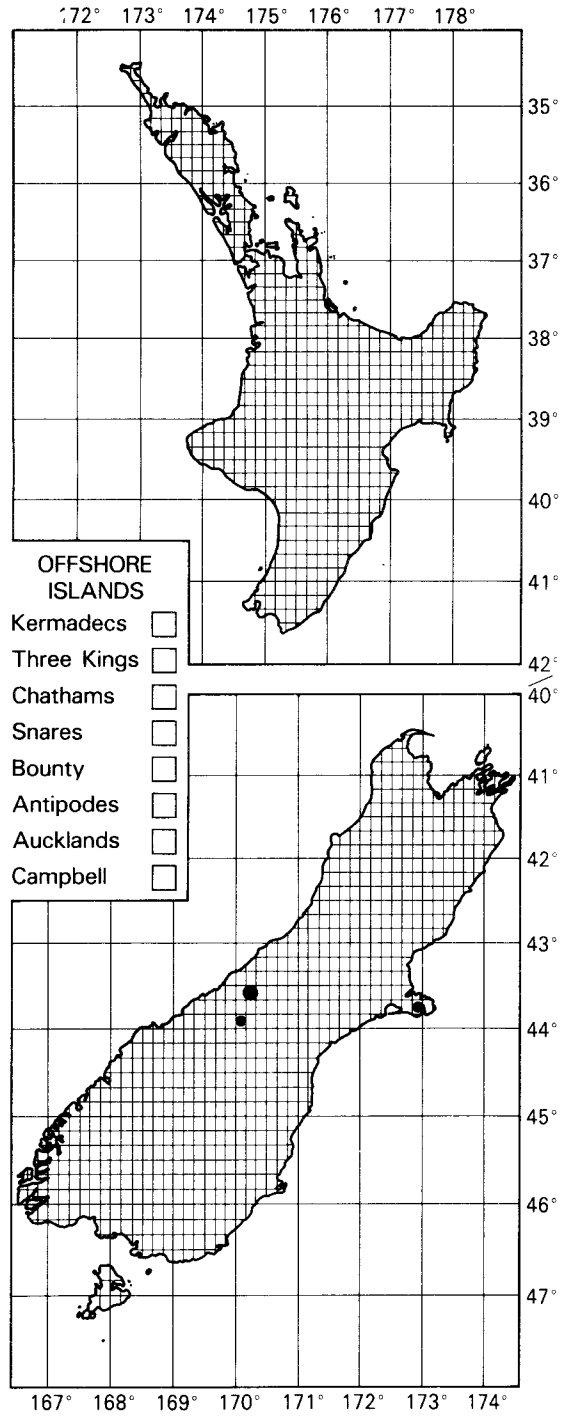
• **Map 17** Collection localities, *Parentia mobile* •



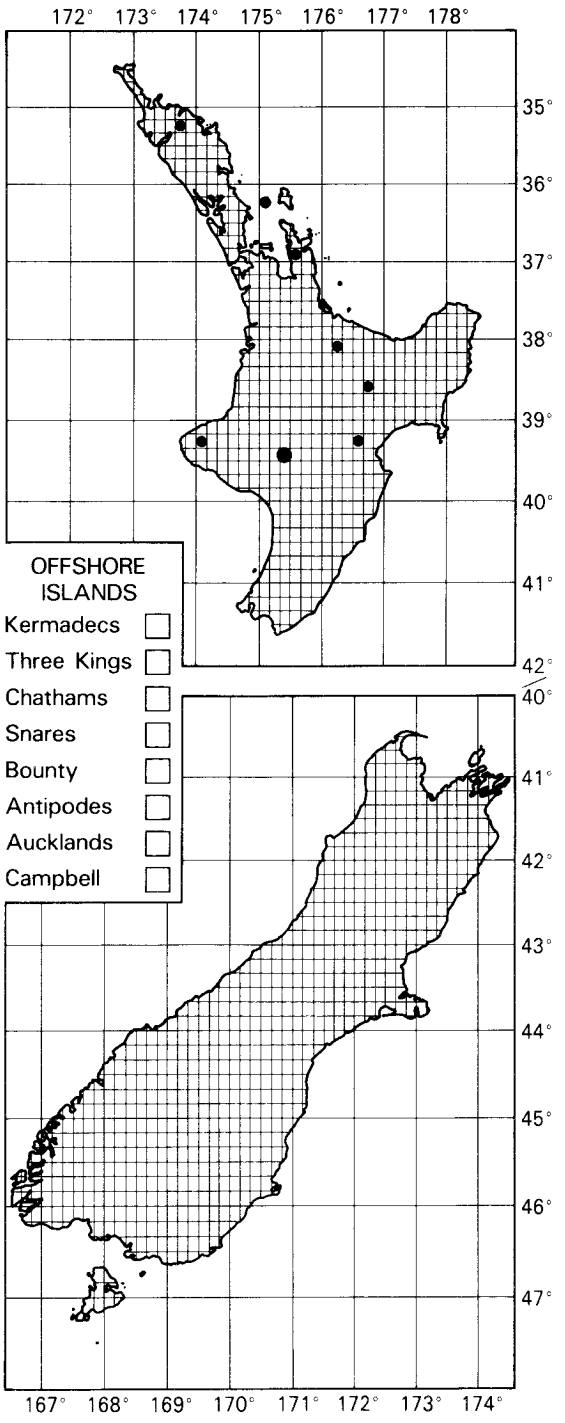
• **Map 18** Collection localities, *Parentia modesta* •



