Fauna of New Zealand

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Number 6

Hydraenidae

(Insecta: Coleoptera)

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ABSTRACT

Thirty-two species of Hydraenidae in five genera are recognised in the New Zealand subregion. Of these, 27 are described as new species and a further two are redescribed to facilitate comparison. Two of the genera, *Homalaena* and *Podaena*, are described as new, and together with *Orchymontia* Broun are regarded as comprising the primitive aquatic elements of the family which have speciated in the abundant alpine streams. The single species of *Hydraena* is regarded as being much more recent, as is the only terrestrial genus, *Meropathus*. Keys to genera and species are given, together with habitus drawings representative of each genus and line drawings of genitalia and other diagnostic features. Brief observations are made on morphology, biology, and phylogeny.

CHECKLIST OF TAXA

CONTENTS

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INTRODUCTION

Small size, obscure habitats, and - in some countries - poor representation have impeded study of the hydraenids. Among early systematists to consider them were Kugelann, who in 1794 erected the type genus *Hydraena*, and Mulsant (1844), who proposed the name from which the family name derives. In more recent times our understanding of the family has been enhanced by the writings of A. d'Orchymont and E. Janssens in Brussels, C. Deane in Victoria, Australia, G. Enderlein in Berlin, R. Jeannel in Paris, P. Zwick in Schlitz, West Germany, J. Balfour-Browne in Surrey, H. B. Leech in California, and P. Perkins in Washington, D.C. Zwick (1977), working on Australian members of the genus *Hydraena*, found six species with valid names already described and added 23 new ones. In a personal communication dated 1978, discussing the South African fauna, J. Balfour-Browne wrote of 50 undescribed hydraenids; and in a very comprehensive review of the 'western hemisphere' hydraenids Perkins (1980) recorded 206 species, 142 of which were new. In

New Zealand too the hydraenid fauna has proved to be much richer than was formerly supposed.

The first hydraenid to be described from New Zealand was *Orchymontia spinipennis*, which Captain T. Broun, a pioneer coleopterist, erected in 1919. One of the two specimens on which Broun's description was based is in the British Museum (Natural History), and bears the label "Moa Basin", a locality in mid Canterbury; the other is in Brussels. Broun had earlier chosen *Hydraenodes spinipennis* as a name for this species, but as d'Orchymont (1937) rightly points out, this name was not published until 1921, and so became a junior synonym. No further species of the aquatic mainland fauna were described until 1975, when P. Zwick described *Orchymontia maclellani* from a single specimen that he had obtained during a brief visit to Westport in 1973.

In the interim, however, some attention had been given to the subantarctic fauna. In a contribution to the Cape Expedition reports, A. E. Brookes (1951) described a terrestrial hydraenid from Campbell Island as *Meropathus chuni campbellensis*, which J. L. Gressitt and G. A. Samuelson (1964) elevated to species rank. In 1971 I described *Meropathus aucklandicus* from the Auckland Islands and *M. johnsi* from The Snares, and made passing reference to an undescribed species known from the Chatham Islands and Stewart Island.

From the literature, then, one might suppose that there are four species of *Meropathus* and two of *Orchymontia* in the New Zealand subregion. J. Balfour-Browne informs me, however, that as early as 1943 he was aware of an additional aquatic species. While examining a series of twelve specimens from Swanson, Auckland, collected in 1942, he had noted that one of them was different. He did not describe it because the specimen had been slide-mounted before the difference was observed. I am indebted to Mr Balfour-Browne for drawing my attention to this, because in so doing he indirectly initiated an extensive collecting programme. This was undertaken mainly by Dr G. Kuschel and his colleagues in Entomology Division, DSIR, and myself. It has resulted in the acquisition of some 4860 specimens, which form the basis of this account of a fauna of 32 species.

Evidence from these collections indicates that 22 of the species occur in the South Island or the New Zealand subantarctic, 4 occur in the North Island only, and a further 6 occur in both the North and South islands. Many species appear to be quite localised in their distribution, though further collecting is needed before the ranges of some can be delimited with any confidence.

All but four species of the New Zealand Hydraenidae are aquatic. The commoner species can be taken from major rivers, but smaller tributaries seem to offer preferred habitats. Even within a single stream, some parts yield more specimens and species than others. Many specimens have been taken from under stones in rapids, but collectors have also noted specimens associated with fallen leaves in the water.

Observation of living beetles shows that they normally surface only when disturbed, and that they have neutral buoyancy. Air

is trapped on the pubescent ventral surface, and it seems that oxygen requirements are absorbed from this reserve. Probably, therefore, they require well aerated water.

From the beetles' distribution it seems that in the headwaters of the many streams that lace New Zealand's hilly terrain, considerable speciation of ancestral stock has occurred. Larvae have been collected from the same habitat as adults, so some at least are aquatic.

These species also presumably evolved under a canopy of native bush, and to a large extent they remain there, though some of the commoner species can occupy more exposed habitats. New Zealand's four terrestrial species are all in genus *Meropathus*, and are found on the sea shore.

Northern Hemisphere hydraenids, called 'cascade beetles' by some, are reported to inhabit matted vegetation along stream margins, in swampy regions, and in brackish pools. I have collected hydraenids under similar conditions in Australia.

SYSTEMATICS

Variously referred to as Hydraenidae (from "Hydraenaires") or Limnebiidae (from "Limnebiaires"), both names of Mulsant, 1844, the family Hydraenidae d'Orchymont, 1919 has often been regarded as a member of the superfamily Hydrophiloidea with strong hydrophilid affinities. It was in this way that Crowson (1967) viewed it in his *Natural classification of the families of Coleoptera*, where he cited the form and function of the antennae, the aquatic adaptations of the adult, the presence of a cephalic egg-burster on the first-instar larva, and the anchorage of eggs with silk as evidence of its hydrophilid affinity. There are, however, features linking the Hydraenidae with the Staphylinoidea - the form of the wing venation, larval mouthparts, aedeagus, and possibly the female genitalia. This apparent conflict of evidence is best resolved by demonstrating which characters result from convergent evolution, which are primitive, and which are derivative.

Orchymontia has for some time been considered a very primitive hydraenid genus having a nine-segmented antenna with a two-segmented club and no cupule. A review of the New Zealand hydraenid fauna as a whole can make a small contribution to phylogeny by documenting all the elements of a primitive fauna (until now known from only two species), since *Orchymontia*, *Homalaena*, and *Podaena* all appear to have various combinations of primitive characters. This would obviate the need to place too much reliance on the characters of *Orchymontia spinipennis* alone.

Members of the family Hydraenidae are usually defined as follows. Small beetles, flattened rather than convex; antennae usually with a five-segmented pubescent club, which in turn is often separated from (usually three) glabrous segments by a cupule; wing venation staphylinoid; tarsi without a distinct bisetose empodium between the claws.

Larvae with normal galea and lacinia; palpiger normal and distinct; mandibles stout, with a basal molar; urogomphi two-

segmented, well developed; tenth abdominal segment developed as a pygopod, usually with a pair of downward-projecting hooks. Boving & Craighead (1930) have figured the larva of *Ochthebius impressus* Marsh and *Limnebius papposus* Mulsant from Denmark, and Samuelson (1964) has described and figured the larva of *Meropathus campbellensis* (Brookes) from Campbell Island, where a definite association of larva and adult can be established. This is not readily accomplished with the New Zealand mainland aquatic fauna because several species may live in one stream. Towns (1978) has, however, been able to publish two drawings of unidentified aquatic species. Features of a typical adult hydraenid that are visible in ventral aspect are illustrated in Figure 1.

Most New Zealand hydraenids live in fast-flowing water, and have accordingly developed a range of sexually dimorphic characters which help prevent the male from being dislodged during copulation. These modifications of the legs and maxillary palps provide a convenient means of recognising species. They have no bearing on phylogeny, however; for insight into this, antennal segmentation (Figures 18-25) and the form of the prothorax and genitalia must be considered.

In primitive hydraenids the antennae are eleven-segmented, have a two-segmented pubescent club, but lack a cupule. The number of segments has progressively reduced to nine as in *Orchymontia*, *Meropathus*, and *Hydraena*. The antenna of *Meropathus* has been described as eight-segmented, but closer examination reveals that two reduced segments lie between club and pedicel, just as in *Hydraena*, bringing the total to nine. This arrangement is best viewed from slide mounts. If, as Jeannel (1940) suggests, divisions beyond the pedicel result from fragmentation of a former shaft, musculature will not facilitate interpretation because the muscle attachments typical of a many-segmented structure will not be evident.

The four-segmented maxillary palps (Figures 26-53) are an aid to identification in the male, because in a number of species the third (penultimate) segment is expanded and grooved ventrally. If the groove is shallow and not sharply defined, it is best examined dry.

The form of the pronotum (Figures 2-6) is constant within a genus. Diagnostic features are the outline when viewed from above, including the degree of constriction at the anterior and posterior angles, and the depressions in their vicinity.

Elytra may be uniform in colour or have contrasting pale yellow pigment on the humeral area. They may be rounded in outline or nearly parallel-sided. The rows of punctures (striae) are usually quite distinct, though not in *Hydraena*, and in some species there is a raised ridge (carina) on the seventh interstria. On the ventral surface, at about the mid-point of the outer edge, there is a broad-based triangular patch of short spines reminiscent of the stridulatory area of some hydrophilids (see Figures 9-11). They seem to occur throughout the New Zealand hydraenids, male and female. Certainly they are differently structured in *Hydraena*

when compared with *Orchymontia*, but scanning electron micrographs indicate that they are not diagnostic at species level nor even between allied genera.

In the aquatic genera of New Zealand, hind wings may be twice as long as the elytra and fully developed in outline, but lack all but some basal venation representing the costal, median, and anal veins (Figure 7). In most specimens the wings are uniformly reduced, however (Figure 8). Fully winged examples of some species have not been seen, but this may be due to the smallness of the samples. Whether full size or reduced, the wing is armed with evenly spaced spines over both the dorsal and ventral surface. In *Meropathus* there is not even a vestigial wing.

Modifications of the legs are most often found in the tibiae of the male, which on some or all of the legs may be distally curved, flattened, variously notched, or armed with spines and long setae (Figures 54-79). No modification of the tarsus has been found, but there are instances of enlarged femora and of trochanters that bear spines. Only in *Hydraena* is the procoxal cavity enclosed behind by the prosternal process and the pleura. The metacoxal sensillum, reported by Perkins (1980) to be a possible water-current detector, is present in New Zealand aquatic species. The line drawings of appendages at the end of this contribution have been prepared from slide-mounted material, in some instances supplemented by details from scanning electron micrographs.

The metasternum is usually heavily sculptured and dull (pruinose), at least in part. A shiny area on the disc, where present, may be interrupted by a median pruinose groove (see Figure 1). Similarly, the abdominal ventrites are at least partly pruinose. The glabrous swellings of the metasternum seen in New Zealand species are not reliable characters, and possibly result from abrasion.

Genitalia. In the male (Figures 80-108) the lack of demarcation between the basal piece and the median lobe of the aedeagus has led to various interpretations. Perkins (1980) has provided good grounds, based on musculature, for regarding the main tube as the basal piece and the structures distal to it as the median lobe. In New Zealand's primitive genera *Podaena*, *Homalaena*, and *Orchymontia* the aedeagus (aedeagophore) is approximately symmetrical, with the parameres articulated to its base. In *Hydraena* the median lobe becomes particularly ornate and asymmetrical and the articulation of the parameres varies in position.

In *Meropathus* the parameres are absent, and what presumably originated as an eversible sac is now permanently everted as a flagellum, with the ostium still identifiable at its base. Except in some species of *Orchymontia* with the distal end of the aedeagus membranous, the male genitalia serve to identify species. They would be indispensable for this purpose in *Meropathus* were it not for the geographic isolation of the species. This seems to be true also of *Hydraena* in a country such as Australia, where it is well represented (Zwick 1977).

The sclerotised parts of the female genitalia (Figures 109-125) are of some help in systematics, at both specific and generic level. The distinct tenth abdominal segment (Figure 113) is to a variable degree extendable, and is presumably extruded during egg laying. Because the spermathecal duct opens into the pouch-like vagina, and the spermatheca is embedded in muscle tissue, the spermathecal duct shifts its position when segment 10 is extended, and the spermatheca may be repositioned to a smaller extent. For descriptive purposes, therefore, all drawings have been made from specimens with segment 10 unextended.

Typically, the spermathecal duct widens as it enters the vagina. This duct may be as long as the spermatheca or up to three times this length, in which case it is completely looped. More frequently it doubles back on itself or is gently curved (Figure 113). It widens, usually abruptly, into the spermatheca, which is more heavily sclerotised and often is pigmented anteriorly. The spermatheca terminates in a spherical or near-spherical sac with a much greater capacity than the rest of the organ. Because sperm have been observed within, the sac is regarded as a part of the spermatheca rather than an accessory gland. In two species the sac itself is slightly doubled back (Figures 100 and 113). Among species of *Orchymontia* the spermatheca tends to be very uniform, though in the type species, *O. spinipennis*, it is curved (Figure 125). In other genera too it is very predictable in form, with only slight interspecific variation in either the spermatheca or its duct.

METHODS AND CONVENTIONS

COLLECTING

Mid summer, when stream water levels are low and algal growth is at its greatest, is the most productive time for collecting aquatic hydraenids, although collection data show that they may be taken at any time of the year. For this study often a fine nylon net on a triangular frame was pushed into the gravel immediately downstream from rapids, and the loose gravel was then disturbed above the net, causing beetles and debris to be washed into it. Other collectors have reported good results from examination of the undersides of dead leaves removed from less rapid streams. If large quantities of leaves are involved, they can be left submerged in a container for a few hours, after which specimens can be removed from the surface film of the water.

PREPARATION OF SPECIMENS

It is usually convenient to collect these beetles into ethanol (70%), and in the short term at least they can safely be left there. Such specimens yield good genitalia preparations, and most diagnostic features can be seen with a stereoscopic microscope while the specimens are immersed in ethanol. For examination and drawing of the more delicate structures, after maceration in 10 percent potassium hydroxide solution, dissection is best carried out under water because both ethanol and glycerine can collapse some structures. For long-term preservation, dry mounting on cardboard points (Walker & Crosby 1979) is the best method.

REPOSITORIES

All holotypes are dry-mounted, and are deposited in NZAC (see 'Abbreviations', below) together with most of the paratype series. Where practicable, paratypes - usually a pair - have been retained at NMNZ together with slide-mounted material. Full locality data for primary types are included in the text, together with the main localities for paratypes. Lists of collection data for all material examined are held at Entomology Division, DSIR.

TEXT CONVENTIONS

Dimensions included as part of species diagnoses refer to average specimens, and not to the minimal variation that occurs. Similarly, altitude ranges and months in which specimens were collected are based on the material examined, and are not intended to be delimiting.

Abbreviations. The abbreviations used to indicate collecting areas are those proposed by Crosby *et al.* (1976), and are briefly defined and delimited inside the back cover. Abbreviations for repositories are as follows:

BPBM Bernice P. Bishop Museum, Honolulu, Hawaii;

CMNZ Canterbury Museum, Christchurch;

NMNZ National Museum of New Zealand, Wellington;

NZAC New Zealand Arthropod Collection, Entomology Division, DSIR, Auckland.

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KEY TO GENERA OF HYDRAENIDAE OCCURRING IN NEW ZEALAND

(Keys to species may be found on the pages indicated where genera key out.)

1 Body broadly rounded; elytra rugose, the striae obscured. Terrestrial species .... (p. 31) .. *Meropathus*

--Body narrow, streamlined; elytra not rugose, the striae distinct. Aquatic species 2

2 (1) Antennae 9-segmented (Figure 22); metasternum pruinose throughout 3

--Antennae 10- or 11-segmented; metasternum not pruinose throughout 4

3 (2) Maxillary palps with segment 2 reaching beyond eyes; prosternum deeply incised to receive antennal club .... (p. 29) *Hydraena* sensu stricto (*H. zelandica*)

--Maxillary palps with segment 2 not reaching beyond eyes; prosternum not deeply incised .... (p. 22) .. *Orchymontia*

4 (2) Antennae 10-segmented (Figure 19); pronotum without impressions; ventrites completely pruinose .... (p. 17) .. *Homalaena*

--Antennae 11-segmented (Figure 18); pronotum with impressions; ventrites pruinose or partly glabrous .... (p. 12) .. *Podaena*

DESCRIPTIONS

Podaena new genus

TYPE-SPECIES *Podaena trochanteralis* new species.

(The name *Podaena* is derived from the Greek *podos*, 'foot', alluding to the highly mod-

ified legs, and the suffix *-aena* as in the type genus of the family; gender feminine.)

Head not retractile to level of eyes; vertex with a pit on either side. Maxillary palps with segment 2 narrow and elongate, not reaching beyond middle of eyes. Eyes lateral, protruding. Antennae 11-segmented; scape and pedicel enlarged; segments 10 and 11 (and sometimes 9) swollen to form a pubescent club. Antennal grooves present, their inner margins projected posteriorly to form parallel ridges on either side of gula.

Pronotum constricted posteriorly but not anteriorly, smooth except for shallow depressions in anterior and posterior angles.

Elytra narrow, with a small tubercle at shoulders and a carina on 7th interstria.

Femora strongly clavate. Tibiae usually strongly modified in male. Tarsi with 5 segments; segment 1 reduced, half as long as segment 2; segments 2-4 subequal; segment 5 as long as segments 3 + 4. Claws long, slender, equal.

Prosternum weakly indented to receive antennal club; median carina present. Fore coxae contiguous, or nearly so, the cavities not closed posteriorly; middle and hind coxae widely separated. Sterna and ventrites 1-4 pruinose or pubescent, but metasternum with a glabrous area on disc. Apical ventrite emarginate in male.

Male genitalia approximately symmetrical. Female genitalia with a long spermathecal duct.

REMARKS. Of the seven species in genus *Podaena*, five are closely allied: *Podaena kuscheli*, *P. dentipalpis*, *P. latipalpis*, *P. obscura*, and, to a smaller extent, *P. trochanteralis* have the same general outline and comparable modification of appendages. *P. maclellani* and *P. glabriventris*, in contrast, seem only distantly related, both to the preceding species and to each other. They have a more rounded outline, and lack modified appendages in the male. *P. glabriventris* alone has a completely shiny metasternum. These relationships are also indicated by the male and female genitalia.

Podaena is known only from New Zealand, and is a primitive genus related to *Homalaena* and *Orchymontia* but seemingly not allied to any other known hydraenid fauna.

KEY TO SPECIES OF *PODAENA*

MALES (appendages usually modified)

1 Maxillary palps with penultimate segment grooved ventrally (weakly grooved in *trochanteralis*) 2

--Maxillary palps not grooved ventrally 5

2 (1) Fore tibiae with a pronounced, backward-directed tooth at mid length .... *trochanteralis*

--Fore tibiae expanded in proximal half, but without a backward-directed tooth 3

3 (2) Fore tibiae expanded and laminate in proximal two-thirds, distally flattened and expanded (Figure 54) ... *dentipalpis*

--Fore tibiae expanded and laminate in proximal half only 4

4 (3) Fore tibiae with a long, inward-directed spine at mid length and a spirally arranged row of small setae (Figure 12) .... *latipalpis*

--Fore tibiae with a shelf-like projection near mid length bearing 2 unequal spines (Figure 58) .... *obscura*

5 (1) Elytra parallel-sided in anterior half, with humeral areas pale; fore tibiae spatulate distally (Figure 55); hind tibiae curved inwards .... *kuscheli*

--Elytra rounded, uniform in colour; all legs unmodified 6

6 (5) Ventrites 1-4 completely pruinose; metasternum with glabrous area confined to middle third .... *maclellani*

--Ventrites 1-4 smooth and shiny, not pruinose; metasternum with glabrous area occupying most of its width .... *glabriventris*

FEMALES (appendages not modified)

1 Larger species, 2.3 mm long; elytral punctures obscure .... *trochanteralis*

--Smaller species, 2.0 mm or less long; elytral punctures obscure or distinct 2

2 Elytral interval 7 with carina distinct (1) 3

--Elytral interval 7 with carina slightly raised 4

3 Metasternum completely glabrous (2) .... *glabriventris*

--Metasternum glabrous on disc only .... *maclellani*

4 Elytral puncturation fine but distinct (2) .... *latipalpis*

--Elytral puncturation faint .... *dentipalpis*

.... *kuscheli*

.... *obscura*

Podaena dentipalpis new species

Figures 18, 26, 54, 80, and 109

Length 2.0 mm; width 0.6 mm. Uniformly reddish-brown.