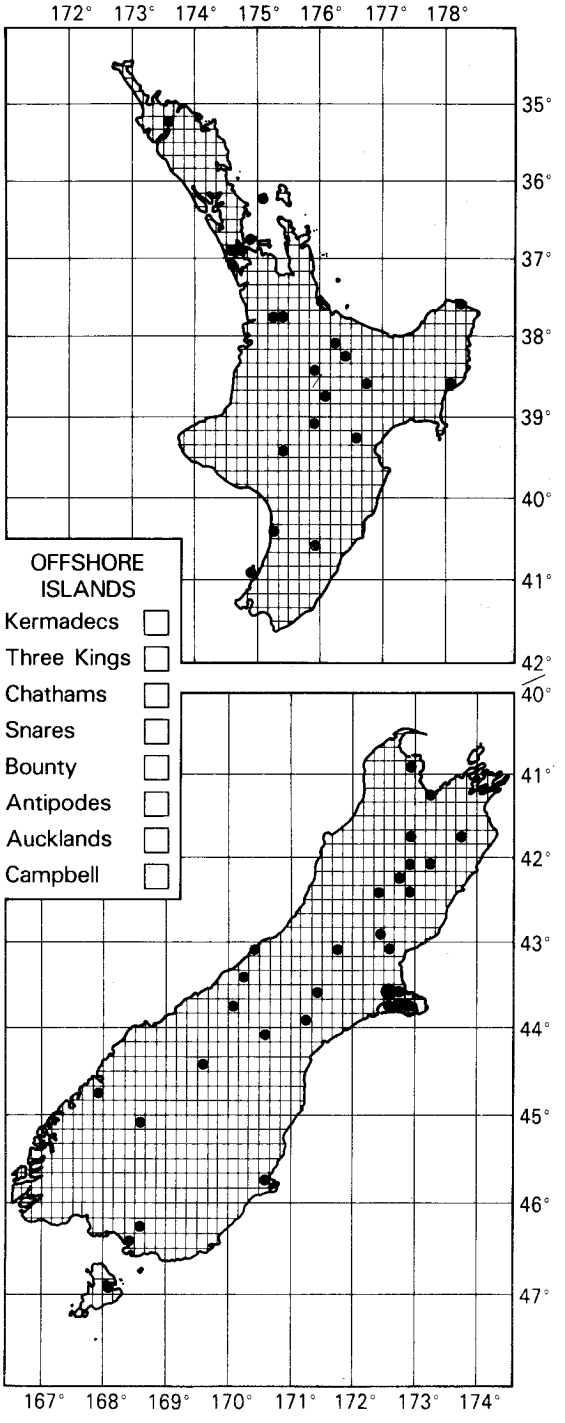
• **Map 19** Collection localities, *Parentia nova* •



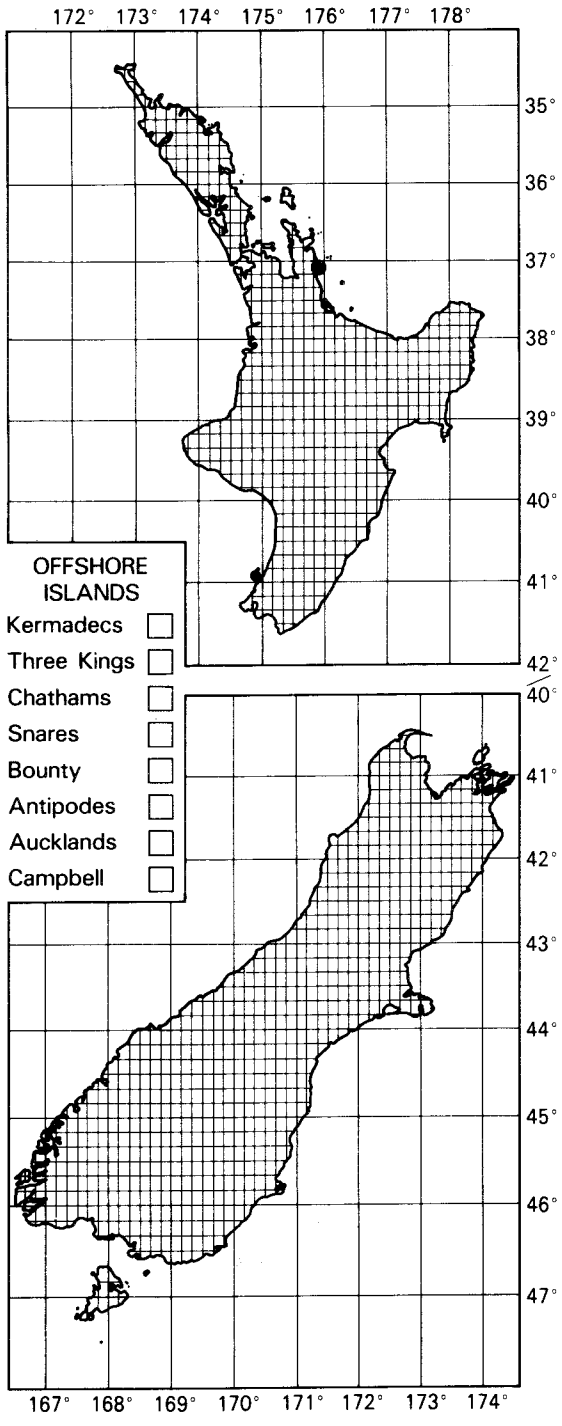
• **Map 20** Collection localities, *Parentia pukakiensis* •



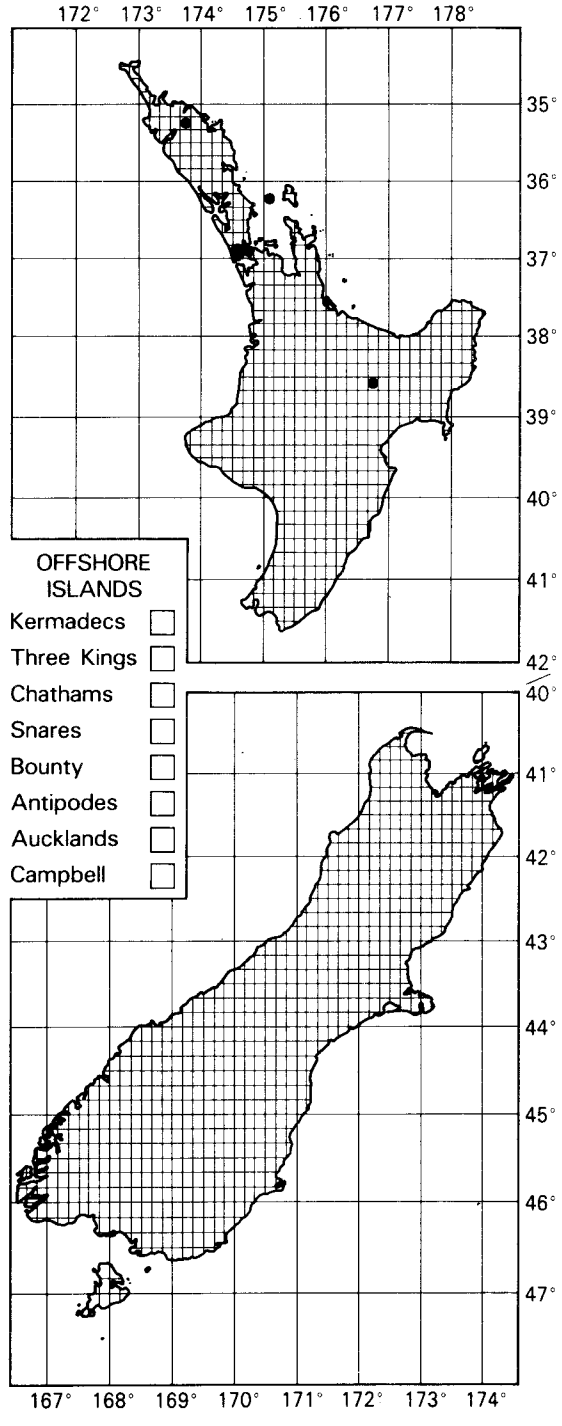
• **Map 21** Collection localities, *Parentia recticosta* •



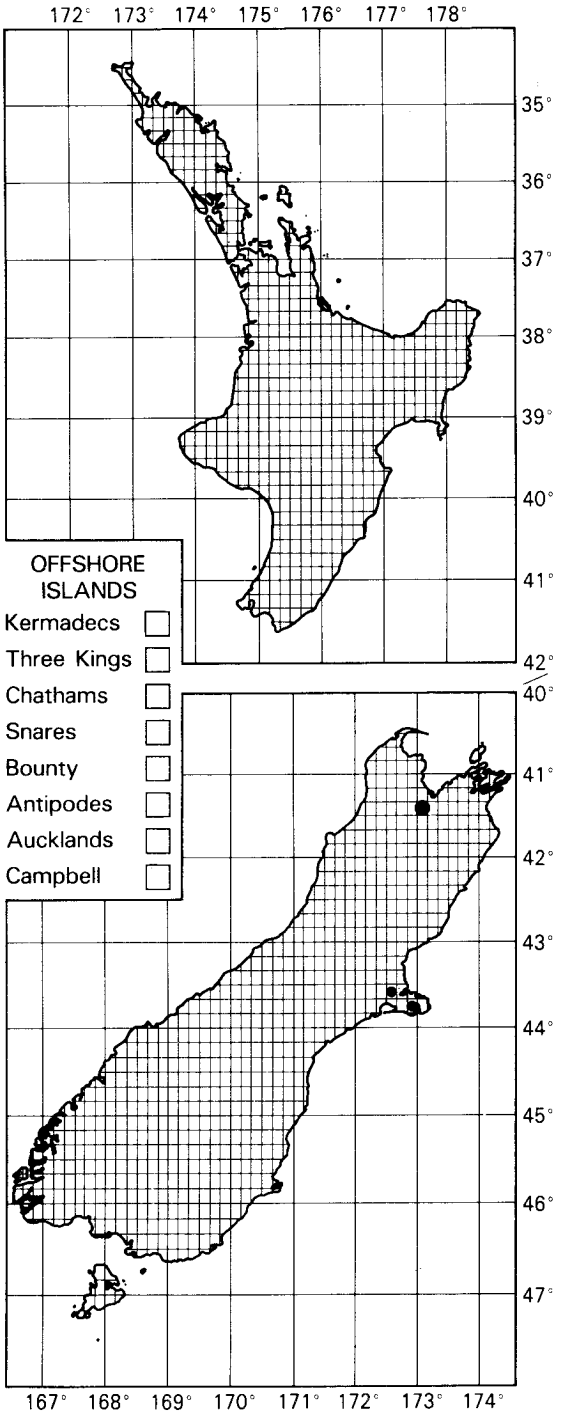
• **Map 22** Collection localities, *Parentia restricta* •