Head shiny, with sparse lateral setae. Maxillary palps with 2nd segment reaching back to mid eye level in females, in males (Figure 26) reaching beyond the eye and bearing distal ventral setae; penultimate segment shorter than last segment, a little dilated, grooved ventrally, bearing an angular tooth on inner distoventral angle. Antennae, Figure 18.

Pronotum as wide as long, shiny; anterior and posterior angles each with sparse setae and a weak fovea; lateral margins not crenulate, angular in dorsal aspect.

Elytra 1.76 x as long as wide, parallel-sided; humeral angles blunt; 7th interstria with a low carina, asperate anteriorly, in both sexes. Hind wings usually reduced.

Legs of male: forelegs (Figure 54) with trochanters bearing an obvious spine; middle and hind trochanters with minute spines; fore tibiae expanded over proximal two-thirds, compressed distally, laminate, with 2 ventral spines; middle tibiae curved but otherwise unmodified; hind tibiae curved strongly inwards in posterior third, compressed, armed with stout distal setae.

Metasternum without a central groove; glabrous area fan-shaped, not reaching level of middle coxae.

Male genitalia, Figure 80. Female genitalia: spermatheca (Figure 109) broad, not closely applied to distal sac; duct long, distinct.

TYPE DATA. Holotype: male, The Brook, Nelson city, NN, 11 February 1973, G. Kuschel (NZAC). Paratypes: 606 males and 552 females (NMNZ, NZAC), from the following localities. NN - The Brook; Maitai Valley; Hope; Kawatiri; Atawhai; Dun Mountain; Teal Valley; Aniseed Valley; Marsden Valley. SD - Pelorus; Ship Cove; Havelock; Picton; Tuamarina. MB - Blue Duck Valley; Hanmer. KA - Hawk Range East; Awatere Valley. BR - Lake Rotoiti. MC - McClennans, Mount Hutt. OL - Lake Hawea. DN - Waipori Falls; Leith Valley.

MATERIAL EXAMINED. Type series only.
- / SD, NN, MB, KA, BR, MC, OL, DN.
From sea level to 750 m.
Collected November-May.

Podaena glabriventris new species

Figures 7, 19, 27, 81, and 110

Length 1.8 mm; width 0.7 mm. Reddish-brown, with black areas on anterior of pronotum and sides of elytra.

Head sparsely punctured on disc; sides behind eyes sharply angled, slightly projecting; vertex very deeply grooved, with a carina arching over eyes to reach beyond their anterior border. Maxillary palps of male (Figure 27) not modified. Antennae (Figure 19) with scape and pedicel expanded nearly to diameter of club; club very compact, formed by last 3 segments.

Pronotum 1.1 x as wide as long, flanged but not margined, with distinct, coarse puncturation on anterior and posterior edges; anterior angles each with a distinct, pit-like depression; anterior area between depressions slightly raised; disc finely punctured.

Elytra 1.4 × as long as wide, evenly punctured, broadly rounded, clearly mar-

gined; 7th stria with an obvious carina; sutural angles projecting. Hind wings, Figure 7.

Legs of male unmodified.

Prosternum pruinose; episternum not excised to accommodate antennal club. Metasternum glabrous in posterior two-thirds, without a central groove. Abdominal ventrites glabrous except at lateral margins.

Male genitalia (Figure 81): median lobe bearing a leaf-like distal expansion; parameres equal. Female genitalia: spermatheca (Figure 110) with sac recurved.

TYPE DATA. Holotype: male, Ohau River near Ohau gorge, Manawatu, WN, 12 January 1973, R. G. Ordish (NZAC). Paratypes: 8 males and 4 females (NMNZ, NZAC), from the following localities. CL - Great Barrier Island. WN - Akatarawa River; Maungakotukutuku Valley; Ohau River.

MATERIAL EXAMINED. Type series only.
CL, WN / - .
From sea level to 100 m.
Collected in January.

Podaena kuscheli new species

Figures 9, 10, 28, 55, 82, and 111

Length 2.0 mm; width 0.6 mm. Dark reddish-brown, with pale reddish-brown appendages; head dark, shiny; clypeus pale in anterior half.

Head: maxillary palps of male (Figure 28) with 2nd and last segments lengthened, penultimate segment neither dilated nor grooved.

Pronotum 1.05 x as long as wide, elongate, shiny, with obsolete punctures and lateral setae; anterior angles each with a moderately distinct depression; margins not crenulate, angular in dorsal aspect.

Elytra 1.4 x as long as wide, parallel-sided, with weak puncturation; humeral areas slightly yellowish; humeral spines acute; 7th interval with a low carina; stridulatory areas, Figures 9 and 10.

Legs of male: forelegs (Figure 55) with trochanters each bearing a distinct spine; fore tibiae dilated in proximal half, reduced distally, spatulate, without a notch, bearing 2 stout, widely separated ventral setae; middle tibiae curved in middle, bearing long, fine setae but otherwise unmodified; hind tibiae strongly curved inwards in distal quarter, bearing 7 stout distal setae.

Metasternum with fan-shaped glabrous area lacking a central groove, not reaching level of middle coxae.

Male genitalia, Figure 82. Female genitalia: spermatheca (Figure 111) exceptionally narrow, closely applied to distal sac; spermathecal duct long, distinct.

TYPE DATA. Holotype: male, Hercules Creek, Mount Hercules, WD, 30 March 1973, G. Kuschel (NZAC). Paratypes: 35 males and 24 females (NMNZ, NZAC), from Mount Hercules and Lake Paringa, WD.

MATERIAL EXAMINED. Type series only.
- / WD.
From around 600 m.
Collected in March.

Podaena latipalpis new species

Figures 2, 12, 29, 56, 83, and 112

Length 1.9 mm; width 0.6 mm. Uniformly reddish-brown except for paler humeral areas of elytra and paler clypeal border. Habitus, Figure 12.

Head uniformly shiny, with some setae. Maxillary palps of male (Figure 29) with 2nd segment bearing a few long setae, very long, reaching beneath eyes; penultimate segment ventrally grooved, greatly expanded, bearing long setae on distal half; last segment flattened proximally, lanceolate, larger than in females.

Pronotum (Figure 2) 1.1 x as long as wide, with moderately dense, fine setae; anterior and posterior angles each with a faint depression; lateral margins very narrow, not crenulate.

Elytra 1.7 x as long as wide; humeral areas pale, with blunt spines; 7th interstria with a low carina; margin slightly asperate in distal third. Hind wings sometimes reduced, but many specimens fully winged.

Legs of male: fore trochanters (Figure 56) with a large ventral spine; middle trochanters with a small basal spine; hind trochanters with a weak basal spine; fore tibiae dilated in proximal half, reduced but not spatulate in distal half, which bears 2 prominent spines; middle tibiae curved, bearing a few long distal setae; hind tibiae strongly curved inwards in distal quarter, with 6 distal spines.

Metasternum with fan-shaped glabrous area extending acutely towards middle coxae, without a central groove.

Male genitalia (Figure 83) entirely membranous in distal two-thirds. Female genitalia: spermatheca (Figure 113) not recurved, with 2 blunt, rod-like extensions penetrating distal sac; duct long, distinct.

TYPE DATA. Holotype: male, Mangamuka Gorge, ND, 9 May 1974, G. Kuschel (NZAC). Paratypes: 107 males and 101 females (NMNZ, NZAC), from the following localities. ND - Waiomio Cave stream; Mangamuka. AK - Piha; Cascade Stream, Waitakere Range; Hunua; Henderson Valley; Huia. CL - Great Barrier Island; Little Barrier Island; Waiau Falls. WO - Mangapohue Stream, Waitomo. GB - Lake Waikaremoana. WA - Carrington.

MATERIAL EXAMINED. Type series only.
ND, AK, CL, WO, GB, WA / - .
From sea level to 350 m.
Collected October-June.

Podaena maclellani (Zwick) new combination

Figure 13, 20, 30, 57, 84, and 113

Zwick, 1975, Nouvelle revue d'entomologie 5 (3): 247-250 (*Orchymontia*).

Length 2.2 mm; width 0.8 mm. Dark brown, almost black on head and thorax; pronotum a little paler on lateral edges and ventrally; elytral epipleura and appendages pale brown; clypeus with pale margins. Habitus, Figure 13.

Head shiny, with obsolete setae laterally. Maxillary palps of male (Figure 30) ungrooved, unmodified. Antennae, Figure 20.

Pronotum 1.1 x as wide as long, shiny, with punctures obsolete except on anterior and posterior borders; posterior angles each with an obvious pit.

Elytra 1.5 x as long as wide, rounded; humeral spine obsolete; 7th interstria with a strong carina. Hind wings usually reduced, but some specimens fully winged.

Legs unmodified; trochanters without spines. Foreleg, Figure 57.

Metasternum with fan-shaped glabrous area extending forward between middle coxae, without a central depression.

Male genitalia, Figure 84. Female genitalia: spermatheca (Figure 113) recurved when retracted, so spherical sac in a posteroventral position.

TYPE DATA. Holotype: male, Fairdown Creek, near Westport, NN/BR, 22 January 1973, P. Zwick (NZAC; transferred from P. Zwick's private collection).

MATERIAL EXAMINED. Holotype, plus 940 non-type specimens (NMNZ, NZAC) from the following localities. NN - Maitai Valley; Karamea; Dodsons Valley; Cleveland Terrace; Cobb; Tarakohe; Clouston Valley; Flora Hut; Hope; The Brook; Kawatiri; Takaka; Aniseed Valley; Marsden Valley. SD - Pelorus; Havelock; Picton; Tuamarina; Ship Cove. KA - Wandle River. BR - Rahu Creek; Capleston; Lewis Pass; Reefton; Maruia Saddle; Inangahua Valley; Lake Rotoiti. NC - Glentui River; Arthurs Pass. WD - Lake Paringa; Mount Hercules; Haast Pass; Wells Creek; Crooked River. MC - McClennans, Mount Hutt; Otepatotu. CO - Ida Cave.
- / SD, NN, BR, KA, NC, WD, MC, CO.
From sea level to 1330 m.
Collected October-June.

REMARKS. *P. maclellani* is notably broad, and has a pronounced elytral carina. The sexual dimorphism typical of hydraenids is absent in this species, but the sexes can be separated by the stronger distension of the apical segments in the female.

Podaena obscura new species

Figures 58, 85, and 114

Length 2.0-2.2 mm; width 0.6 mm. Uniformly reddish-brown.

Head of male with very sparse lateral setae. Maxillary palps of male with segments 2-4 longer than in female; segment 2 with distal setae; penultimate segment variably enlarged and grooved throughout its length; last segment lanceolate.

Pronotum 1.1 x as long as wide; anterior and posterior angles each with an elongate fovea; margins smooth, shining, angular, not crenulate in dorsal aspect.

Elytra 1.9 x as long as wide, parallel-sided, in male shiny, with a low carina on 7th interval and puncturation fine but distinct, in female with puncturation obscure.

Legs of male: forelegs (Figure 58) with trochanter bearing a large distoventral spine; middle trochanters unarmed; hind trochanters with a weak ventral spine; fore tibiae expanded in proximal half, the expansion terminating abruptly, not notched but bearing a weak, shelf-like projection with 2 unequal stout setae, reduced distally, spatulate; middle tibiae weakly curved inwards in distal half; hind tibiae curved inwards over distal third, bearing 8 stout distal setae.

Metasternum with fan-shaped glabrous area lacking a distinct central groove, not reaching level of middle coxae.

Male genitalia (Fig. 85) symmetrical. Female genitalia: spermatheca (Fig. 114) strongly curved; spermathecal sac enlarged.

TYPE DATA. Holotype: male, Rahu Creek, Rahu Saddle, Mt Haast, BR, 6 April 1973, J. S. Dugdale (NZAC). Paratypes: 214 males and 50 females (NMNZ, NZAC), from the following localities. NN - Lake Cobb; Flora Hut, Mount Arthur; Takaka; Anatoki River; Karamea. BR - Lewis Pass; Maruia Saddle; Rahu Saddle. OL - Lake Hawea. FD - George Creek.

MATERIAL EXAMINED. Type series only.
- / NN, BR, OL, FD.
From 100 m to 310 m.
Collected November-June.

Podaena trochanteralis new species

Figures 31, 59, 86, and 115

Length 2.3 mm; width 0.8 mm. Uniformly reddish-brown except for paler appendages.

Head shiny, with sparse lateral setae near eyes and on clypeus; frons and clypeus paler. Maxillary palps of male (Figure 31) with 2nd segment not enlarged, without distal setae; penultimate segment expanded, with a shallow groove throughout its length; last segment lanceolate.

Pronotum as wide as long, smooth, shiny; anterior and posterior angles each with a weak fovea; margins not crenulate, slightly rounded in dorsal aspect.

Elytra 1.6 x as long as wide, approximately parallel-sided, shiny, with obsolete punctures on disc; 7th interstria with a low carina.

Legs of male: forelegs (Figure 59) with trochanter bearing a large distoventral spine; fore tibiae expanded over proximal half, the expansion terminated abruptly by a deep notch and a backward-directed tooth bearing 2 setae, reduced distally, spatulate; middle tibiae unmodified; hind tibiae curved inwards over distal half, bearing numerous short distal setae.

Metasternum with fan-shaped glabrous area not reaching level of middle coxae, bisected by a distinct central groove.

Male genitalia (Figure 86) symmetrical. Female genitalia: spermatheca (Figure 115) broad, strongly curved in middle; duct long, distinct.

TYPE DATA. Holotype: male, Lewis Pass, BR, 11 April 1973, G. Kuschel (NZAC). Paratypes: 45 males and 67 females (NMNZ, NZAC), from the following localities. NN - Mount Kendall; Capleston; Flora Hut. MB - Black Birch Range. BR - Lewis Pass. NC - Mount Arthur. WD - Haast; Fox Glacier; Lake Paringa.

MATERIAL EXAMINED. Type series only.
- / NN, MB, BR, NC, WD.
From 600 m to 1200 m.
Collected December-April.

Homalaena new genus

TYPE-SPECIES *Homalaena dispersa* new species.

(The name *Homalaena* is derived from the Greek *homalos*, 'even', referring to the very even pronotum, and the suffix *-aena* as in the type genus of the family; gender feminine.)

Head not retractable to level of eyes; vertex without lateral pits. Maxillary palps with segment 2 not reaching beyond eyes. Eyes lateral, protruding. Antennal groove below eye distinct. Antennae 10-segmented; segments 1 and 2 enlarged; segment 3 elongate; segments 4-8 subequal; segments 9 and 10 expanded to form a club.

Pronotum broadly rounded anteriorly, completely without depressions; posterior angles square.

Elytra narrow, with or without a carina; shoulders each with a weak spine.

Femora strongly clavate. Tarsi with 5 segments; segment 1 not reduced; segments

1-4 subequal, often reduced in forelegs; segment 5 elongate.

Prosternum very weakly indented to receive antennal club; median carina present. Fore coxae contiguous, the coxal cavity open posteriorly; middle and hind coxae widely separated. Sterna and ventrites 1-4 pruinose and pubescent, except for a glabrous area on metasternum, which typically has a pruinose median groove.

Male genitalia slightly asymmetrical. Female genitalia with a spherical spermathecal sac.

REMARKS. The seven species of *Homalaena* form a fairly homogeneous group. Apart from the dimorphisms used in the key to species, they differ a little in size, the occurrence of a carina on the seventh elytral interval, and the occurrence of a pruinose groove along the middle of the metasternum. They do not seem to be divisible into species groups.

Homalaena is known only from New Zealand.

KEY TO SPECIES OF *HOMALAENA*

MALES (appendages usually modified)

1 Maxillary palps with penultimate segment grooved throughout its length 2

--Maxillary palps with penultimate segment not grooved 4

2 (1) Prosternum with an obvious, forward-projecting anteromedian process .... *spatulata*

--Prosternum without a process 3

3 (2) Elytra with a carina on 7th interval; hind tibiae slender, curved, without a distal spine .... *carinata*

--Elytra without a carina; hind tibiae broadly expanded in middle, bearing an inward-directed distal spine .... *dilatata*

4 (1) Fore tibiae strongly modified, medially dilated 5

--Fore tibiae unmodified or weakly modified 6

5 (3) Fore tibiae considerably widened beyond middle, distally laminated (Figure 65); hind tibiae with long ventral setae .... *setosa*

--Fore tibiae moderately widened beyond middle, not modified distally (Figure 64); hind tibiae without long setae .... *nelsonensis*

6 (4) Pronotum with posterior angles acute; elytra broad, rounded; fore tibiae with an inward-directed distal spine (Figure 60) .... *acuta*

--Pronotum with posterior angles obtuse; elytra narrow, nearly parallel-sided; fore tibiae unarmed (Figure 63) .... *dispersa*

FEMALES (appendages not modified)

1 Elytral interval 7 with no carina ... 2

--Elytral interval 7 with a carina 3

2 (1) Larger species, over 2 mm long; metasternum with median groove broad, nearly parallel-sided .... *dilatata*

--Smaller species, less than 2 mm long; metasternum with median groove lanceolate .... *setosa*

3 (1) Metasternum without a groove on midline; pronotum with posterior angles acute .... *acuta*

--Metasternum with a pruinose groove on midline; pronotum with posterior angles normal 4

4 (3) Larger species, 1.8 mm long; elytra parallel-sided 5

--Smaller species, 1.6 mm long; elytra rounded 6

5 Pronotum deeply arched in anterior half .... *dispersa*
(4)

--Pronotum shallow in anterior half .... *nelsonensis*

6 From North Island only .... *carinata*
(4)

--From South Island only .... *spatulata*

Homalaena acuta new species

Figures 32, 60, 87, and 116

Length 1.6 mm; width 0.6 mm. Uniformly reddish-brown.

Head shiny, with obsolete setae. Maxillary palps of male (Figure 32) with 2nd segment elongate, reaching back beneath eyes; penultimate segment not modified.

Pronotum as wide as long, shiny, with obsolete punctures; posterior angles acute.

Elytra 1.5 x as long as wide, rounded; 7th interstria with a low carina; humeral spine small, blunt; sutural spine absent. Hind wings reduced or fully developed.

Legs of male: all trochanters without spines; fore tibiae (Figure 60) with an inward-directed distal tooth; middle and hind tibiae slightly clavate.

Prosternum without an anterior process. Metasternum with glabrous area fan-shaped, lacking a medial groove.

Male genitalia, Figure 87. Female genitalia: spermatheca (Figure 116) poorly differentiated; duct short, widening almost to exterior.

TYPE DATA. Holotype: male, Clouston Valley, NN, 30 June 1973, G. Kuschel (NZAC). Paratypes: 4 males and 11 females (NMNZ, NZAC), from the following localities. NN - Cleveland Terrace; Clouston Valley; Takaka. BR - Capleston. WD - near Lake Paringa; Sam Creek.

MATERIAL EXAMINED. Type series, plus 8 non-type specimens (NMNZ, NZAC) from the following localities. ND - Waiomio Cave stream. AK - Hunua; Waitakere Range. CL - Tryphena, Great Barrier Island.
ND, AK, CL / NN, BR, WD.
From sea level to 600 m.
Collected November-June.

Homalaena carinata new species

Figures 33, 61, 88, and 117

Length 1.9 mm; width 0.6 mm. Uniformly medium brown, except for pale yellow labrum.