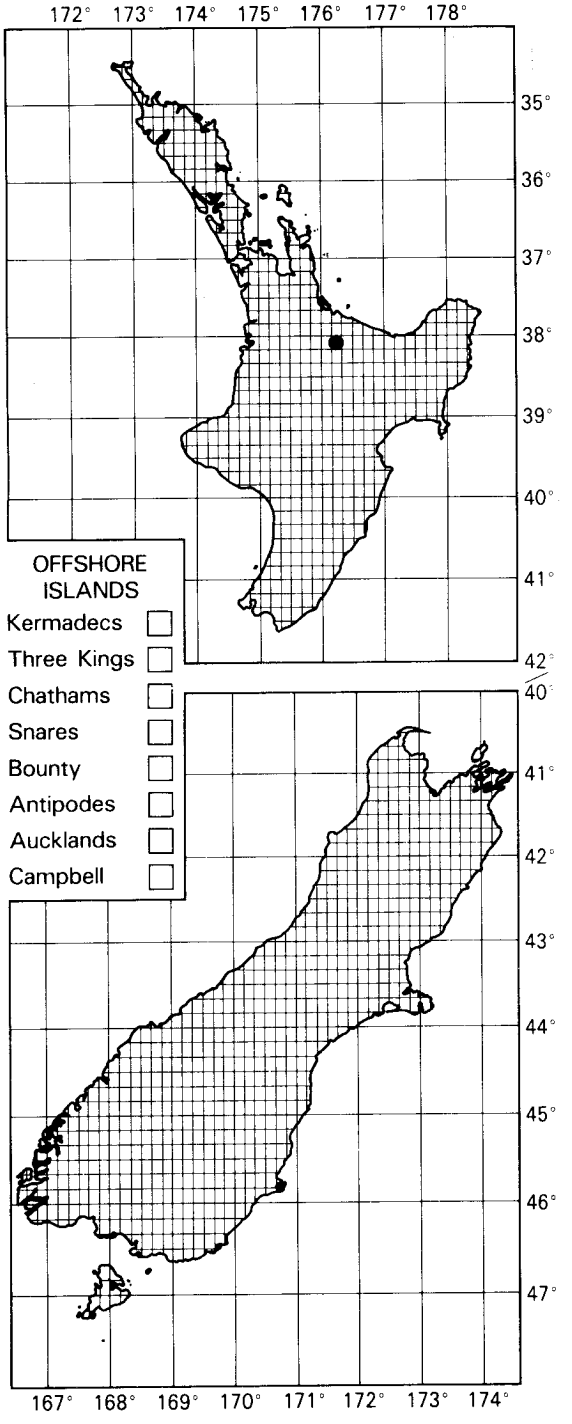
• **Map 23** Collection localities, *Parentia schlingeri* •



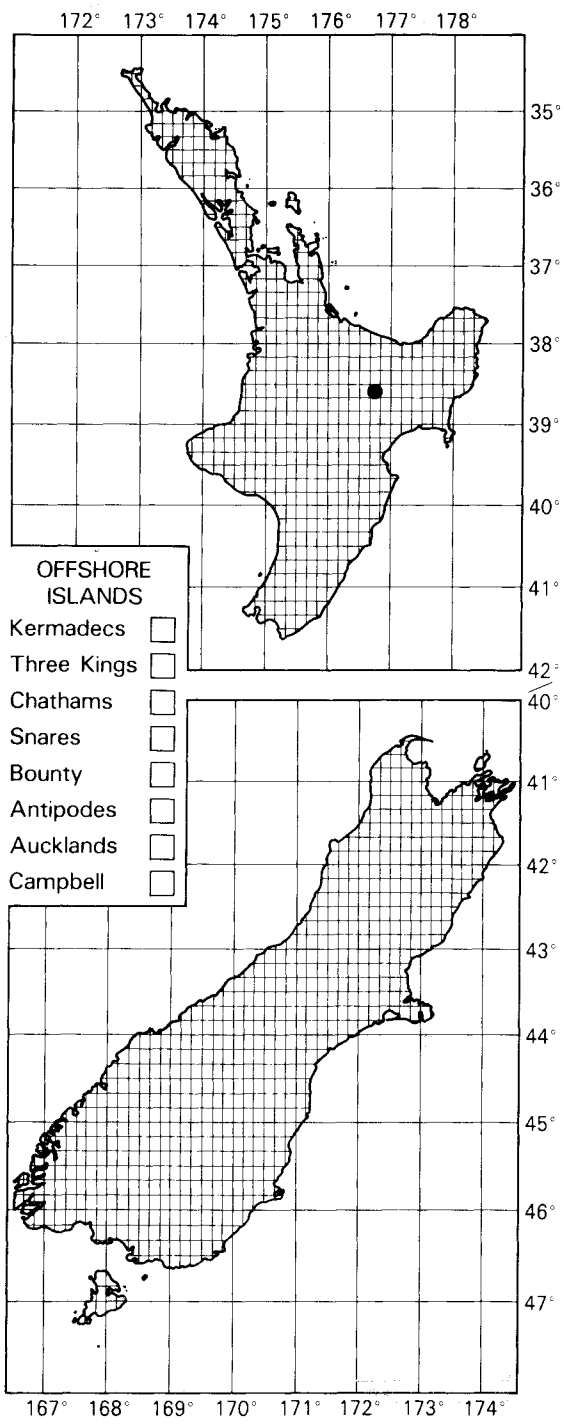
• **Map 24** Collection localities, *Parentia titirangi* •



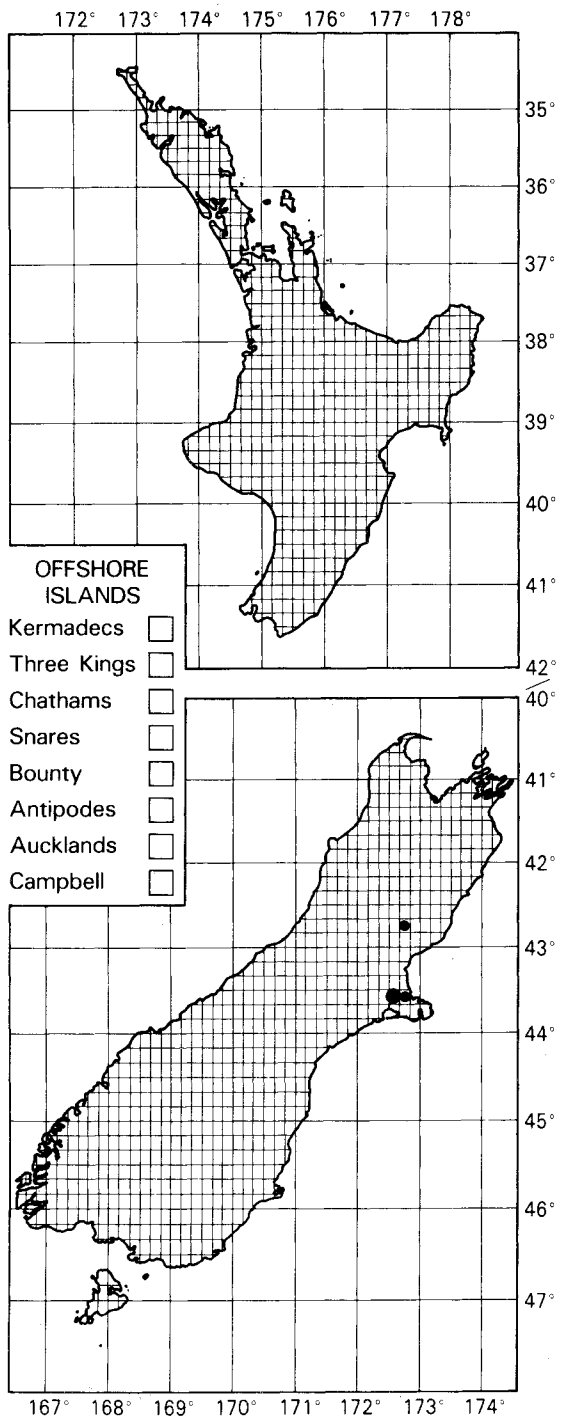
• **Map 25** Collection localities, *Parentia tonnoiri* •



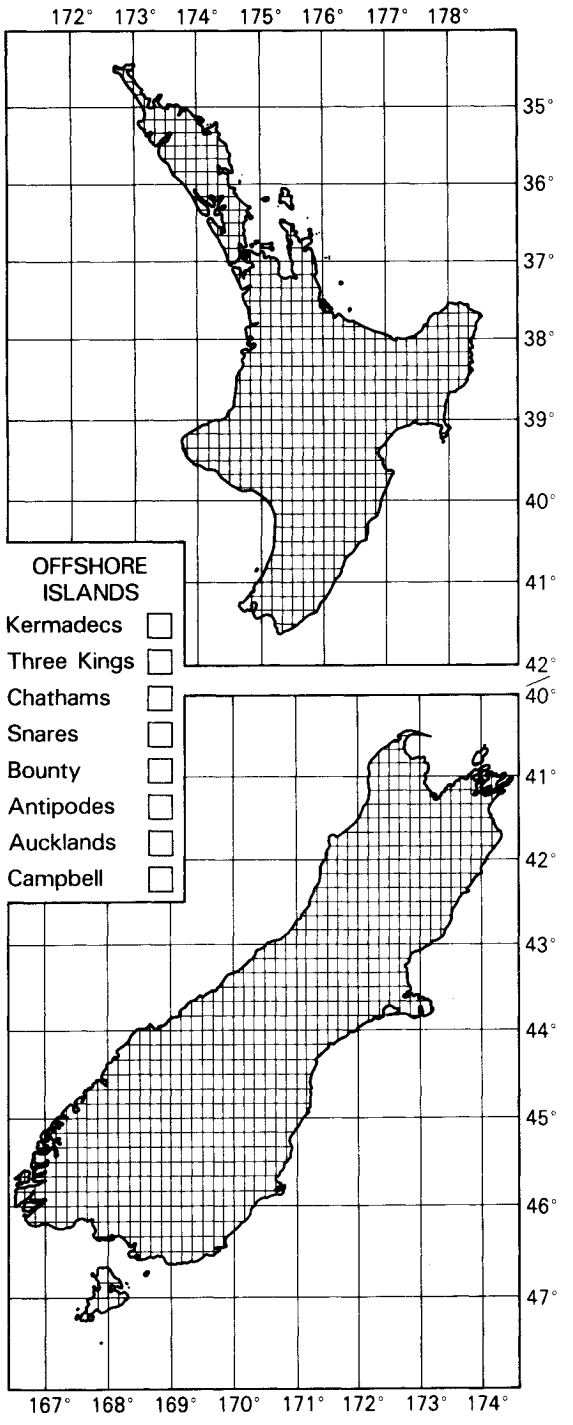
• **Map 26** Collection localities, *Parentia varifemorata* •