Head shiny, with very obscure punctures. Labrum weakly asperate. Maxillary palps of male (Figure 33) with 2nd segment a little dilated and grooved distally, not reaching halfway across eyes; penultimate and last segments greatly expanded, with a shallow, trough-like groove.

Pronotum as wide as long, shiny, with faint punctures; margins narrow in anterior half; posterior angles almost obliterated by curvature of lateral margins.

Elytra 1.8 x as long as wide, parallel-sided, truncate; 7th interstria with a carina. Hind wings reduced or fully developed.

Legs of male: forelegs (Figure 61) with trochanter bearing an obvious recurved spine; middle trochanters with a blunt, broad-based ventral spine; hind trochanters with a large, broad-based spine; femora clavate, with a blunt proximoventral spine; fore tibiae slightly dilated over middle third, reduced distally, rounded and enlarged apically; middle tibiae curved, bearing long setae distally; hind tibiae slender, curved inwards over distal quarter, with 7 stout distal setae but no long setae nor a distal spine.

Prosternum with no anterior process. Metasternum with glabrous area divided by an obvious, pruinose central groove.

Male genitalia (Figure 88): median lobe of aedeagus acute, bifid. Female genitalia: spermatheca (Figure 117) with sac enlarged.

TYPE DATA. Holotype: male, Tryphena Stream, Great Barrier Island, CL, January 1980, R. G. Ordish (NZAC). Paratypes: 14 males and 5 females (NMNZ, NZAC), from the following localities. CL - Tryphena Stream and Kaiarata Stream, Great Barrier Island. WN - Ohariu Stream tributary.

MATERIAL EXAMINED. Type series only.
CL, WN / - .
From near sea level.
Collected January and February.

Homalaena dilatata new species

Figures 14, 34, 62, 89, and 118

Length 2.2 mm; width 0.7 mm. Uniformly dark reddish-brown. Habitus, Figure 14.

Head shiny, with sparse punctures and setae. Maxillary palps of male (Figure 34) elongate, reaching beyond level of eye; penultimate segment swollen, ventrally grooved throughout its length; last segment a little enlarged.

Pronotum 1.1 x as long as wide, shiny, finely and evenly punctate, finely margined; posterior angles square.

Elytra 1.7 x as long as wide, parallel-sided, a little truncate, without a carina or sutural spines; humeral spines acute. Hind wings reduced.

Legs of male: forelegs (Figure 62) with trochanter bearing a minute ventral spine; fore tibiae distally expanded, laminate, bearing 2 inward-directed spines; middle tibiae unmodified; hind tibiae medially expanded, terminally laminate, with long distal setae and an inward-directed spine.

Prosternum with no anterior process. Metasternum with glabrous area completely divided medially by a broad, parallel-sided, pruinose groove.

Male genitalia, Figure 89. Female genitalia: spermatheca (Figure 118) broad, sclerotised, tapering into short spermathecal duct.

TYPE DATA. Holotype: male, Moores Valley, Wainuiomata, WN, 19 January 1973, R. G. Ordish (NZAC). Paratypes: 11 males and 19 females (NMNZ, NZAC), from the following localities. AK - upper Waitakere Stream. WA - Carrington; Featherston. WN - Wainuiomata; Otaki River. NN - Tophouse; The Brook. KA - Hawk Range East.

MATERIAL EXAMINED. Type series only.
AK, WA, WN / NN, KA.
From sea level to 300 m.
Collected September-April.

Homalaena dispersa new species

Figures 1, 3, 21, 35, 63, 90, and 119

Length 1.8 mm; width 0.55 mm. Reddish-brown; labrum very pale in anterior half; elytra often darker in middle; appendages yellowish.

Head shiny, but with distinct setae. Maxillary palps of male (Figure 35) with 2nd segment elongate, reaching back under eyes; penultimate segment not modified. Antennae of male, Figure 21.

Pronotum (Figure 3) 1.1 × as wide as long, shiny, bearing fine, uniform setae; lateral margins very narrow in anterior half only; posterior angles square.

Elytra 1.6 x as long as wide, parallel-sided, a little truncate; humeral angles low, blunt; 7th interstria with weak punctuation and a low carina; sutural spine absent. Hind wings reduced.

Legs of male largely unmodified; forelegs (Figure 63) with trochanter bearing a small ventral tooth; hind tibiae without long setae.

Ventral aspect (schematic), Figure 1. Prosternum of male with no anterior process. Metasternum with median glabrous area completely divided by a distinct pruinose groove.

Male genitalia, Figure 90. Female genitalia: spermatheca (Figure 119) poorly differentiated, but heavily sclerotised near spherical sac; spermathecal duct short, widening to exterior.

TYPE DATA. Holotype: male, Waiomio Cave stream, ND, 1 May 1975, G. Kuschel (NZAC). Paratypes: 32 males and 27 females (NMNZ, NZAC), from the following localities. ND - Waiomio Cave stream; Mangamuka Gorge. AK - Waitakere Stream. WO - Waitomo. WN - Abbotts Creek; Otaki River. NN - Kawatiri; Takaka; The Brook; Maitai Valley. SD - Tuamarina. MB - Awatere Valley; Wairau Valley; Hanmer. DN - Evansdale.

MATERIAL EXAMINED. Type series only.
ND, AK, WO, WN / SD, NN, MB, DN.
From sea level to 500 m.
Collected November-May.

Homalaena nelsonensis new species

Figures 36, 64, 91, and 120

Length 1.8 mm; width 0.6 mm. Uniformly reddish-brown, but appendages a little paler.

Head shiny, sparsely punctured, with fine setae. Maxillary palps of male (Figure 36) with 2nd segment not reaching beyond middle of eye; penultimate segment not expanded or grooved.

Pronotum as wide as long, evenly punctured, weakly margined in anterior half; posterior angles square.

Elytra 1.7 x as long as wide, parallel-sided; 7th interstria with a low carina and distinct punctures; humeral spines blunt, low; sutural spine reduced. Hind wings reduced.

Legs of male: forelegs (Figure 64) and middle legs with trochanter lacking ventral spines; fore femora distinctly clavate; fore tibiae dilated medially, with 2 long ventral setae, reduced in distal third, bearing an acute, inward-directed distal spine; middle and hind tibiae a little curved over distal half, otherwise unmodified and without long setae.

Prosternum with no anterior process. Metasternum with glabrous area divided medially by an obvious, posteriorly tapering, pruinose groove.

Male genitalia, Figure 91. Female genitalia: spermatheca (Figure 120) half as long as spermathecal duct.

TYPE DATA. Holotype: male, Maitai Valley, NN, 25 November 1972, G. Kuschel (NZAC). Paratypes: 4 males and 4 females (NMNZ, NZAC), from Cleveland Terrace and The Brook, Nelson city, NN.

MATERIAL EXAMINED. Type series only.
- / NN.
From about 10 m.
Collected November-February.

Homalaena setosa new species

Figures 37, 65, 92, and 121

Length 1.8 mm; width 0.5 mm. Uniformly reddish-brown.

Head shiny, finely punctured. Labrum strongly asperate. Maxillary palps of male (Figure 37) with 2nd segment elongate; penultimate segment not modified.

Pronotum as wide as long, shiny, very sparsely punctured and margined in anterior half; posterior angles square.

Elytra 1.7 x as long as wide, parallel-sided, strongly punctured, not truncate, without a carina; humeral spines angular; sutural spines absent. Hind wings reduced.

Legs of male: all trochanters without spines; fore femora (Figure 65) clavate; fore tibiae strongly widened beyond middle, reduced in distal quarter, bearing a terminal lamina, notch, and spines; middle legs unmodified; hind tibiae without long ventral setae.

Prosternum with no anterior process. Metasternum with glabrous area divided medially by an obvious pruinose groove.

Male genitalia, Figure 92. Female genitalia: spermatheca (Figure 121) strongly sclerotised at junction with sac, parallel-sided; spermathecal duct very short.

TYPE DATA. Holotype: male, Kohukohunui, Hunua Range, AK, 600 m, 30 March 1974, J. S. Dugdale (NZAC). Paratypes: 6 males and 9 females (NMNZ, NZAC), from the following localities. ND - Mangamuka Gorge. AK - Waitakere Range. CL - Great Barrier Island. WN - Otaki River.

MATERIAL EXAMINED. Type series only.
ND, AK, CL, WN / - .
From around 100 m to 600 m.
Collected November-May.

Homalaena spatulata new species

Figures 38, 66, 93, and 122

Length 2.0 mm; width 0.6 mm. Uniformly pale reddish-brown except for yellowish labrum and appendages.

Head shiny, very sparsely setose. Maxillary palps of male (Figure 38) with 2nd segment elongate, reaching back beyond level of eyes, expanded and laminate distally; penultimate segment greatly expanded, ventrally grooved throughout its length.

Pronotum as wide as long, punctured on posterior border; lateral margins narrow.

Elytra 1.8 x as long as wide, parallel-sided, a little truncate; 7th interstria with a low carina; humeral spines blunt, weak; sutural spine absent. Hind wings reduced.

Legs of male: forelegs (Figure 66) with trochanter bearing a weak ventral spine; hind trochanters bearing a small, median, ventral spine; fore femora strongly clavate; fore tibiae swollen and laminate in proximal quarter, the lamina bearing long setae, arched and narrowed in distal three-quarters, with an acute distal extension as long as 1st tarsal segment; middle tibiae a little swollen in middle, a little curved, with sparse, long, ventral setae; hind tibiae more strongly curved in middle, distally rounded, with a few distal setae.

Prosternum of male with an obvious, spatulate, anteromedian process. Metasternum with glabrous area nearly divided by a median pruinose groove, but intact posteriorly.

Male genitalia, Figure 93. Female genitalia: spermatheca (Figure 122) poorly differentiated, tapered almost to exterior; spermathecal duct short.

TYPE DATA. Holotype: male, Rahu Creek, Rahu Saddle, BR, 600 m, 6 May 1973, J. S. Dugdale (NZAC). Paratypes: 12 males and 24 females (NMNZ, NZAC), from the following localities. NN - Tarakohe; Kawatiri; Maitai Valley; The Brook. BR - Capleston; Lewis Pass. WD - Haast. OL - Lake Hawea. DN - Waipori Falls; Leith Valley.

MATERIAL EXAMINED. Type series only.
- / NN, BR, WD, OL, DN.
From 10 m to 600 m.
Collected November-May.

Genus *Orchymontia* Broun

TYPE-SPECIES *Orchymontia spinipennis* Broun, 1919.

Broun, 1919, Annales de la Société Entomologique de Belgique 59: 108. Crowson, 1967, Natural classification of the .. Coleoptera: 22. Perkins, 1980, Quaestiones entomologicae 16: 60.
Hydraenodes Broun, 1921, Bulletin of the New Zealand Institute 1 (6): 479-480.

Head not retractile to level of eyes; frontoclypeal suture weakly curved. Maxillary palp segment 2 not reaching beyond eyes. Eyes lateral, protruding. Antennal grooves beneath eyes distinct. Antennae 9-segmented; segments 1 and 2 enlarged; segment 3 elongate; segments 1-3 together reaching beyond eye; cupule absent; segments 4-6 reduced; segments 7-9 together forming a pubescent club.

Pronotum constricted anteriorly and posteriorly; disc smooth; anterior and posterior angles each with a deep, pit-like depression.

Elytra narrow, without carinae; shoulders each with a small tubercle.

Femora strongly clavate. Tibiae of male with a ventral spine. Tarsi 5-segmented; segment 1 reduced; segments 2-4 subequal; segment 5 as long as segments 1-4 combined. Claws long, slender, equal.

Prosternum weakly indented to receive antennal club; median carina present. Fore coxae nearly contiguous, the cavities not closed posteriorly; middle and hind coxae widely separated.

Sterna and ventrites 1-4 pruinose or pubescent.

Male genitalia asymmetrical; parameres articulated basally. Female genitalia: spermathecal sac spherical.

REMARKS. The thirteen species making up the genus *Orchymontia* are morphologically uniform, although *O. crassifemur* and *O. otagensis* have the pronotum a little less constricted anteriorly. The type species and eight others seem to form a natural species group, in that the median lobe of the aedeagus is membranous distally. *O. bidentata* and *O. latispina* also seem to be closely allied to each other, but *O. curvipes* and *O. crassifemur* have widely divergent male genitalia. Such groupings may be of limited significance, because similarities of the genitalia are not paralleled by other diagnostic features (compare *Podaena*).

Orchymontia is known only from New Zealand.

KEY TO SPECIES OF *ORCHYMONTIA*

MALES (middle tibiae spined)

1 Maxillary palps not expanded or grooved ventrally 2

--Maxillary palps with penultimate segment expanded and grooved ventrally, at least at apex 5

2 (1) Elytra with humeral areas yellow; middle tibiae with spine not distal .... *vulgaris*

--Elytra uniformly coloured 3

3 (2) Middle femora thicker than the others; middle tibiae with ventral spine large, blunt, recurved (Figure 76) .... *latispina*

--Middle femora not noticeably thicker than the others; middle tibiae with ventral spine acute, not recurved ... 4

4 (3) Hind tibiae with an inward-directed distal tooth .... *calcarata*

--Hind tibiae without a distal tooth .... *otagensis*

5 (1) Maxillary palps with penultimate segment ventrally grooved at apex only (Figure 43); hind tibiae with a large, inward-directed distal lamina .... *crassifemur*

--Maxillary palps with penultimate segment ventrally grooved throughout; hind tibiae with or without a distal expansion 6

6 (5) Elytra with humeral areas pale; hind tibiae flattened or narrowed distally 7

--Elytra uniform in colour; hind tibiae not flattened distally 8

7 (6) Middle tibiae with ventral spine blunt, some distance from distal end (Figure 67) .... *banksiana*

--Middle tibiae with ventral spine acute, but broadly tapering distally almost to end of tibia (Figure 70) .... *ciliata*

8 (6) Middle tibiae with ventral spine in the form of a low keel (Figures 72 and 74) 9

--Middle tibiae with ventral spine projecting 10

9 (8) Maxillary palps with penultimate segment greatly expanded (Figure 44); hind tibiae curved inwards; middle trochanters spined .... *curvipes*

--Maxillary palps with penultimate segment moderately expanded (Figure 46); hind tibiae not curved inwards; middle trochanters not spined .... *dugdalei*

10 (8) Middle tibiae with ventral spine bidentate (Figure 68); elytra rounded .... *bidentata*

--Middle tibiae with ventral spine single; elytra subparallel 11

11 (10) Middle tibiae with ventral spine blunt, greatly enlarged (Figure 75) .... *laminifera*

--Middle tibiae with ventral spine small, acute (Figures 73 and 78) 12

12 (11) Hind tibiae expanded in distal half, bearing long, fine setae .... *dilatata*

--Hind tibiae not expanded in distal half, bearing short, stout setae. .... *spinipennis*

FEMALES (middle tibiae unarmed)

1 Elytra with humeral area pale yellow (most apparent when dry) 2

--Elytra with humeral area dark, at most a pale spot opposite pronotal angle 3

2 (1) Confined to Banks Peninsula .... *banksiana*

--Widespread, not known from Banks Peninsula .... *ciliata* .... *vulgaris*

3 (1) Elytra with pale humeral spots opposite pronotal angles (most apparent when dry) 4

--Elytra uniformly black or reddish-brown 6

4 (3) Small species, 2.0 mm long; elytra rounded in dorsal aspect ... *latispina*

--Larger species, 2.3 mm long; elytra subparallel in dorsal aspect 5

5 From Westland .... *calcarata*
(4)
--From Mackenzie Basin, south-western Canterbury .... *dilatata*

6 Pronotum with lateral margins not con-
(3) stricted anteriorly 7

--Pronotum with lateral margins constricted about equally at either end 8

7 Body outline rounded in dorsal aspect;
(6) elytral margins wide .... *crassifemur*

--Body parallel-sided in dorsal aspect; elytral margins narrow .... *otagensis*

8 Body broadly rounded in dorsal aspect;
(6) pronotum much wider than long .... *bidentata*

--Body narrow, subparallel in dorsal aspect; pronctum a little wider than long 9

9 Metasternum with 2 distinct, pit-
(8) like, glabrous depressions. From Auckland .... *dugdalei*

--Metasternum without pit-like depressions 10

10 Spermatheca straight. From Westland
(9) .... *curvipes*
.... *laminifera*

--Spermatheca curved. From north-west of South Island .... *spinipennis*

Orchymontia banksiana new species

Figures 15, 39, 67, 94, and 123

Length 2.3 mm; width 0.6 mm. Uniformly shiny dark brown except for paler humeral area and appendages. Habitus, Figure 15.

Head very sparsely punctured. Maxillary palps of male (Figure 39) with penultimate segment a little expanded; ventral groove well defined throughout its length.

Pronotum 1.1 x as wide as long, shiny, finely and evenly punctured; lateral margins crenulate in anterior half.

Elytra 1.7 x as long as wide, parallel-sided, finely and evenly punctured; humeral area with strong, angular spines. Hind wings reduced.

Legs of male: middle femora not enlarged; middle tibiae (Figure 67) flattened dorso-ventrally, curved, bearing a narrow, acute ventral spine which does not taper to end of tibia; hind tibiae with short, thick, distal setae, narrowed distally, without a distal tooth.

Male genitalia (Figure 94): median lobe of aedeagus membranous distally. Female genitalia: spermatheca (Figure 123) not sclerotised at junction with sac.

TYPE DATA. Holotype: male, Kaituna, Banks Peninsula, MC, 20 March 1973, G. Kuschel (NZAC). Paratypes: 23 males and 60 females (NMNZ, NZAC), from Banks Peninsula, MC.

MATERIAL EXAMINED. Type series only.
- / MC.
From around 200 m.
Collected November-March.

Orchymontia bidentata new species

Figures 4, 40, 68, 95, and 96

Length 2.5 mm; width 0.8 mm. Uniformly medium reddish-brown.

Head smooth, shiny, finely pubescent. Maxillary palps of male (Figure 40) with penultimate segment weakly grooved, very slightly enlarged.

Pronotum (Figure 4) 1.4 x as wide as long, finely pubescent; lateral margins crenulate anteriorly.

Elytra 1.7 x as long as wide, rounded in posterior half; interstrial punctures moderately developed, giving the impression of denser puncturation; humeral spine obsolete. Hind wings reduced.

Legs of male: middle trochanters with a small tooth on distal margin; middle femora a little enlarged; middle tibiae (Figure 68) curved, with a weakly bidentate ventral spine not tapering to distal end of tibia; hind tibiae bearing numerous long, distal, ventral setae and some short spines ventrally but no distal tooth.

Male genitalia (Figures 95 and 96) with 4 basal setae; median lobe spatulate in lateral aspect. Female genitalia: spermatheca sclerotised at junction with sac.

TYPE DATA. Holotype: male, small stream near Lake Waikaremoana, GB, 19 November 1975, G. Kuschel (NZAC). Paratypes: 8 males and 5 females (NMNZ, NZAC), from the following localities. WO - Waitomo. GB - Lake Waikaremoana.

MATERIAL EXAMINED. Type series only.
WO, GB / - .
From around 355 m.
Collected November-March.

Orchymontia calcarata new species

Figures 41 and 69

Length 2.2 mm; width 0.7 mm. Uniformly dark reddish-brown to black, except as follows: head shiny black, with vertex and anterior edge of labrum reddish-brown; humeral spot on 6th interval yellow; appendages pale.

Head: maxillary palps of male (Figure 41) with penultimate segment not enlarged or grooved.

Pronotum 1.1 x as wide as long, finely and evenly punctured; lateral margins not crenulate.

Elytra 1.7 x as long as wide, finely and evenly punctured; sides subparallel; humeral spines obscure. Hind wings reduced.

Legs of male: middle trochanters with a minute tooth on distal margin; middle femora not enlarged; middle tibiae (Figure 69) slightly curved, with an acute ventral spine not tapering to distal end of tibia; hind tibiae without long setae but with a strong, inward-directed distal lamina and a few ventral spines.