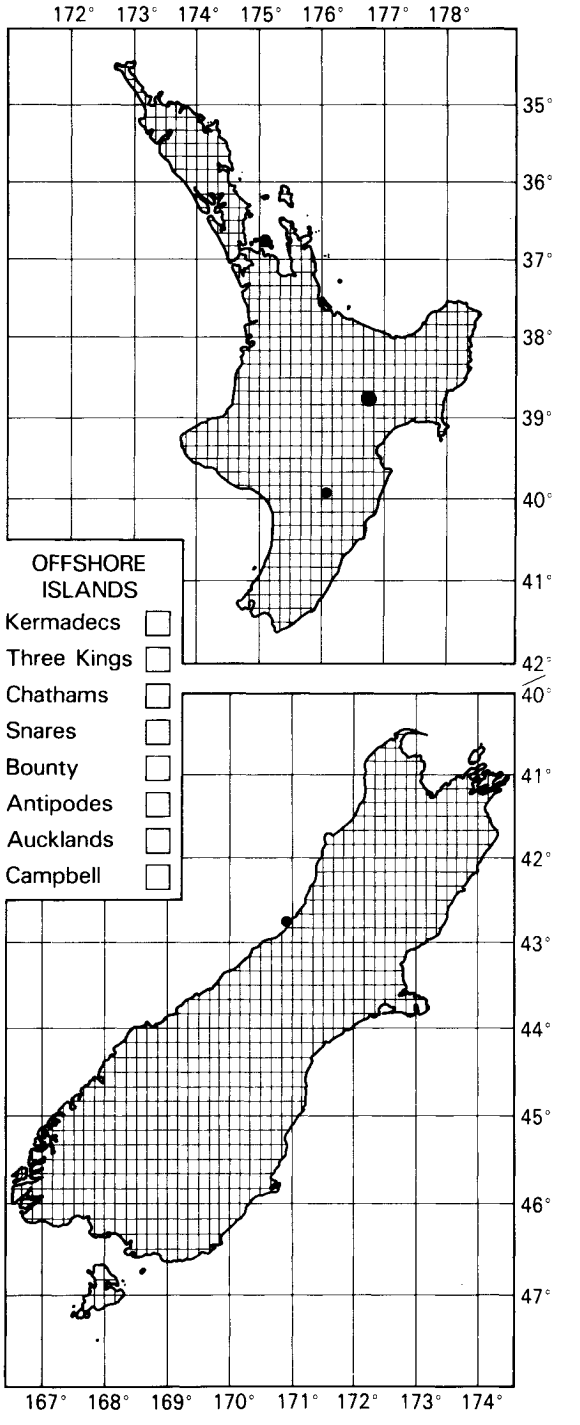
• **Map 27** Collection localities, *Parentia whirinaki* •



• **Map 28** Collection localities, *Naufraga hexachaeta* •



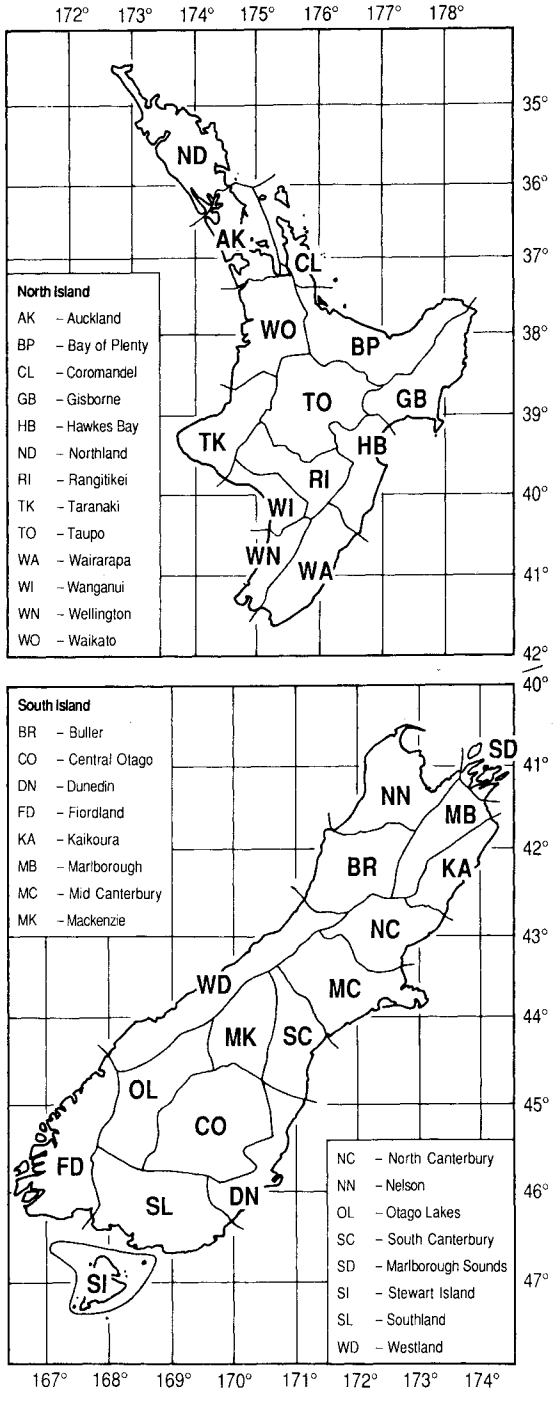
• **Map 29** Collection localities, *Amblypsilopus proximus* •