Male genitalia: median lobe of aedeagus membranous. Female genitalia: spermatheca sclerotised at junction with sac.

TYPE DATA. Holotype: male, Haast Pass opposite Pyke Creek, WD, 29 March 1973, G. Kuschel (NZAC). Paratypes: 4 males and 2 females (NMNZ, NZAC), from the following localities. WD - Haast Pass; Simonin Pass, Olivine Range. OL - Lake Hawea.

MATERIAL EXAMINED. Type series only.
- / WD, OL.
From around 1000 m.
Collected January-March.

Orchymontia ciliata new species

Figures 42, 70, and 97

Length 2.3 mm; width 0.6 mm. Pale reddish-brown; head medium brown, a little paler near eyes; labrum pale anteriorly; large, pale humeral patches occupying anterior quarter of elytra; appendages yellowish.

Head: maxillary palps of male (Figure 42) with penultimate segment expanded, ventrally grooved; groove trough-like, clearly defined throughout its length.

Pronotum 1.2 x as wide as long, obviously punctured anteriorly and posteriorly, but punctures obsolete on disc; lateral margins crenulate.

Elytra 1.7 x as long as wide, parallel-sided in anterior half, distinctly punctured; humeral spines acute. Hind wings reduced.

Legs of male: middle femora not expanded; middle tibiae (Figure 70) with a sharp, broadly based ventral spine tapering to distal end of tibia; hind tibiae flattened distally, bearing dense, moderately long setae on distal third but without a distal tooth.

Male genitalia (Figure 97); median lobe of aedeagus membranous. Female genitalia: spermatheca sclerotised at junction with sac.

TYPE DATA. Holotype: male, Moores Valley Stream, Wainuiomata, WN, 20 January 1973, R. G. Ordish (NZAC). Paratypes: 248 males and 346 females (NMNZ, NZAC), from the following localities. CL - Waiau Falls; Great Barrier Island. RI - Taihape. WN - Karori Stream; Ohariu Valley; Kaiwharawhara Stream; Hutt River tributaries; Wainuiomata Valley; Maungakotukutuku Valley; Gollans Valley; Otaki River tributaries; Ohau River; Akatarawa River. WA - southern Wairarapa.

MATERIAL EXAMINED. Type series only.
CL, RI, WN, WA / - .
From sea level to 440 m.
Collected November-August.

Orchymontia crassifemur new species

Figures 43, 71, and 98

Length 2.2 mm; width 0.8 mm. Uniformly shiny black except for medium-brown appendages.

Head with a few obsolete lateral and anterior setae. Maxillary palps of male (Figure 43) with penultimate segment a little dilated, with a ventral, trough-like groove on anterior quarter only.

Pronotum 1.1 x as wide as long, shiny, without punctures or setae; lateral margins little constricted anteriorly, not bordered or crenulate.

Elytra 1.6 x as long as wide, rounded; lateral margins wide; humeral area evenly punctured; humeral spines blunt; sutural spines enlarged. Hind wings absent.

Legs of male: all femora enlarged; middle femora obviously swollen; middle tibiae (Figure 71) with ventral spine in the form of a large, distal, recurved, blunt lamina; hind tibiae a little dilated distally, laminate, without long setae but bearing short, ventral spines on distal quarter and a very small distal tooth.

Male genitalia (Figure 98) asymmetrical; median lobe of aedeagus sclerotised and expanded distally. Female genitalia with spermatheca sclerotised at junction with sac.

TYPE DATA. Holotype: male, Lewis Pass, BR, 900 m, in bush stream, 11 April 1973, G. Kuschel (NZAC). Paratypes: 9 males and 7 females (NMNZ, NZAC), from the following localities. NN - Lake Karamea; Cobb; Flora Stream. BR - Lewis Pass; Buller Gorge.

MATERIAL EXAMINED. Type series only.
- / NN, BR.
From 700 m to 1030 m.
Collected December-April.

Orchymontia curvipes new species

Figures 44, 72, and 99

Length 2.3 mm; width 0.6 mm. Uniformly pale reddish-brown.

Head shiny, with obsolete setae. Maxillary palps of male (Figure 44) with penultimate segment greatly enlarged, strongly grooved ventrally throughout its length; groove very clearly defined but broad and shallow.

Pronotum 1.2 x as wide as long, shiny, very finely punctured; lateral margins weakly crenulate in anterior half.

Elytra 1.8 x as long as wide, parallel-sided anteriorly, finely and evenly punctured; humeral spines angular. Hind wings reduced.

Legs of male: middle trochanters with a ventral spine on distal margin; middle femora not enlarged; middle tibiae (Figure 72) with ventral spine represented by a low, keel-like process ending a little before distal end of tibia, not reduced beyond keel; hind tibiae terminally spatulate, distally curved inwards, with a few long setae and ventral spines, but without a distal tooth.

Male genitalia (Figure 99) reduced, distinct from those of all other known members of the genus. Female genitalia: spermatheca sclerotised at junction with sac.

TYPE DATA. Holotype: male, Lake Hutt, University Camp Stream, MC, 10 December 1973, G. Kuschel (NZAC). Paratypes: 11 males and 17 females (NMNZ, NZAC), from the following localities. BR - Lewis Pass. WD - Lake Paringa. MC - Mount Hutt. OL - Lake Hawea.

MATERIAL EXAMINED. Type series only.
- / BR, WD, MC, OL.
From around 800 m.
Collected December, March, and April.

Orchymontia dilatata new species

Figures 45, 73, and 124

Length 1.3 mm; width 0.6 mm. Uniformly reddish-brown, except for slightly paler appendages and (typically) a pale humeral spot on 6th stria.

Head: maxillary palps of male (Figure 45) with penultimate segment expanded, ventrally grooved throughout its length; groove narrow, clearly defined.

Pronotum 1.1 x as wide as long, smooth, shiny, with fine punctures and setae; lateral margins not crenulate.

Elytra 1.7 x as long as wide, approximately parallel-sided; humeral spine angular. Hind wings reduced.

Legs of male: middle femora not expanded; middle tibiae (Figure 73) with a sharp ventral spine not tapering to distal end of tibia; hind tibiae expanded distally in middle, with moderately long setae and short distal spines but no distal tooth.

Male genitalia: median lobe of aedeagus membranous distally. Female genitalia: spermatheca (Figure 124) long and narrow, sclerotised at junction with sac.

TYPE DATA. Holotype: male, Black Birch Stream, Hooker Valley, MK, 750 m, 2 April 1977, J. S. Dugdale (NZAC). Paratypes: 19 males and 50 females (NMNZ, NZAC), from the following localities. MK - Hooker Valley. OL - Lake Hawea. CO - Lindis Pass.

MATERIAL EXAMINED. Type series only.
- / MK, OL, CO.
From 300 m to 920 m.
Collected in March and April.

Orchymontia dugdalei new species

Figures 46 and 74

Length 2.1 mm; width 0.6 mm. Dark reddish-brown on head and pronotum; elytra, venter, and appendages paler; labrum paler in anterior half.

Head shiny, with obsolete punctures and setae. Maxillary palps of male (Figure 46) with penultimate segment expanded throughout its length and with a broad, shallow, weakly defined depression.

Pronotum 1.1 x as wide as long; punctures obsolete; lateral margins crenulate.

Elytra 1.7 x as long as wide, weakly punctured, approximately parallel-sided in anterior half, very narrowly margined; humeral spines angular. Hind wings reduced.

Legs of male: middle trochanters with a large, distal spine; middle femora not expanded; middle tibiae (Figure 74) weakly expanded ventrally to form a keel-like spine not tapering to end of tibia; hind tibiae not flattened distally, without long setae or a distal tooth.

Male genitalia: median lobe of aedeagus membranous distally. Female genitalia: spermatheca sclerotised at junction with sac.

TYPE DATA. Holotype: male, Kohukohunui, Hunua Range, AK, 600 m, 30 March 1974, J. S. Dugdale (NZAC). Paratypes: 2 males and 1 female (NMNZ, NZAC), from the Hunua Range, AK.

MATERIAL EXAMINED. Type series only.
AK / - .
From around 600 m.
Collected in March.

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Orchymontia laminifera new species

Figures 47 and 75

Length 2.4 mm; width 0.7 mm. Uniformly dark reddish-brown except as follows: appendages pale; head pale across vertex and near eyes, darkening centrally and anteriorly, completely black in some specimens; labrum uniformly dark.

Head smooth, shining. Maxillary palps of male (Figure 47) with penultimate segment enlarged and ventrally grooved through its entire length; groove moderately well defined.

Pronotum 1.1 x as wide as long, smooth, shiny, finely and evenly punctured; lateral margins ridged, not crenulate.

Elytra 1.7 x as long as wide; anterior two-thirds approximately parallel-sided; puncturation fine but uniform; setae more obvious in female; humeral spines angular. Hind wings reduced.

Legs of male: middle trochanters with a small spine on distoventral margin; middle femora a little enlarged; middle tibiae (Figure 75) curved, with a blunt, enlarged ventral spine tapering distally to end of tibia; hind tibiae with long distal setae, sparse ventral spines, and a small, low, inward-directed distal tooth.

Male genitalia: median lobe of aedeagus membranous distally. Female genitalia: spermatheca straight, sclerotised at junction with sac.

TYPE DATA. Holotype: male, Simonin Pass, Olivine Range, WD, 30 January 1975, J. S. Dugdale (NZAC). Paratypes: 3 males and 2 females (NMNZ, NZAC), from the type locality.

MATERIAL EXAMINED. Type series only.
- / WD.
From around 1000 m.
Collected in January and February.

Orchymontia latispina new species

Figures 48, 76, 100, and 101

Length 2.0 mm; width 0.8 mm. Uniformly dark reddish-brown, almost black, except for a faint, pale humeral spot on 6th stria in some specimens, and pale yellowish-brown appendages. Dorsum very smooth, shining.

Head very smooth, shining, faintly pubescent. Maxillary palps of male (Figure 48)

with penultimate segment neither grooved nor enlarged.

Pronotum 1.1 x as wide as long, very shiny, sparsely pubescent, without larger punctures on posterior border; lateral margins not crenulate.

Elytra 1.6 x as long as wide, broadly rounded, with wide margins; disc with punctures on striae obsolete; humeral spines obsolete. Hind wings reduced.

Legs of male: middle femora obviously enlarged; middle tibiae (Figure 76) with a pronounced, acute, recurved spine; hind tibiae with abundant, long, distal setae but no distal tooth.

Male genitalia (Figures 100 and 101): median lobe of aedeagus with apex deflected dorsally in lateral aspect. Female genitalia: spermatheca not sclerotised at junction with sac.

TYPE DATA. Holotype: male, 3 km south of Surveyors Creek, Karamea Bluff, NN, 25 June 1973, G. Kuschel (NZAC). Paratypes: 36 males and 14 females (NMNZ, NZAC), from the following localities. NN - Moonstone Lake; Karamea Bluff. WD - Simonin Pass, Olivine Range.

MATERIAL EXAMINED. Type series only.
- / NN, WD.
From 500 m to 900 m.
Collected January-June.

Orchymontia otagensis new species

Figures 49 and 77

Length 2.1 mm; width 0.7 mm. Uniformly reddish-brown to black, except as follows: appendages paler; head pale near eyes and across vertex, darkening centrally and anteriorly to distal third of labrum, which is pale anteriorly.

Head smooth, shining. Maxillary palps of male (Figure 49) with penultimate segment not enlarged or grooved.

Pronotum as wide as long, finely and evenly punctured; anterior angles each with a very deep pit; lateral margins bordered but not crenulate.

Elytra 1.7 x as long as wide; anterior two-thirds approximately parallel-sided; lateral margins narrow; puncturation distinct, uniform; humeral spines angular. Hind wings reduced.

Legs of male: middle femora not enlarged; middle tibiae (Figure 77) straight, with an acute, ventral spine clearly separated from distal end of tibia; hind tibiae without long setae or distal tooth but with 9 stout spines on distoventral quarter.

Male genitalia: median lobe of aedeagus distally membranous, as in *O. spinipennis*. Female genitalia: spermatheca sclerotised at junction with sac.

TYPE DATA. Holotype: male, Coronet Peak, on Skippers Road, OL, 800 m, 25 March 1973, G. Kuschel (NZAC). Paratypes: 24 males and 32 females (NMNZ, NZAC), from the following localities. WD - Hawdon Valley. OL - Coronet Peak. CO - Old Woman Range; Pisa Range; Old Man Range. DN - Leith Valley; Waipori Falls; Evansdale.

MATERIAL EXAMINED. Type series only.
- / WD, OL, CO, DN.
From 300 m to 1615 m.
Collected October-March.

Orchymontia spinipennis Broun

Figures 8, 22, 50, 78, 102, and 125

Broun, 1919, Annales de la Société Entomologique de Belgique 59: 108-109; 1921, Bulletin of the New Zealand Institute 1 (6): 479-480 (*Hydraenodes*). Wise, 1973, Records of the Auckland Institute and Museum 10: 143-187. Zwick, 1975, Nouvelle revue d'entomologie 5 (3): 247-250. Towns, 1978, New Zealand entomologist 6 (4): 416.

spinipes d'Orchymont, 1937, Occasional papers of the Bishop Museum XII (13): 155 (*Hydraenodes*) (lapsus).

spinicollis Jeannel, 1940, Mémoires du Museum National d'Histoire Naturelle XIV (1): 130 (lapsus).

Length 2.3 mm; width 0.8 mm. Uniformly deep reddish-brown to black, except for paler appendages and brown head.

Head shiny, with obsolete punctures and setae. Maxillary palps of male (Figure 50) with penultimate segment weakly dilated and grooved throughout its length; groove sharply defined. Antennae of male, Figure 22.

Pronotum 1.1 x as wide as long, finely but evenly punctured; lateral margins not crenulate.

Elytra 1.8 x as long as wide, approximately parallel-sided, with distinct, even puncturation; humeral spines angular. Hind wings (Figure 8) reduced.

Legs of male: middle femora a little expanded; middle tibiae (Figure 78) with a small, blunt, ventral spine not tapering to distal end of tibia; hind tibiae with numerous short setae on distal half but no distal tooth.

Male genitalia (Figure 102): median lobe of aedeagus membranous distally. Female genitalia: spermatheca (Figure 125) curved, sclerotised at junction with sac; duct as long as spermatheca.

TYPE DATA. Broun's description of this species indicates that he examined two specimens, which are thus syntypes. I designate as lectotype the male examined by me that is held in the British Museum of Natural History and labelled "Moa Basin, mid Canterbury, 20 October, 1913, T. Hall, Broun Collection No. 3982"; and as a paralectotype the second specimen, which Dr L. Baert informs me is in the collection of the Institut Royal des Sciences Naturelles de Belgique.

MATERIAL EXAMINED. Lectotype male, plus 351 non-type specimens (157 males and 194 females; NMNZ, NZAC) from the following localities. NN - Hope River. MB - Hanmer; Awatere. KA - Amuri; Hawk Range East; Blue Duck Creek; Wandle River. BR - Lewis Pass. MC - Mount Hutt. WD - Sam Creek. FD - Lake Thompson.

- / NN, MB, KA, BR, MC, WD, FD.
From 240 m to 815 m.
Collected October-April.

Elytra 1.8 x as long as wide, parallel-sided; humeral areas with weakened puncturation; humeral spine acute. Hind wings usually reduced, but a few specimens fully winged.

Legs of male: femora not enlarged; middle tibiae (Figure 79) straight, bearing a small, blunt, ventral spine not reaching their distal end; hind tibiae with short, stout setae on distal half but no distal tooth.

Male genitalia, Figure 103. Female genitalia: spermatheca not sclerotised at junction with sac.

TYPE DATA. Holotype: male, The Brook, Nelson city, NN, 11 February 1973, G. Kuschel (NZAC). Paratypes: 236 males and 309 females (NMNZ, NZAC), from the following localities. ND - Waiomio Stream; Mangamuka Gorge. AK - Waitakere Range; Swanson. NN - Kawatere; Maitai Valley; Nelson city streams; Aniseed Valley; Pearce Valley; Cobb River; Lea River; upper Karamea River. MB - Pukaka Stream, Tuamarina; Pelorus; Waitohi River; Picton; Fuchsia Creek. KA - Blue Duck Valley.

ND, AK / NN, MB, KA.
From sea level to 810 m.
Collected August-May.

REMARKS. Zwick (1975) has listed under *O. spinipennis* a specimen labelled "Com. Inst. Ent. Coll. No. 11103", which is part of a series of 12 specimens collected at Swanson by D. Spiller in 1942. Swanson is well outside the range of *O. spinipennis*. I am grateful to Mr J. Balfour-Browne and the British Museum (Natural History) for the opportunity to examine the series and determine No. 11103 as *O. vulgaris*.

Orchymontia vulgaris new species

Figures 51, 79, and 103

Length 2.3 mm; width 0.7 mm. Reddish-brown except for darkening of head in anterior half, including labrum; humeral areas and appendages pale.

Head shiny, sparsely punctate. Maxillary palps of male (Figure 51): penultimate segment not enlarged or ventrally grooved.

Pronotum 1.1 x as wide as long, shining, sparsely punctate; anterior and posterior borders strongly punctured; lateral margins weakly crenulate.

Genus *Hydraena* Kugelann

TYPE-SPECIES *Hydraena riparia* Kugelann, 1794.

Kugelann, 1794, in Schneider's neuestes Magazin für die Liebhaber der Entomologie 5: 578.

Head retractile to level of eyes, closely applied to prothorax; vertex on same level as anterior margin of prothorax in lateral aspect; frontoclypeal suture straight.

Labrum bilobed. Maxillary palpi very long and slender; segment 1 very short; segment 2 very long, curved, reaching well beyond eyes. Eyes lateral, protruding. Antennal grooves beneath eyes usually distinct. Antennae 9-segmented; segments 1 and 2 elongate, together reaching beyond eyes; segment 3 very small; segment 4 forming a small cupule; segments 5-9 forming a pubescent club.

Pronotum without distinct apical or basal transverse grooves or constrictions; lateral margins asperate, punctate, rounded, not angular, with submarginal anteriolateral depressions. Scutellum triangular, small.

Elytra distinctly wider at shoulders than basal width of prothorax, without a tooth or tubercle at base of shoulders, and without carinae besides the epipleural ones; elytral suture not raised at tip in lateral aspect.

Femora weakly clavate. Tibiae variable, usually straight or weakly curved. Tarsi 5-segmented; segments 1-3 very short, together not longer than segment 4; last segment distinctly longer than the previous 4 combined. Claws long, slender, equal.

Prosternum deeply incised laterally for reception of antennal club, and with a median carina. Fore coxae distinctly separate, their cavities completely enclosed behind by prosternal process and pleura. Thoracic sterna and ventrites 1-4 pruinose or finely tomentose or pubescent, but metasternum usually with bare stripes or ridges.

Male genitalia strongly asymmetrical.

REMARKS. The type species is known from Europe and Asia. The above description is based on species from Europe, Australia, and New Zealand. The genus *Hydraena* has nearly world-wide distribution, and the occurrence in New Zealand of one species extends its previously known range.

Hydraena zelandica new species

Figures 5, 16, 23, 24, 52, and 104

Length 1.35-1.60 mm; width 0.55-0.60 mm. Shiny black; antennae, palpi, and legs dark brown; pubescence on dorsal surface very fine; pruinosity on ventral surface finely tomentose rather than dew-like. Habitus, Figure 16.

Head shiny, sparsely punctate, the larger punctures about the size of an ommatidium. Clypeus convergent, smooth and shiny on middle, alutaceous on lateral margins. Labrum dull, alutaceous, the gena without an obvious posterior ridge. Maxillary palps of males, Figure 52; 2nd segment 2.5 x as long as segment 3; last segment 1.7-1.8 x as long as segment 3. Antennae of male, Figures 23 and 24; cupule partly membranous, with 3 curved setae on one side and 2 on the other.

Prothorax 1.2-1.3 x as wide as long, gently rounded laterally, widest at apical third or slightly behind; lateral margins granulo-crenulate. Pronotum (Figure 5) with a small, shallow, oblique impression on either side of disc at basal third, and with 2 larger, submarginal impressions; punctation as strong as on elytra, but a little irregular in distribution; integument between punctures smooth, shiny, lacking scintilla described by Perkins (1980).

Elytra 1.6 x long as wide, moderately declivous at end, moderately flanged above epipleura; epipleural carina weakly serrate at basal quarter; entire surface strongly punctate, the punctures of the striae and interstriae equal in size and very indistinctly aligned; neither primary nor secondary striae sulcate, except sutural stria on declivity. Wings fully developed.

Tibiae nearly straight; fore tibiae of male slightly expanded on lower edge just distal of middle.

Metasternum without ridges, with a bare stripe on either side of median depression. Intercoxal segment of abdomen flat and with posterior margin nearly straight.

Male genitalia, Figure 104.

TYPE DATA. Holotype: male, Bryants Stream, Pelorus River valley, MB, 21 January 1973, J. G. R. McBurney (NZAC). Paratypes: 3 males and 6 females (NMNZ, NZAC), from the following localities. MB - Bryants Stream; Pukaka Stream, Tuamarina. CO - Blue Lake, St Bathans.

MATERIAL EXAMINED. Type series only.
- / MB, CO.
From around 100 m.
Collected January-March.

Genus *Meropathus* Enderlein

TYPE-SPECIES *Meropathus chuni* Enderlein, 1901.

Enderlein, 1901, Zoologischer Anzeiger 24: 121; 1903, Wissenschaftliche Ergebnisse der Deutschen Tiefsee-Expedition 3: 206; 1909, Deutsche Südpolar-Expedition 10 (zoology 2): 411. d'Orchymont, 1938, Revue Française d'Entomologie 5: 78. Jeannel, 1940, Mémoires du Museum National d'Histoire Naturelle XIV (1): 129. Ordish, 1971, Pacific insects monograph 27: 187-188. Perkins, 1980, Quaestiones entomologicae 16: 406, 434.

Terrestrial species with irregular ridging on elytra obscuring striation, and stout, recumbent setae on elytral intervals and pronotum.

Head with distinct gular punctures but with no antennal groove. Maxillary palps 4-segmented; penultimate segment enlarged. Antennae 9-segmented; segments 1-3 glabrous, the pedicel spherical; segments 3 and 4 greatly reduced; segments 5-9 forming a loose, pubescent club.

Elytra broad, with 8 rows of deep punctures discernible, at least on disc, and irregular, mound-like intervals.

Male genitalia asymmetrical; parameres absent; median lobe of aedeagus flagellate, variably produced beyond attachment of flagellum; flagellum with or without a basal collar.

REMARKS. *Meropathus* is closely allied to *Ochthebius* Leach. It has been recorded from Kerguelen and Marion islands in the southern Indian Ocean, Campbell, Antipodes, and Auckland islands in the New Zealand subantarctic, The Snares islands, and Australia. *M. zelandicus* n.sp., described below, is from the South Island, Stewart Island, and the Chatham Islands.

The nine species now known have been taken from porous rock, littoral moss and grasses, debris of bird nests, and (in Australia) in the vicinity of waterfalls and streams. They are remarkably similar, and the male genital armature provides the most satisfactory means of identification. All species in the New Zealand subregion are closely allied to the type species.

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KEY TO SPECIES OF *MEROPATHUS* IN THE NEW ZEALAND SUBREGION

1 Small species, 1.6 mm long; male with aedeagus (Figure 107) not constricted medially, the tip deflected towards ostium; female with sternite 8 weakly emarginate. From The Snares islands .... *johnsi*

--Larger species, 2.0-2.5 mm long; male with aedeagus constricted or not constricted medially, the tip reflected away from ostium; female with sternite 8 strongly emarginate 2

2 Aedeagus (Figure 105) weakly constricted medially, short and acute beyond ostium; ocelli separated from eyes by their own diameter. From the Auckland Islands .... *aucklandicus*

--Aedeagus not constricted medially, blunt and elongate or spatulate beyond ostium; ocelli separated from eyes by less than their own diameter 3

3 Aedeagus (Figure 106) terminally spatulate beyond ostium, constricted medially. From Campbell Island and the Antipodes Islands ... *campbellensis*

--Aedeagus (Figure 108) elongate and curved, but not spatulate nor constricted medially .... *zelandicus*

Meropathus aucklandicus Ordish

Figure 105

Ordish, 1971, Pacific insects monograph 27: 188-189.

Length 2.6 mm; width 0.8 mm. Uniformly dark brown. Dorsal surface densely clothed in strong, recumbent setae sufficiently numerous to entangle debris, giving specimens a grey overtone. Granular microsculpture restricted to head anterior to

clypeal suture; remainder of dorsal surface smooth and shining between punctures and setae.

Head clothed with pale, recumbent setae that are much sparser on vertex; frons with no lateral keels; vertex raised between ocelli as in *M. johnsi*, bordered laterally by moderately deep depressions. Eyes prominent. Lateral ocelli somewhat prominent, separated from eyes by more than their own diameter. Labrum moderately emarginate in female, in male bearing triangular projections intermediate in length between those of *M. johnsi* and *M. campbellensis*. Gena strongly concave.

Pronotum constricted posteriorly, densely setiferous at sides; discal groove shallow, shaped and margined as in *M. johnsi* but occasionally bearing a raised horizontal bar.

Elytra with striae represented by rows of very coarse, penetrating punctures much larger than those in *M. johnsi* or *M. campbellensis*; 7th and 8th rows disrupted in posterior half of elytra; elytral intervals interrupted by ridge-like thickenings; outer edge obviously serrated.

Legs as in *M. johnsi*; middle tarsi of male not enlarged.

Ventral surface of thorax with granulose microsculpture and fine setae. Prosternum without a carina; mesosternum with weak, "m"-shaped ridging; metasternum deeply grooved medially, at junction with hind coxae. Female with 8th sternite strongly emarginate, bearing a row of coarse setae.

Male genitalia: aedeagus (Figure 105) obviously constricted medially, produced considerably beyond ostium, gently tapered, slightly curved; flagellum without a basal support. Female genitalia: spermathecal duct tightly coiled towards vagina, merging anteriorly with spermatheca, which is obviously dilated.

TYPE DATA. Holotype: male, Crozier-Webling Bay, Auckland Islands, 30 December 1962, J. L. Gressitt (NZAC). Paratypes: 4 males and 6 females (BPBM, NMNZ, NZAC), from localities around the Auckland Islands.

MATERIAL EXAMINED. Type series only.
- / Auckland Islands.
From sea level to around 10 m.
Collected in December and January.

REMARKS. Collecting by J. S. Dugdale in 1973 has shown this species to be numerous in crumbling substrates, taking advantage of porous rock as does *M. campbellensis* on the Antipodes Islands. Dugdale has noted also that it can be associated with algae. Previously little habitat detail had been recorded, beyond an association with nests of large oceanic birds (Brookes 1951).

Meropathus campbellensis Brookes

Figure 106

chuni campbellensis Brookes, 1951, Cape Expedition series, bulletin 5: 25. Brookes, Gressitt, & Samuelson, 1964, Pacific insects monograph 7: 377-378 (*campbellensis*). Ordish, 1971, Pacific insects monograph 27: 190.

Length 2.0-2.6 mm; width 1.0 mm. Uniformly dark brown except legs paler. Dorsal surface heavily setiferous, usually bearing debris that gives it a grey overtone. Head and pronotum with granulose microsculpture. Elytra smooth and shining between punctures.

Head with setae most numerous on labrum and near eyes; frons without lateral keels; vertex raised, bordered laterally by deep depressions. Lateral ocelli prominent, separated from the prominent eyes by more than their own diameter. Labrum deeply emarginate in female, in male bearing projections which are triangular basally but elongate anteriorly, and longer and more widely separated in the Antipodes Island population. Gena strongly concave.

Pronotum constricted posteriorly, densely setiferous, particularly at sides; discal groove as in *M. johnsi*, bordered by recumbent setae.

Elytra with striae represented by moderately strong punctures visible from ventral surface but obscured dorsally by setae and debris; intervals interrupted by ridge-like thickenings which are more developed than in *M. aucklandicus*; outer edge strongly serrated.

Legs as in *M. johnsi*; middle tarsi of male not enlarged.

Ventral surface of thorax with granulose microsculpture and fine setae. Prosternum without a carina; mesosternum with strong, "m"-shaped ridging; metasternum deeply divided posteriorly. Female with 8th sternite deeply and widely emarginate.

Male genitalia: aedeagus (Figure 106) broadened and blade-like beyond ostium, in lateral view; flagellum without a basal support. Female genitalia: spermathecal

duct loosely corrugated or straight as it approaches vagina; spermatheca strongly coiled, only slightly dilated distally.

TYPE DATA. Holotype: male, Courrejolles Point, Campbell Island, 13 September 1947, J. H. Sorensen (NZAC).

MATERIAL EXAMINED. Holotype, plus a selection of the 1000+ non-type specimens (NMNZ, NZAC) collected from localities on Campbell Island and the Antipodes Islands.
- / Antipodes Is, Campbell I.
From sea level to around 215 m.
Collected in September, November, and February.

REMARKS. *M. campbellensis* has been recorded from amongst littoral debris and bird nesting material on Campbell Island, and from porous rock on the Antipodes Islands.

Meropathus johnsi Ordish

Figure 107

Ordish, 1971, Pacific insects monograph 27: 188.

Length 1.6-1.8 mm; width 0.6 mm. Uniformly dark brown (teneral specimens pale fawn); head dark brown only anterior to clypeal suture and in centre, paler near eyes, clothed in golden-brown, recumbent setae which are very dense near eyes but sparse in centre and anterior to clypeal suture. Body clothed in moderately dense setae. Dorsal microsculpture present on head and thorax only.

Head: frons without lateral keels; vertex raised between ocelli, flanked by deep, lateral, pit-like depressions. Eyes prominent, coarsely facetted. Lateral ocelli very prominent, separated from the eyes by less than their own diameter. Labrum dark brown, strongly emarginate in female, in male bearing projections which are broadly triangular in dorsal aspect, and very much shorter than those of *M. campbellensis*. Gena strongly concave.

Pronotum constricted posteriorly, densely setiferous at sides; discal groove broadly lanceolate anteriorly, parallel-sided and narrowed in posterior half, smooth, bordered with recumbent setae.

Elytra with striae represented by rows of unconnected, moderately coarse punctures that are clearly visible on ventral surface but obscured dorsally by numerous recumbent setae; intervals interrupted by ridge-like thickenings which make dorsal surface uneven; outer edge slightly serrated.

Legs smooth, with scattered fine setae; dorsolateral face of tibiae with numerous stout setae. Middle tarsi of male not enlarged.

Ventral surface of thorax with granulose microsculpture and bearing very fine setae. Prosternum devoid of any obvious carina; mesosternum with strong, "m"-shaped ridges; metasternum deeply grooved medially at its border with hind coxae. Female with 8th sternite weakly emarginate.

Male genitalia: aedeagus (Figure 107) not constricted medially, briefly extended and abruptly pointed beyond ostium; flagellum without any basal enveloping support. Female genitalia: bursa copulatrix ill defined; spermathecal duct loosely and evenly coiled, merging with spermatheca, which is irregularly and loosely coiled and only slightly greater in diameter than its duct.

TYPE DATA. Holotype: male, cliffs east of Sinkhole Flat, The Snares islands, beaten from *Poa astonii*, 30 January 1967, P. M. Johns (NZAC). Paratypes: 5 males and 11 females (BPBM, CMNZ, NMNZ, NZAC), from the type locality.

REMARKS. D. S. Horning has taken *M. johnsi* on *Colobanthus muscoides*. The available evidence, though slight, suggests that this species is more plant-associated than its New Zealand congeners.

MATERIAL EXAMINED. Type series only.
- / The Snares.
From around 10 m.
Collected in January.

Meropathus zelandicus new species

Figures 6, 17, 25, 53, and 108

Length 2.5 mm; width 1.0 mm. Uniformly dark brown, but with paler, dense, strongly recumbent setae on elytra and pronotum. Typically covered with debris amongst the setae in all but teneral specimens. Granulose microsculpture confined to head and thorax. Elytra glabrous between setae and punctures. Habitus, Figure 17.

Head: frons without lateral keels; vertex raised between ocelli, flanked by deep, linear, lateral depressions. Maxillary palps of male, Figure 53. Eyes prominent, lateral. Ocelli prominent, separated from eyes by half their own diameter. Labrum moderately emarginate in female, in male with blunt, triangular projections widely separated by a 'U'-shaped emargination that are strongly recurved in lateral aspect and parallel-sided on their inner margins. Antennae of male, Figure 53.

Pronotum (Figure 6) constricted posteriorly, expanded anteriorly, widest at middle, deeply punctured at sides towards posterior border, marked by numerous symmetrical depressions. Setation reduced on disc, which bears an obvious, lanceolate, deeply punctured depression.

Elytra with striae represented by 8 rows of coarse punctures; interstriae interrupted by rows of coarse, recumbent setae that are more numerous on outer edge; serration very weak on outer edge, confined to anterior half.

Legs unmodified; outer face of tibiae with strong setae.

All thoracic sterna unornamented except for pruinose microsculpture and an obsolete, 'M'-shaped carina on mesosternum, and a deep, parallel-sided median notch on metasternum between coxae. Abdomen of female with a deep 'V'-shaped emargination and numerous coarse setae.

Male genitalia: aedeagus (Figure 108) blunt but projecting well beyond ostium, angular at ostium.

TYPE DATA. Holotype: male, Middle Sister Island, Chatham Islands, under fern on main dome (litter sample No. 73/152), 24 November 1973, A. Whitaker and C. J. Robertson (NZAC). Paratypes: 101 males and 150 females (NMNZ, NZAC), from localities on the Chatham Islands.

MATERIAL EXAMINED. Type series, plus 5 non-type specimens (NZAC) from the following localities. DN - Carey Bay, Port Chalmers. SI - Sealers Bay, Codfish Island; north-east Long Island; Twilight Bay, Port Pegasus.

- / DN / SI / Chatham Is.
From sea level to 30 m.
Collected November-February.

REMARKS. *M. zelandicus* has been collected on the Chatham Islands from under stones on rock, in association with dead kelp, on live *Disphyma australe*, and in litter of *Olearia traversii*. Stewart Island specimens have been taken on a vertical rock face in the splash zone, and in lichen and moss. The only mainland specimens were taken from "beachwrack".

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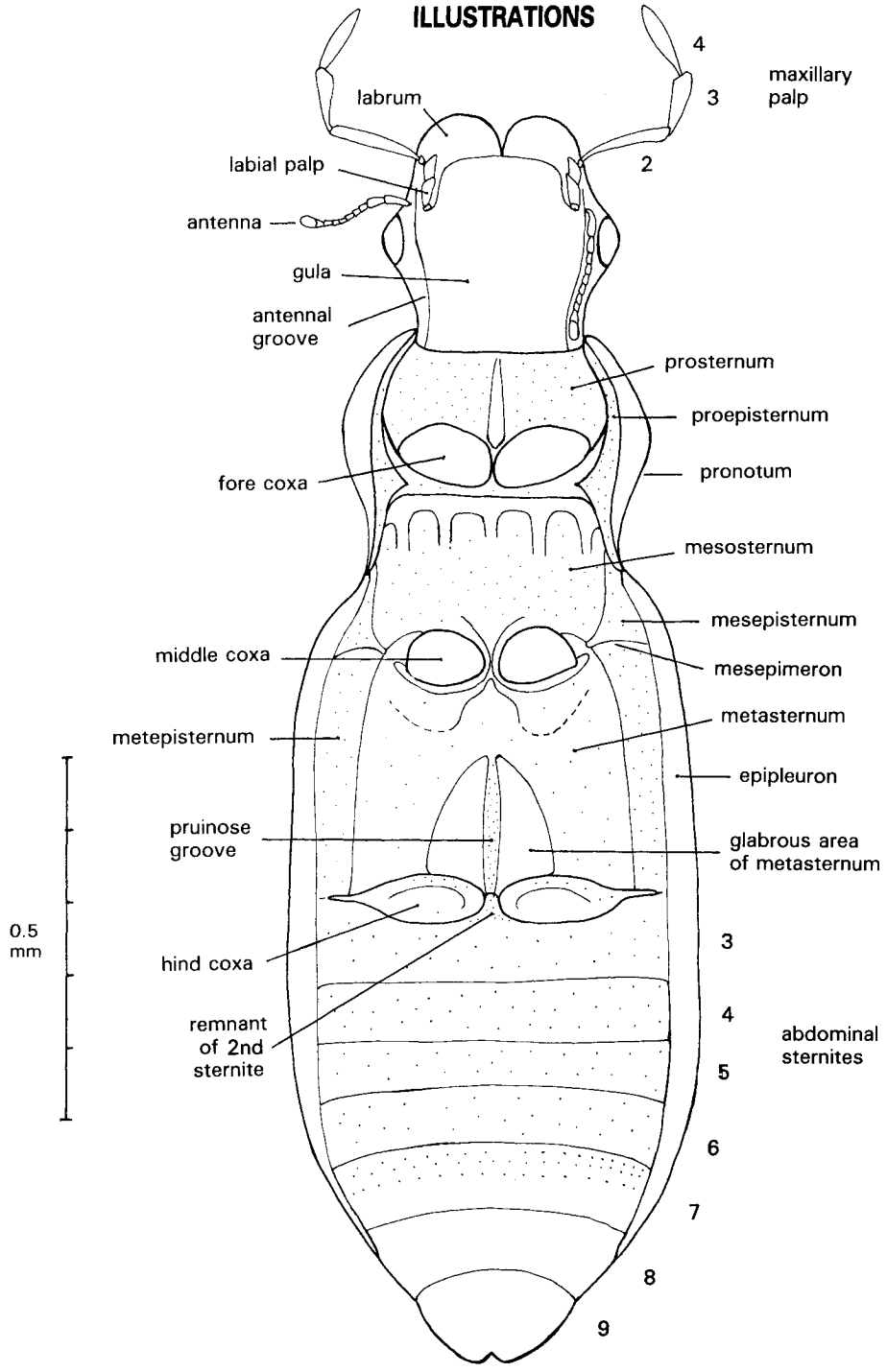
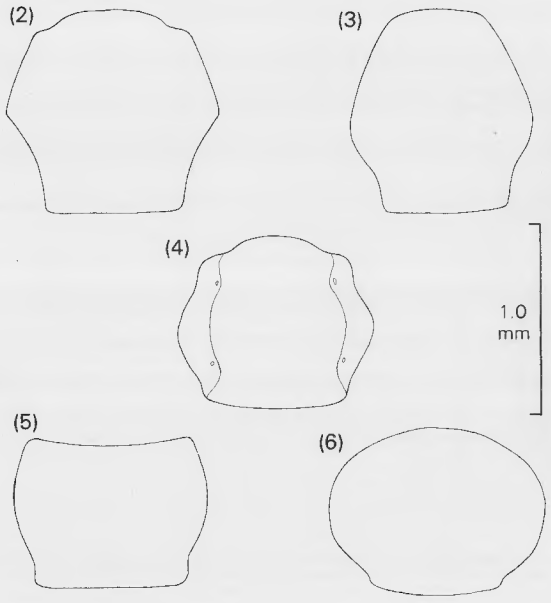
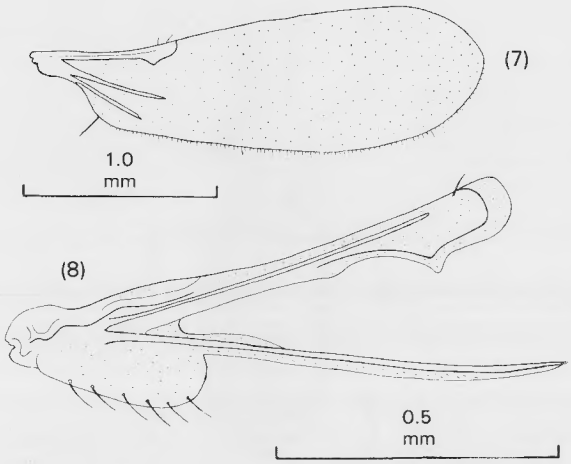