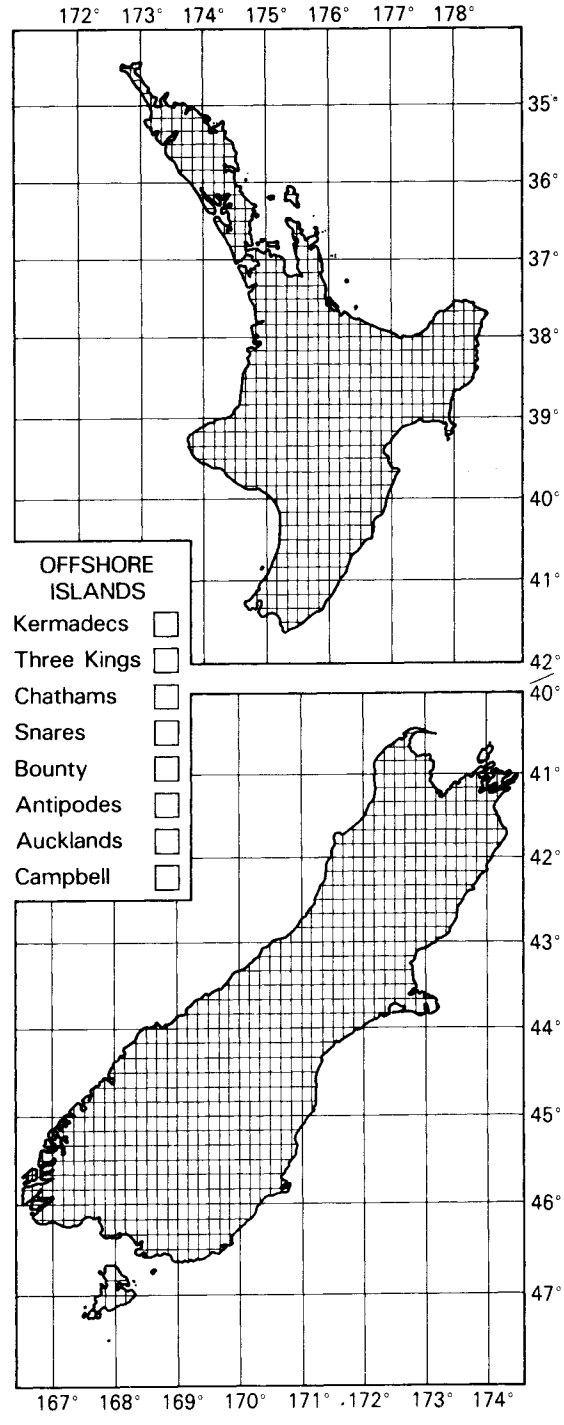
• **Map 30** Collection localities, *Thrypticus arahakiensis* •

TAXONOMIC INDEX

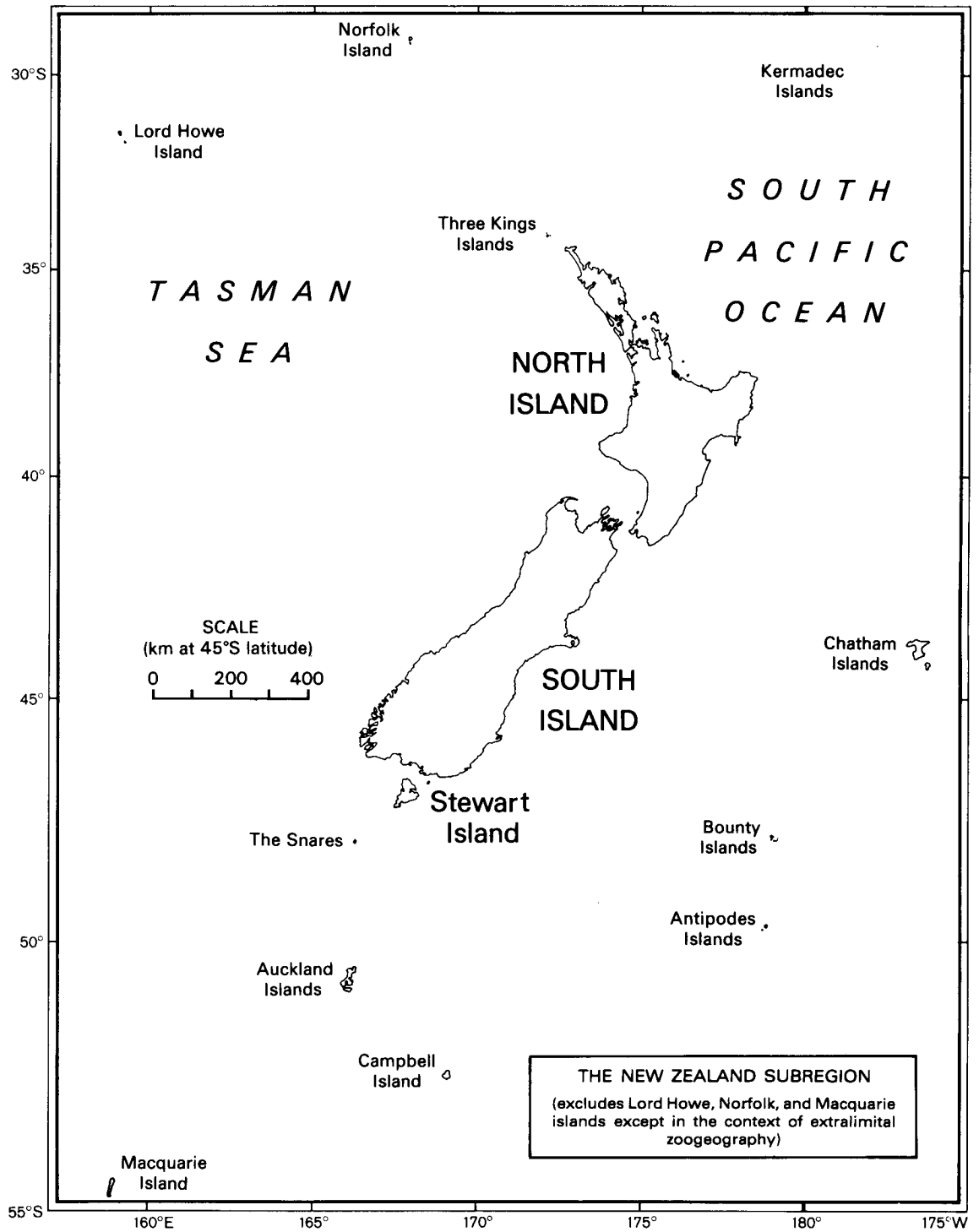
This index covers the nominal taxa ofDolichopodidae and related groups mentioned in the text, regardless of their current status in taxonomy. Page numbers in bold type denote descriptions of taxa, and in italic type illustrations. Suffixed letters are used to indicate the location of keys (k) and distribution maps (m).