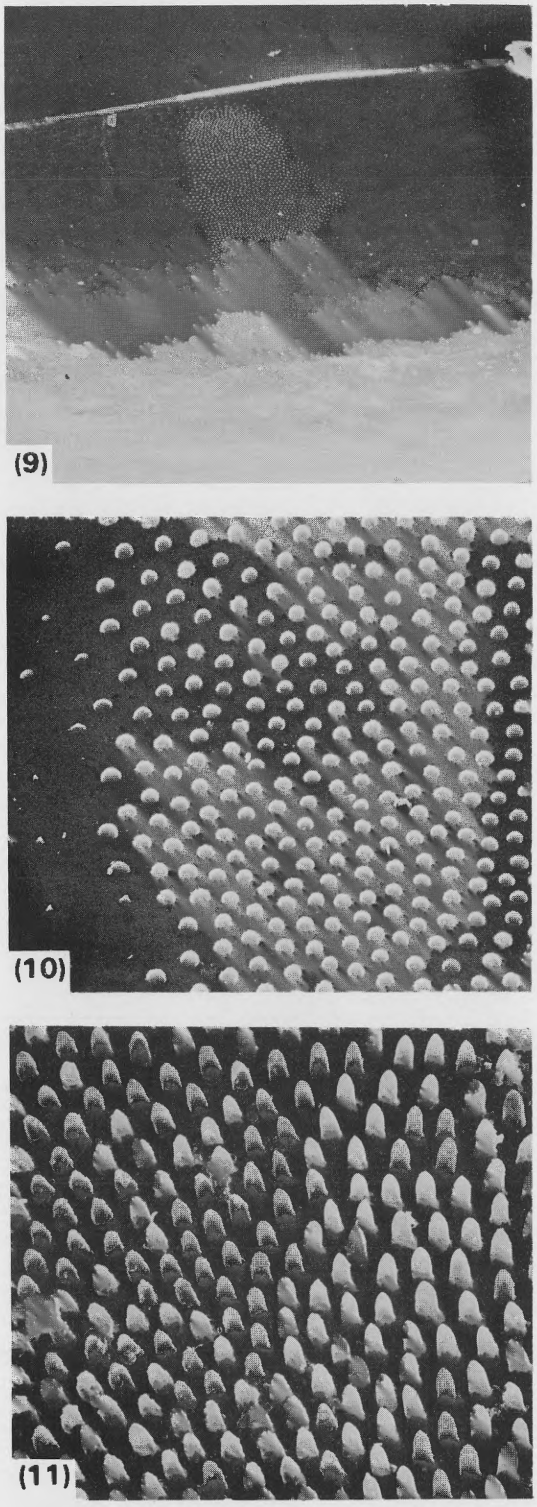
Figure 1 Schematic diagram of ventral aspect of female *Homalaena dispersa*, a representative hydraenid.



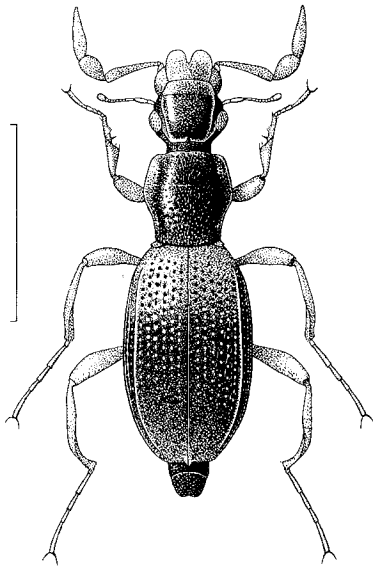
Figures 2–6 Pronotal outline: (2) *Podaena latipalpis;* (3) *Homalaena dispersa;* (4) *Orchymontia bidentata;* (5) *Hydraena zealandica;* (6) *Meropathus zelandicus.*



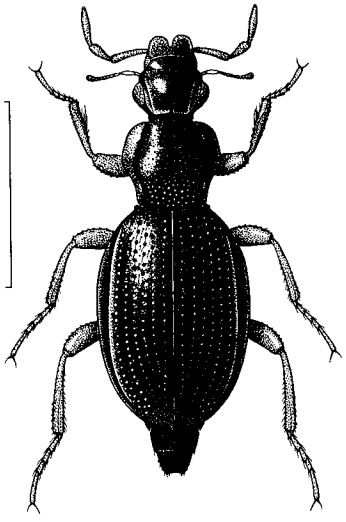
Figures 7 and 8 Hind wing of male: (7) *Podaena glabriventris;* (8) *Orchymontia spinipennis.*



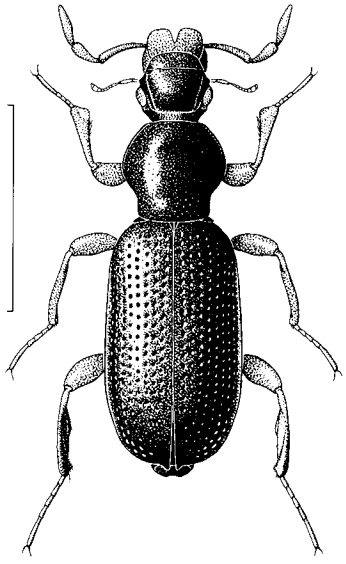
Figures 9–11 Inner (concave) surface of elytron: (9,10) *Podaena kuscheli*, showing stridulatory area at mid elytron, and detail; (11) stridulatory spines of *Berosus* (Hydrophilidae). Magnification: (9) ×170; (10) ×1700; (11) ×1400.



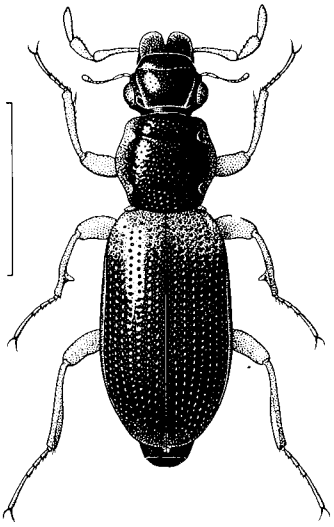
12. *Podaena latipalpis*



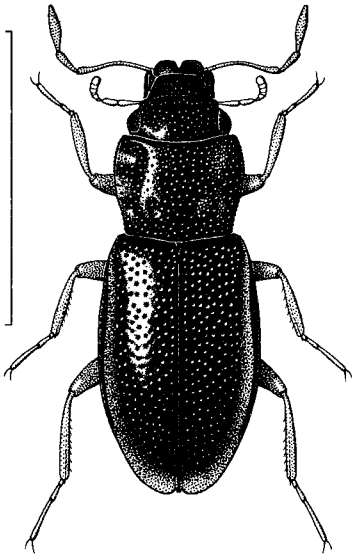
13. *Podaena maclellani*



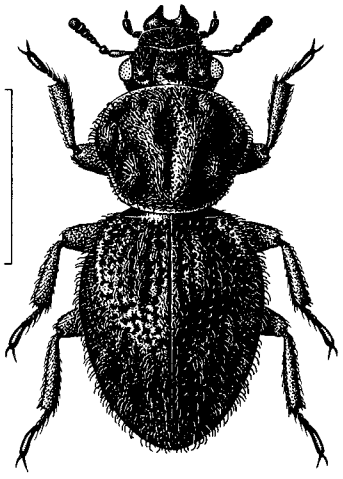
14. *Homalaena dilatata*



15. *Orchymontia banksiana*

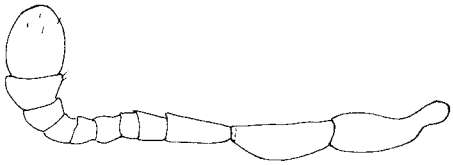


16. *Hydraena zelandica*

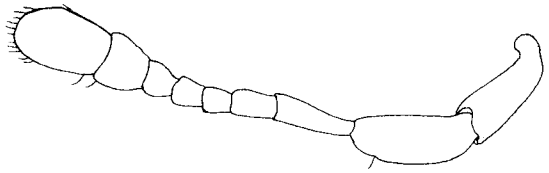


17. *Meropathus zelandicus*

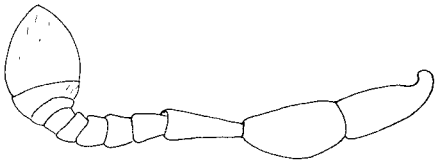
Figures 12–17 Habitus drawings of species representative of the genera of New Zealand Hydraenidae; scale lines represent 1 mm *(artist: D. W. Helmore).*



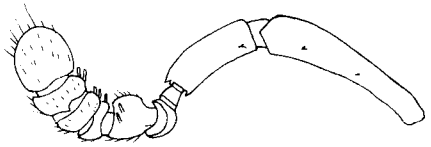
18. *Podaena dentipalpis*
Nelson



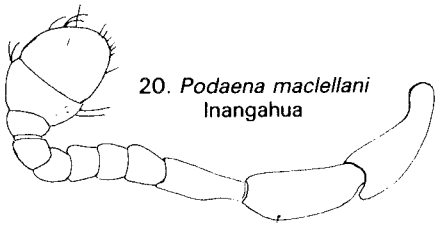
22. *Orchymontia spinipennis*
Lake Hutt



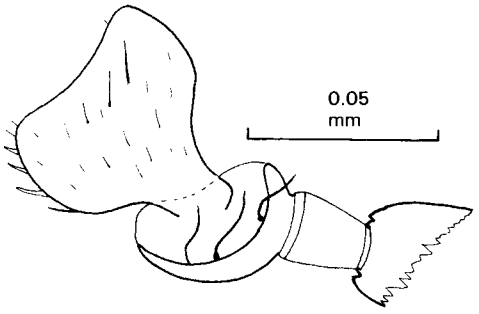
19. *Podaena glabriventris*
Great Barrier Island



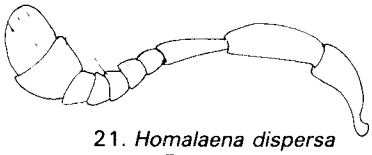
23. *Hydraena zelandica*
Pelorus



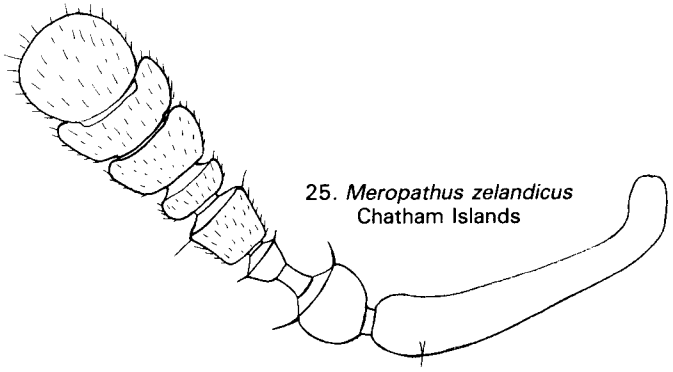
20. *Podaena maclellani*
Inangahua



24. *H. zelandica*, detail
of segments 3–5



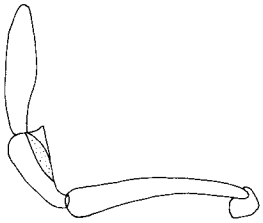
21. *Homalaena dispersa*
Evansdale



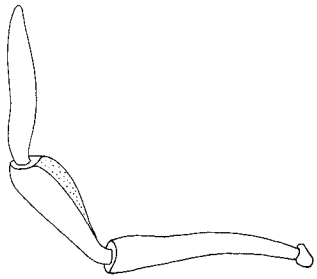
25. *Meropathus zelandicus*
Chatham Islands

0.2
mm

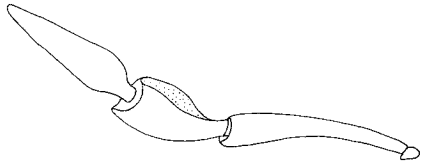
Figures 18–25 Right antenna of male, ventral aspect.



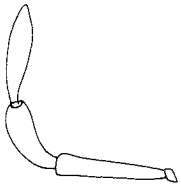
26. *Podaena dentipalpis*
Nelson



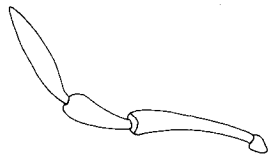
31. *Podaena trochanteralis*
Lewis Pass



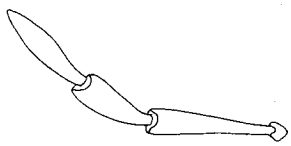
29. *Podaena latipalpis*
Mangamuka Gorge



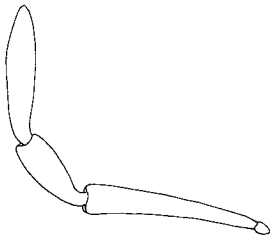
27. *Podaena glabriventris*
Great Barrier Island



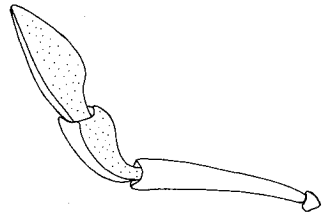
32. *Homalaena acuta*
Northland



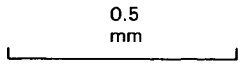
30. *Podaena maclellani*
Maitai Valley



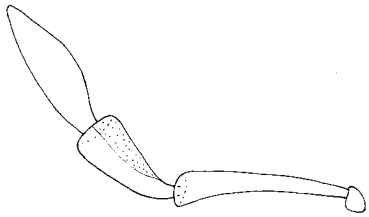
28. *Podaena kuscheli*
Mount Hercules



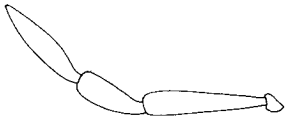
33. *Homalaena carinata*
Moores Valley



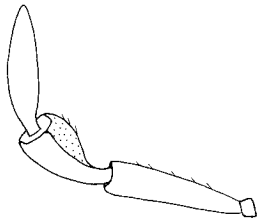
Figures 26–53 Right maxillary palp of male, ventral aspect.



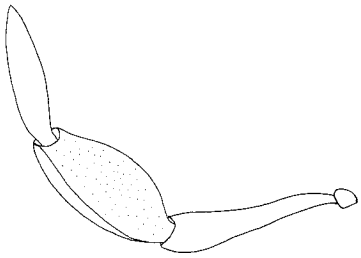
34. *Homalaena dilatata*
Moores Valley



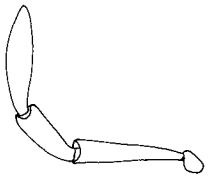
37. *Homalaena setosa*
Waitakere Range



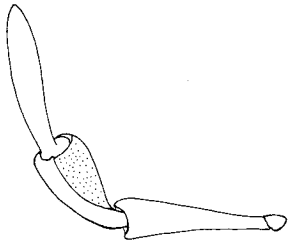
41. *Orchymontia calcarata*
Lake Hawea



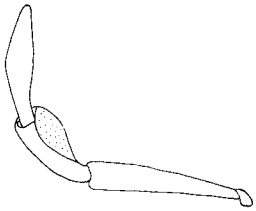
38. *Homalaena spatulata*
Lake Hawea



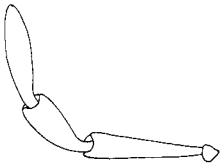
35. *Homalaena dispersa*
Evansdale



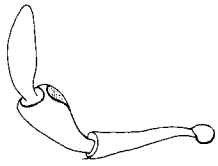
42. *Orchymontia ciliata*
Moores Valley



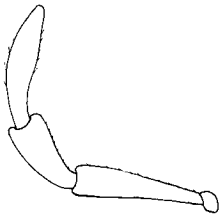
39. *Orchymontia banksiana*
Banks Peninsula



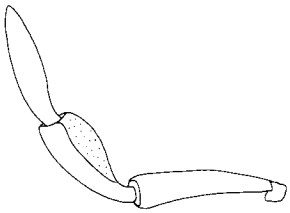
36. *Homalaena nelsonensis*
Nelson



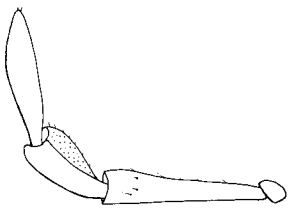
43. *Orchymontia crassifemur*
Karamea



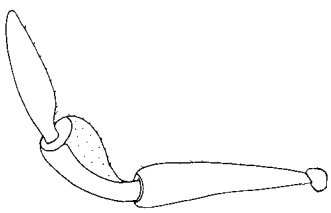
40. *Orchymontia bidentata*
Lake Waikaremoana



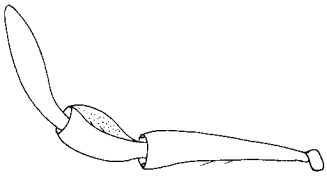
44. *Orchymontia curvipes*
Lake Hutt



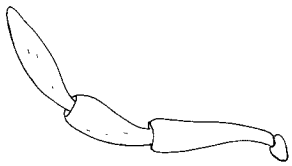
45. *Orchymontia dilatata*
Hooker Valley



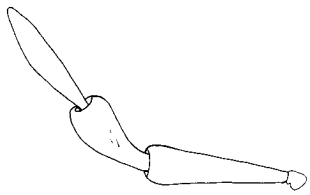
46. *Orchymontia dugdalei*
Kohukohunui



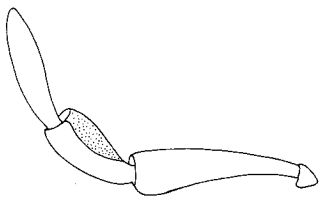
47. *Orchymontia laminifera*
Simonin Pass



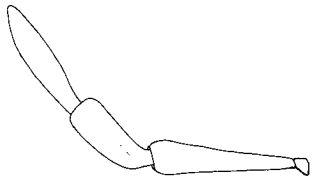
48. *Orchymontia latispina*
Karamea



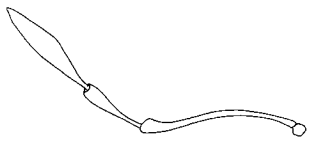
49. *Orchymontia otagensis*
Coronet Peak