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


Norfolk Island
Kermadec Islands
Lord Howe Island
SOUTH PACIFIC OCEAN
Three Kings Islands
TASMAN SEA
NORTH ISLAND
SCALE
(km at 45°S latitude)
0 200 400
SOUTH ISLAND
Chatham Islands
Stewart Island
The Snares
Bounty Islands
Antipodes Islands
Auckland Islands
Campbell Island
THE NEW ZEALAND SUBREGION
(excludes Lord Howe, Norfolk, and Macquarie islands except in the context of extralimital zoogeography)
Macquarie Island
30°S
35°
40°
45°
50°
55°S
160°E
165°
170°
175°
180°
175°W

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This series of refereed occasional publications has been established to encourage those with expert knowledge to publish concise yet comprehensive accounts of elements in the New Zealand fauna. The series is professional in its conception and presentation, yet every effort is made to provide resources for identification and information that are accessible to the non-specialist.

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Te utu (tirohia te whaarangi 73): Ko te koopakitanga me te pane kuini kei roto i te utu. Me utu koutou e noho ana Niu Tiireni me Aahitereiria ki nga taara o Niu Tiireni. Ko eetahi atu me utu te whakaritenga i nga taara Marikena.

E toe ana nga pukapuka o mua. Mehemea e hiahia ana koe ki te katoa o nga pukapuka, tonoa mai kia heke iho te utu. E rua pai heneti te heke iho o te utu ki nga toa hoko pukapuka.

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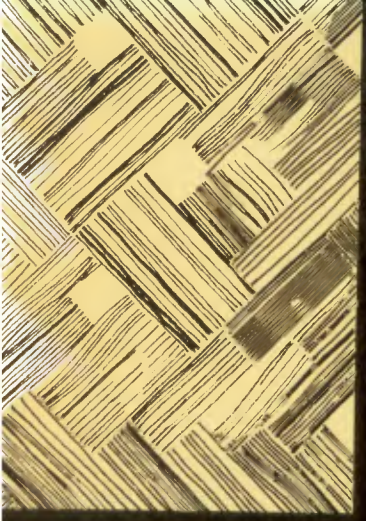
(Insecta: Diptera) with a generic review of the Dolichopodidae

D. J. Bickel



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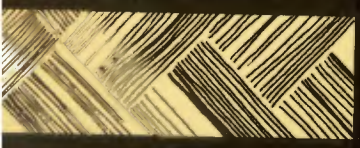

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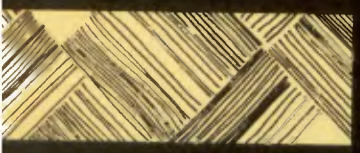

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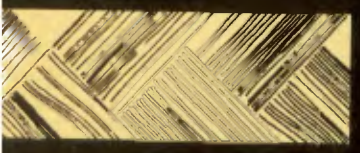

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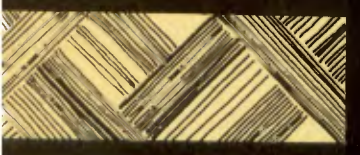

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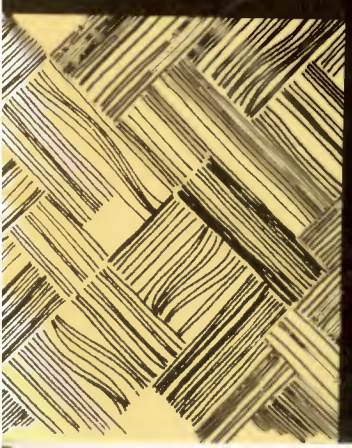

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