50. *Orchymontia spinipennis*
Hawk Range East

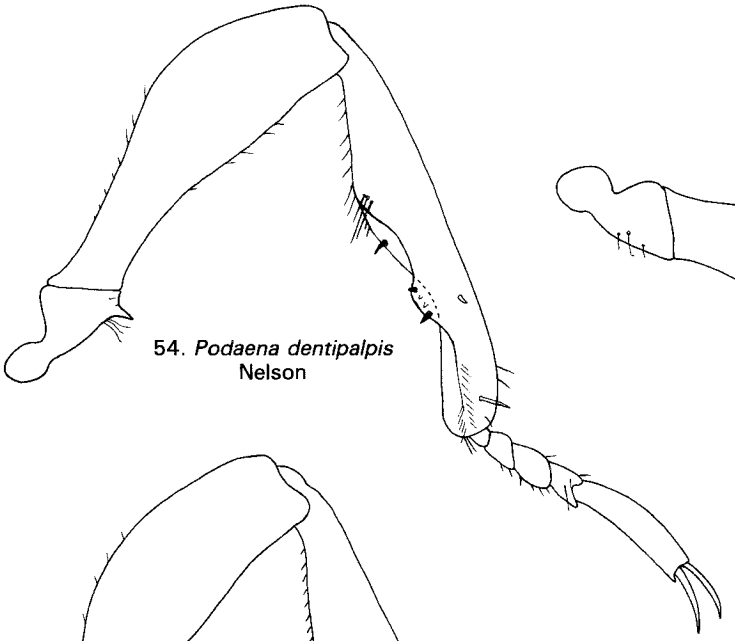


51. *Orchymontia vulgaris*
Wairau

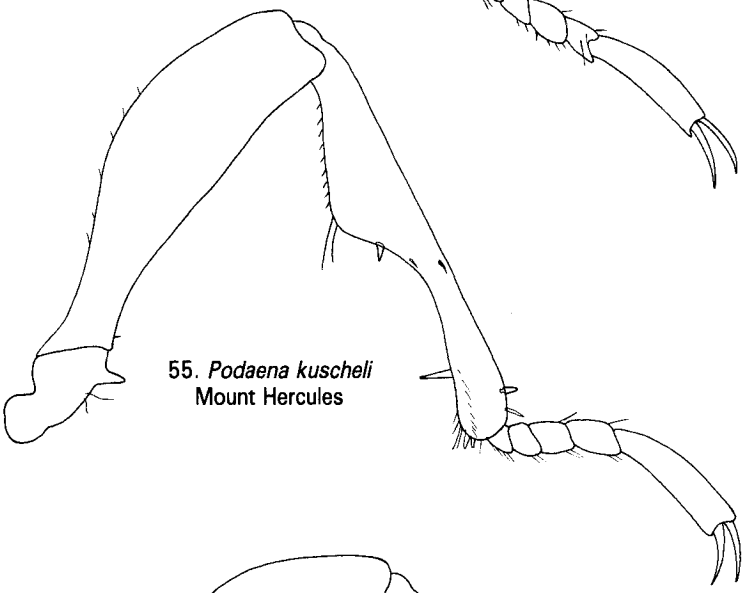


52. *Hydraena zelandica*
Marlborough

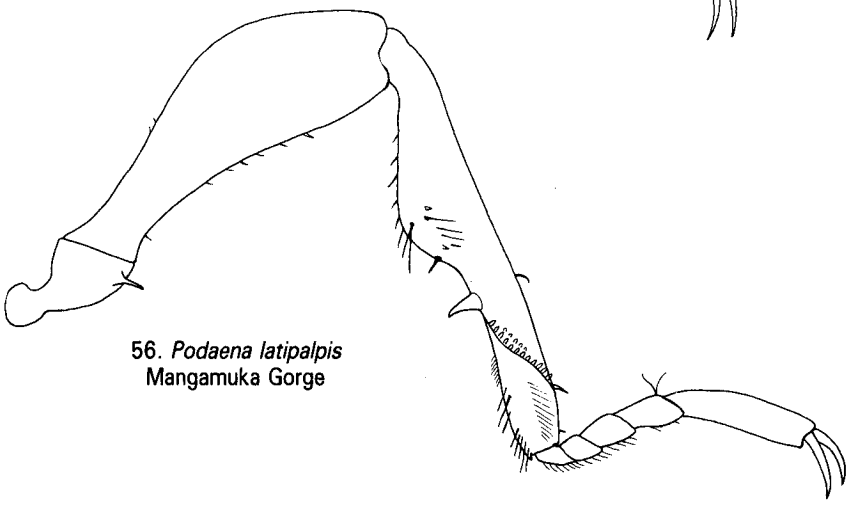
53. *Meropathus zelandicus*
Chatham Islands



54. *Podaena dentipalpis*
Nelson

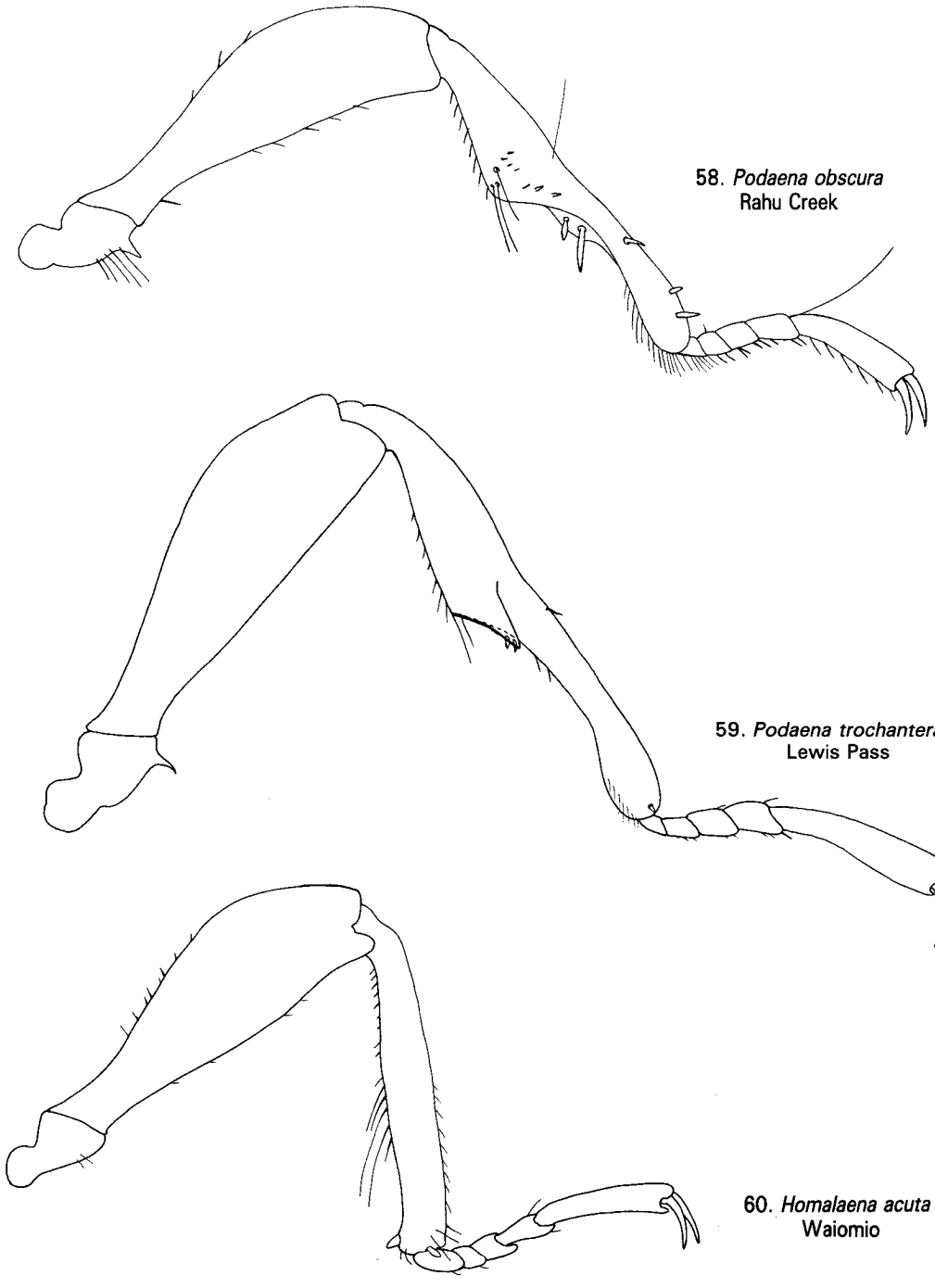


55. *Podaena kuscheli*
Mount Hercules



56. *Podaena latipalpis*
Mangamuka Gorge

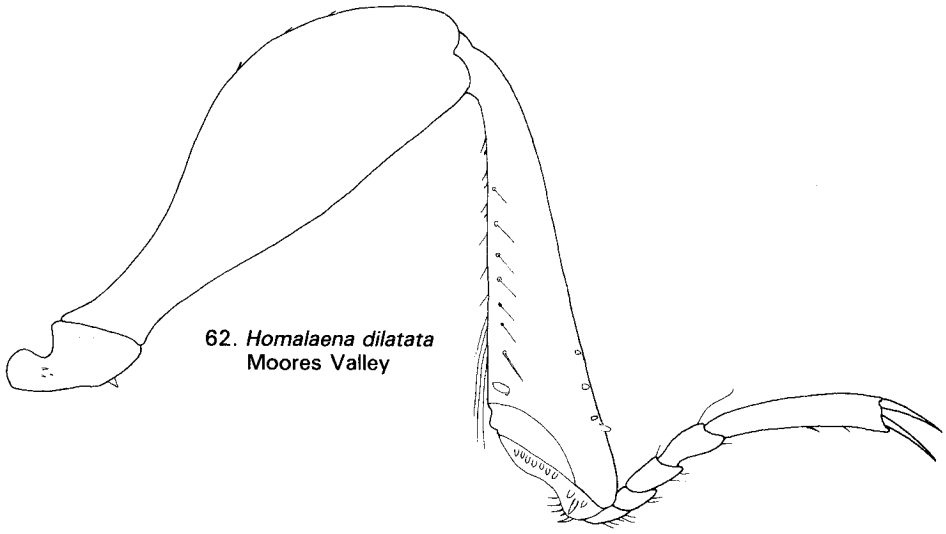
57. *Podaena maclellani*
Nelson



Figures 54–66 Left foreleg, anterior aspect; all to same scale.

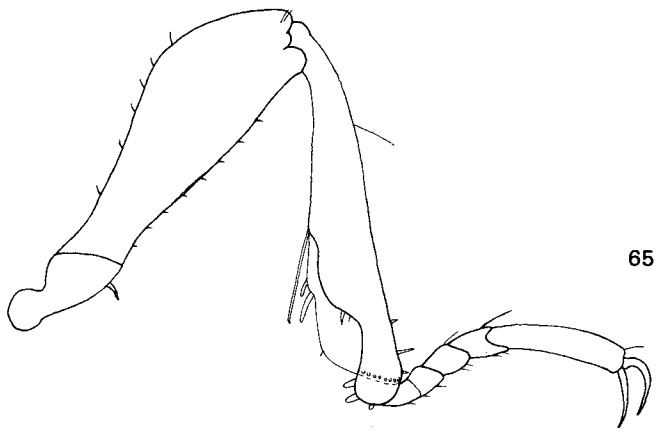
61. *Homalaena carinata*
Great Barrier Island

62. *Homalaena dilatata*
Moores Valley

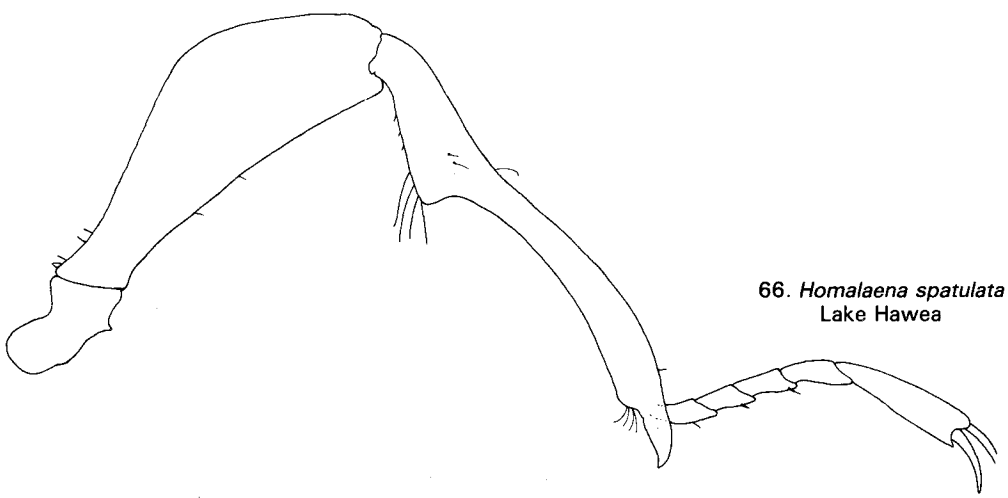


63. *Homalaena dispersa*
Waiomio

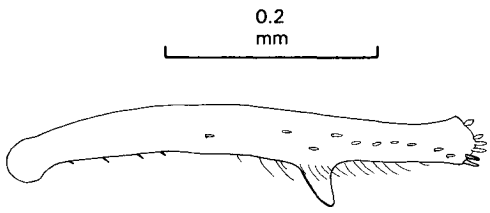
64. *Homalaena nelsonensis*
Nelson



65. *Homalaena setosa*
Cascade Creek

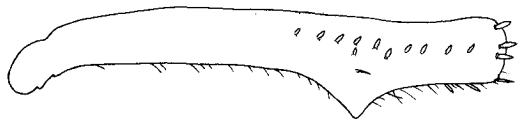


66. *Homalaena spatulata*
Lake Hawea



67. *Orchymontia banksiana*, Banks Peninsula

68. *Orchymontia bidentata*, Lake Waikaremoana

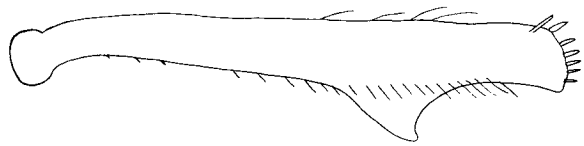


69. *Orchymontia calcarata*, Lake Hawea

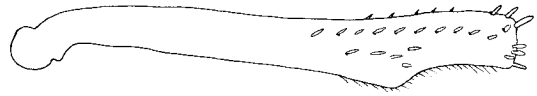
70. *Orchymontia ciliata*, Moores Valley

71. *Orchymontia crassifemur*, Karamea

72. *Orchymontia curvipes*, Lake Hutt

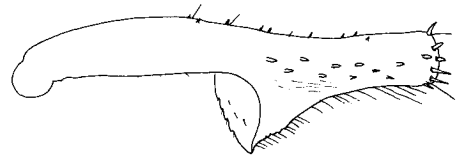


73. *Orchymontia dilatata*, Hooker Valley

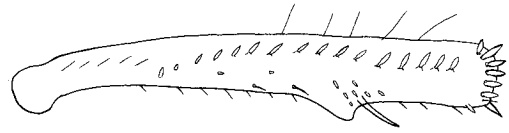


74. *Orchymontia dugdalei*, Hunua Range

75. *Orchymontia laminifera*, Simonin Pass



76. *Orchymontia latispina*, Karamea

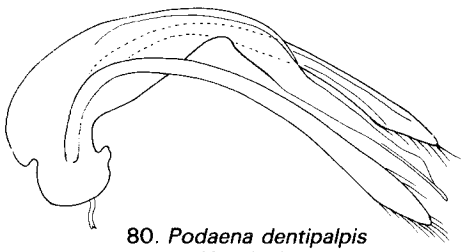


77. *Orchymontia otagensis*, Waipori Falls

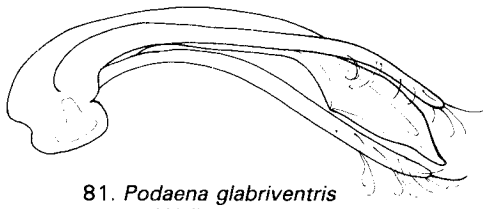
78. *Orchymontia spinipennis*, Hawk Range East

79. *Orchymontia vulgaris*, Wairau

Figures 67–79 Left middle tibia, lateral aspect; all to same scale.

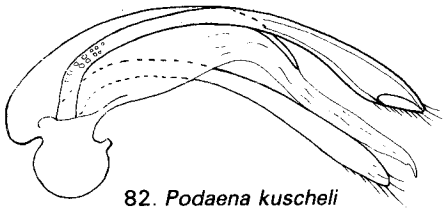


80. *Podaena dentipalpis*
Havelock

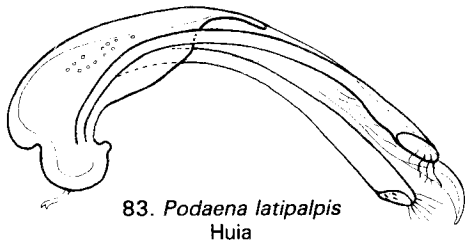


81. *Podaena glabriventris*
Wellington

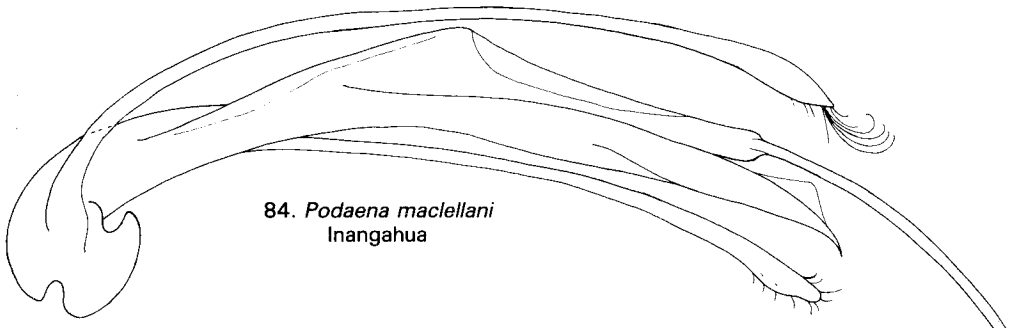
0.2
mm



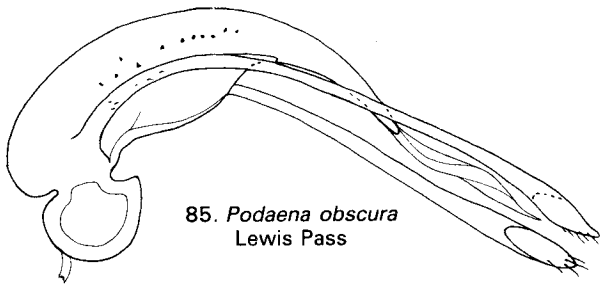
82. *Podaena kuscheli*
Flora Creek



83. *Podaena latipalpis*
Huia

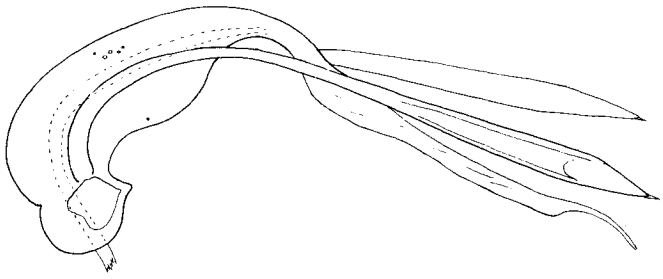


84. *Podaena maclellani*
Inangahua

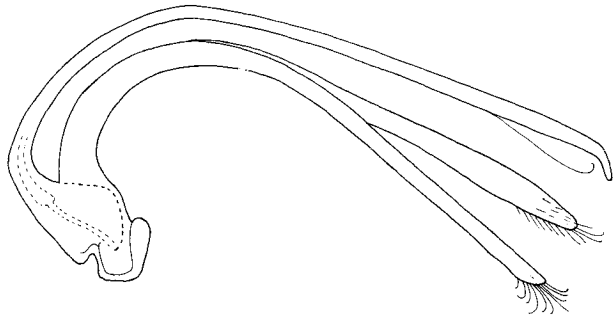


85. *Podaena obscura*
Lewis Pass

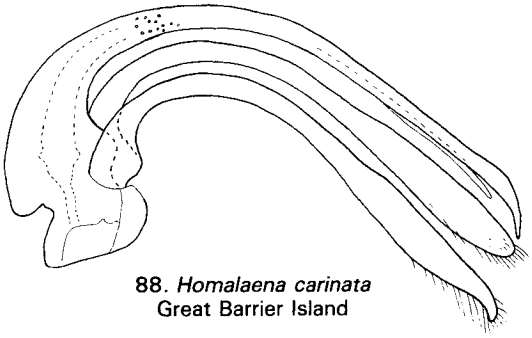
Figures 80–108 Male genitalia: (80–93) lateral aspect, all to same scale; (94–103) ventral aspect except Figures 96 and 101 (lateral); (104–108) lateral aspect.



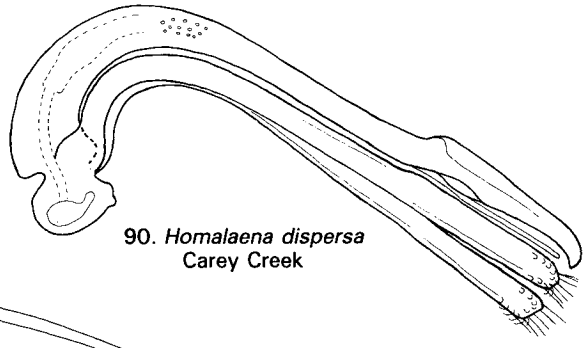
86. *Podaena trochanteralis*
Lake Paringa



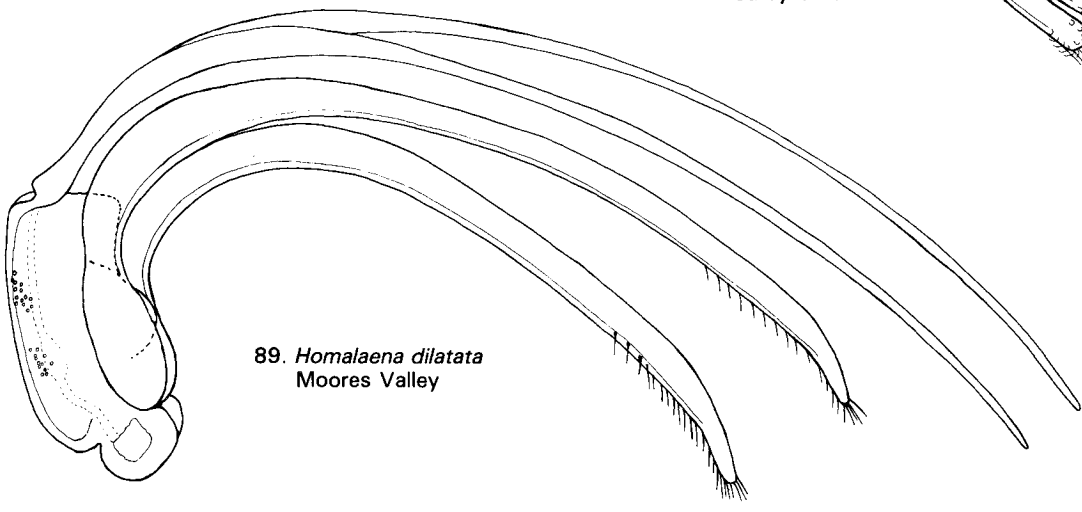
87. *Homalaena acuta*
Nelson



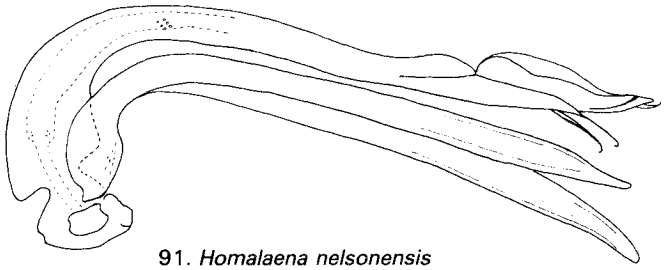
88. *Homalaena carinata*
Great Barrier Island



90. *Homalaena dispersa*
Carey Creek

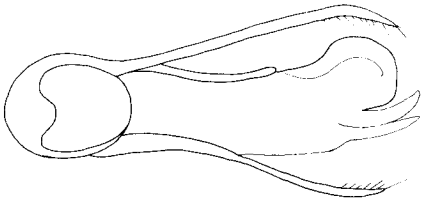


89. *Homalaena dilatata*
Moores Valley

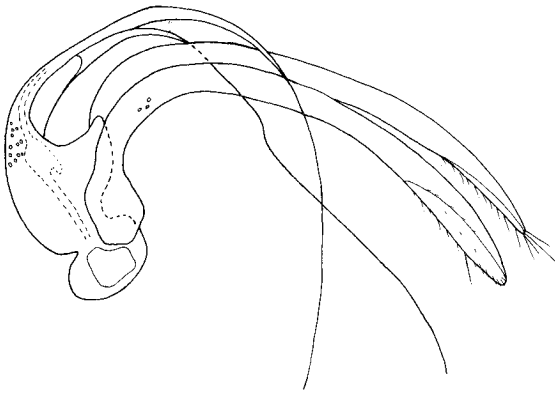


91. *Homalaena nelsonensis*
Nelson

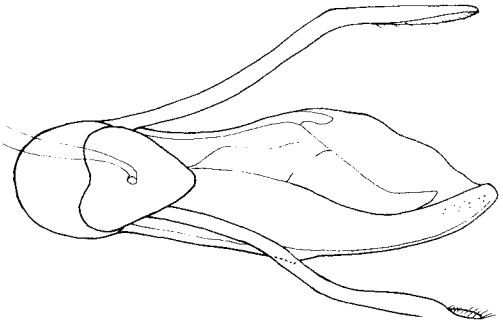
0.2
mm



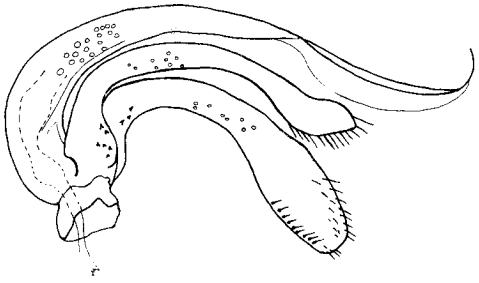
94. *Orchymontia banksiana*
Banks Peninsula



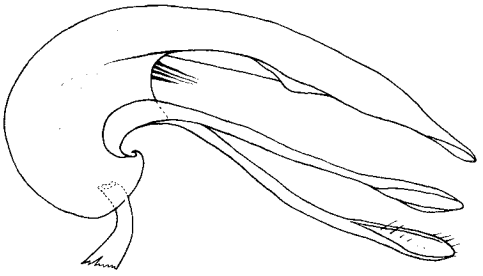
92. *Homalaena setosa*
Great Barrier Island

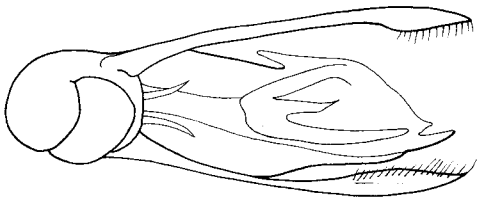


95, 96. *Orchymontia bidentata*
Waitomo

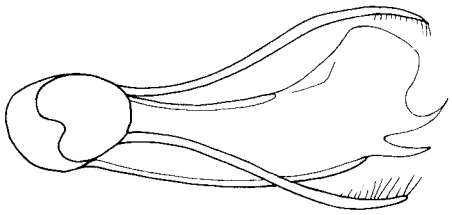


93. *Homalaena spatulata*
Dinner Creek

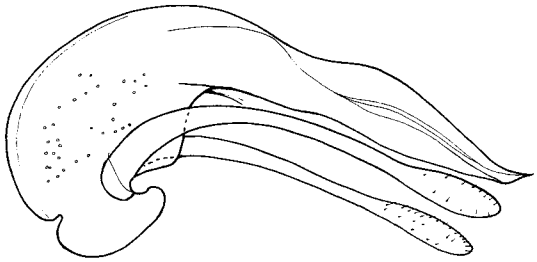


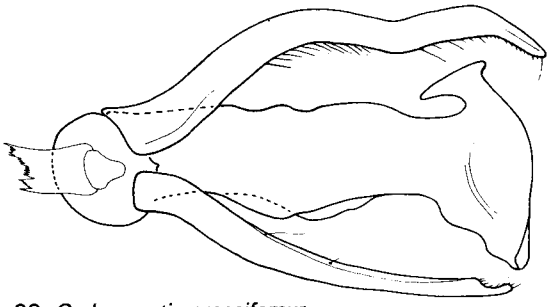


100, 101. *Orchymontia latispina*
Moonstone Lake

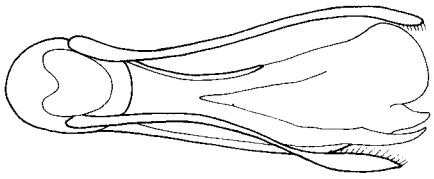


97. *Orchymontia ciliata*
Kaiwharawhara

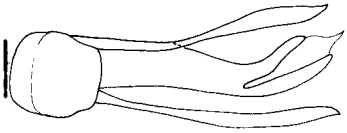




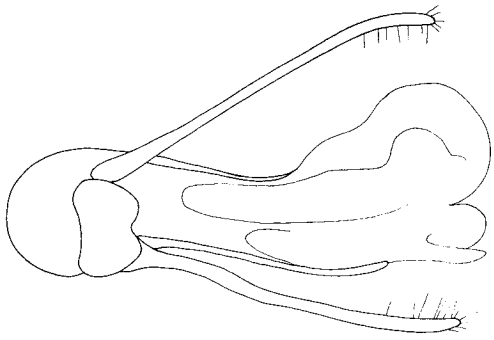
98. *Orchymontia crassifemur*
Lewis Pass



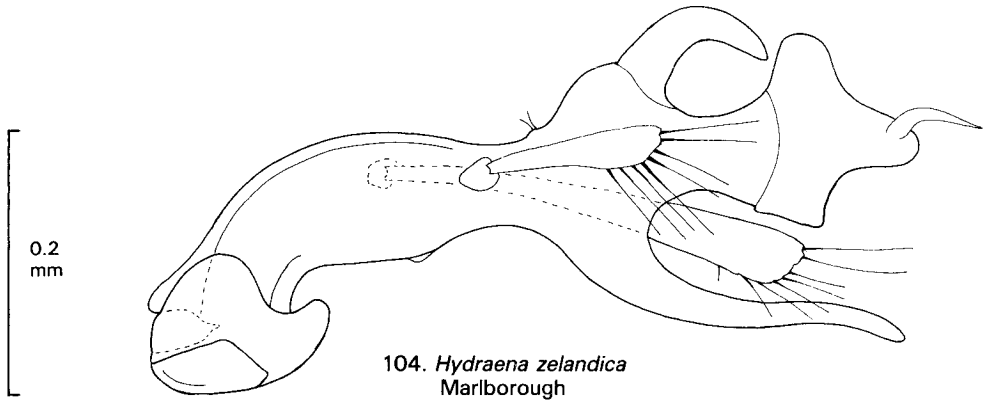
102. *Orchymontia spinipennis*
Wandle River



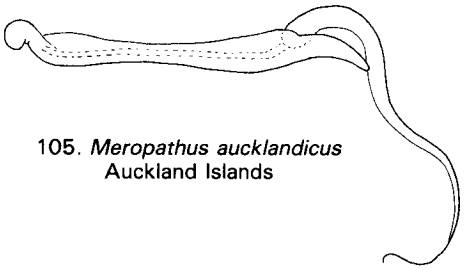
99. *Orchymontia curvipes*
Lewis Pass



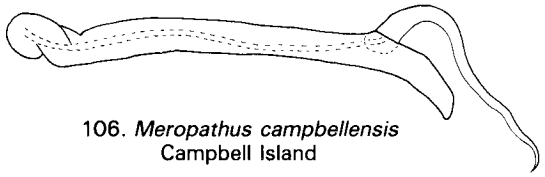
103. *Orchymontia vulgaris*
Nelson



104. *Hydraena zelandica*
Marlborough

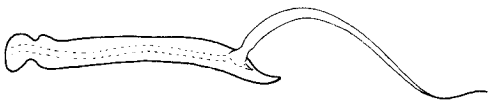


105. *Meropathus aucklandicus*
Auckland Islands

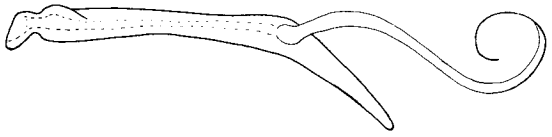


106. *Meropathus campbellensis*
Campbell Island

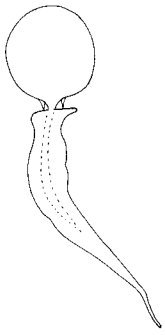
0.5
mm



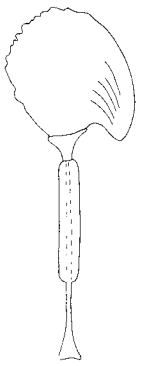
107. *Meropathus johnsi*
The Snares islands



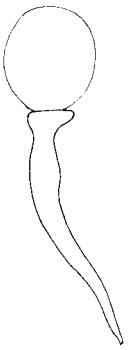
108. *Meropathus zelandicus*
Chatham Islands



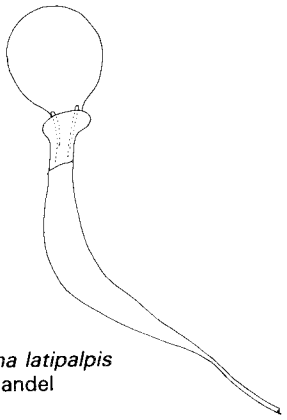
109. *Podaena dentipalpis*
Nelson



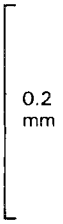
110. *Podaena glabriventris*
Wellington

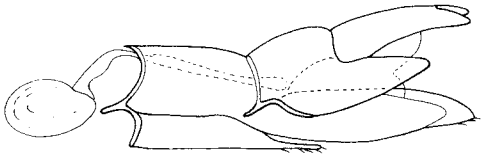


111. *Podaena kuscheli*
Hercules Creek

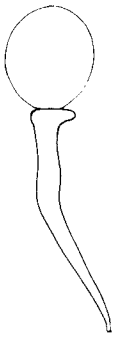


112. *Podaena latipalpis*
Coromandel

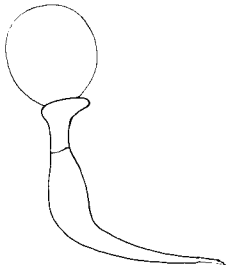




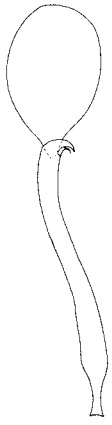
113. *Podaena maclellani*
Maitai Valley



114. *Podaena obscura*
Lewis Pass



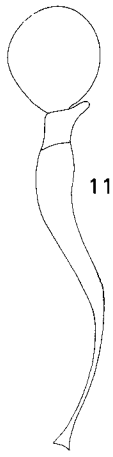
115. *Podaena trochanteralis*
Haast



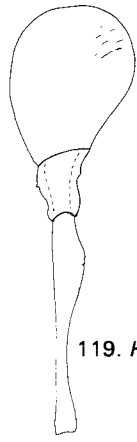
116. *Homalaena acuta*
Clouston Valley

Figures 109–125 Spermatheca, dorsal aspect,. except Figure 113 which shows also the distended apical abdominal segments in lateral aspect.

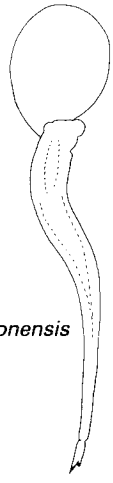
117. *Homalaena carinata*
Great Barrier Island



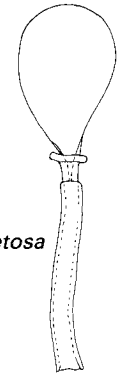
118. *Homalaena dilatata*
Moores Valley



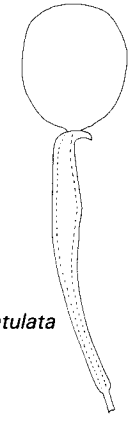
119. *Homalaena dispersa*
Carey Creek



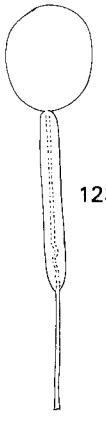
120. *Homalaena nelsonensis*
Nelson



121. *Homalaena setosa*
Otaki River

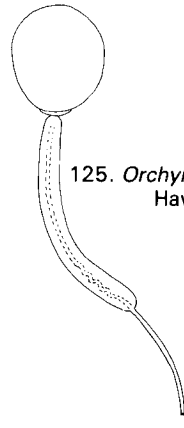


122. *Homalaena spatulata*
Lake Hawea



123. *Orchymontia banksiana*
Banks Peninsula

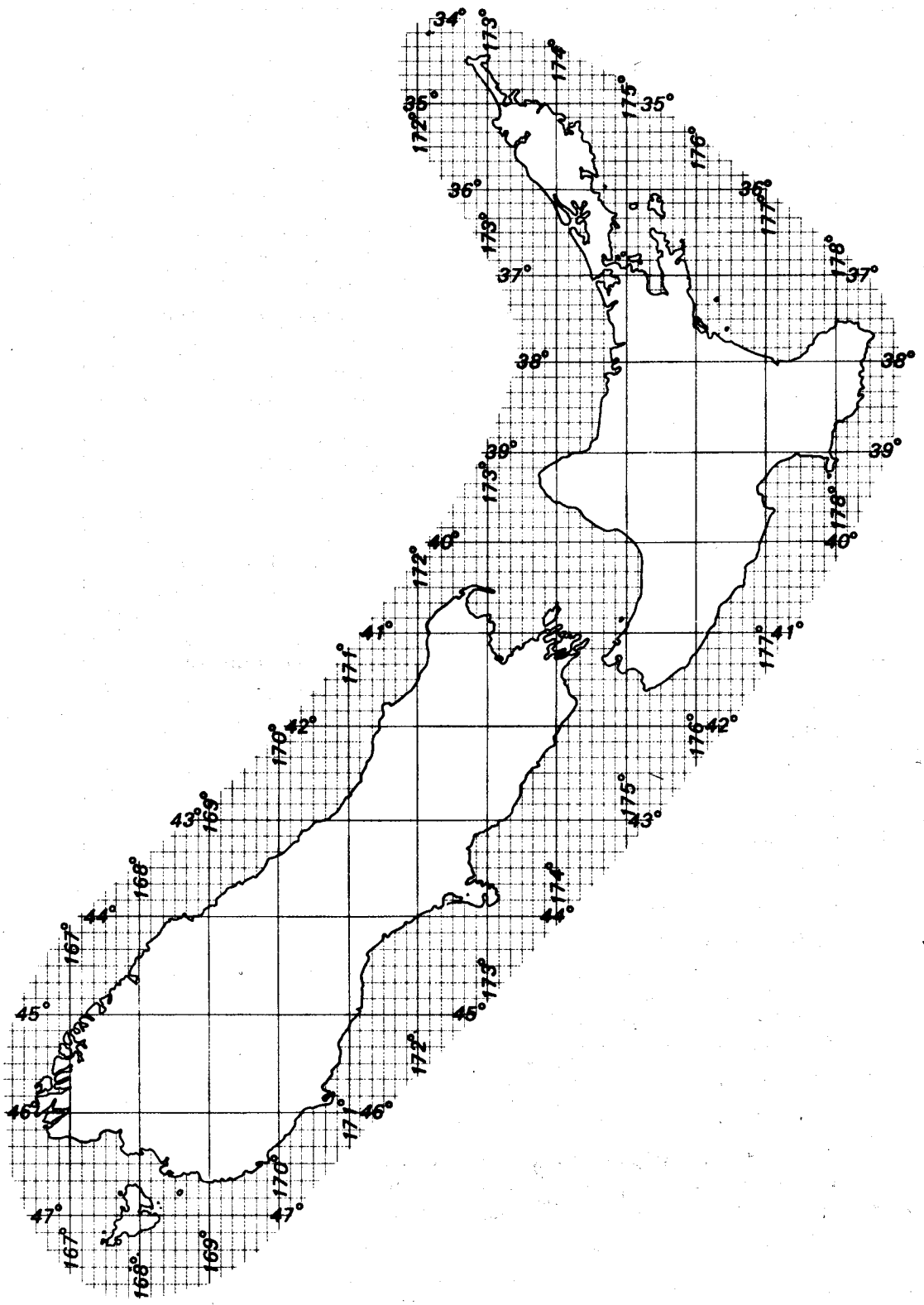
124. *Orchymontia dilatata*
Hooker Valley



125. *Orchymontia spinipennis*
Hawk Range

TAXONOMIC INDEX

Underlined entries are opening page numbers of descriptions.



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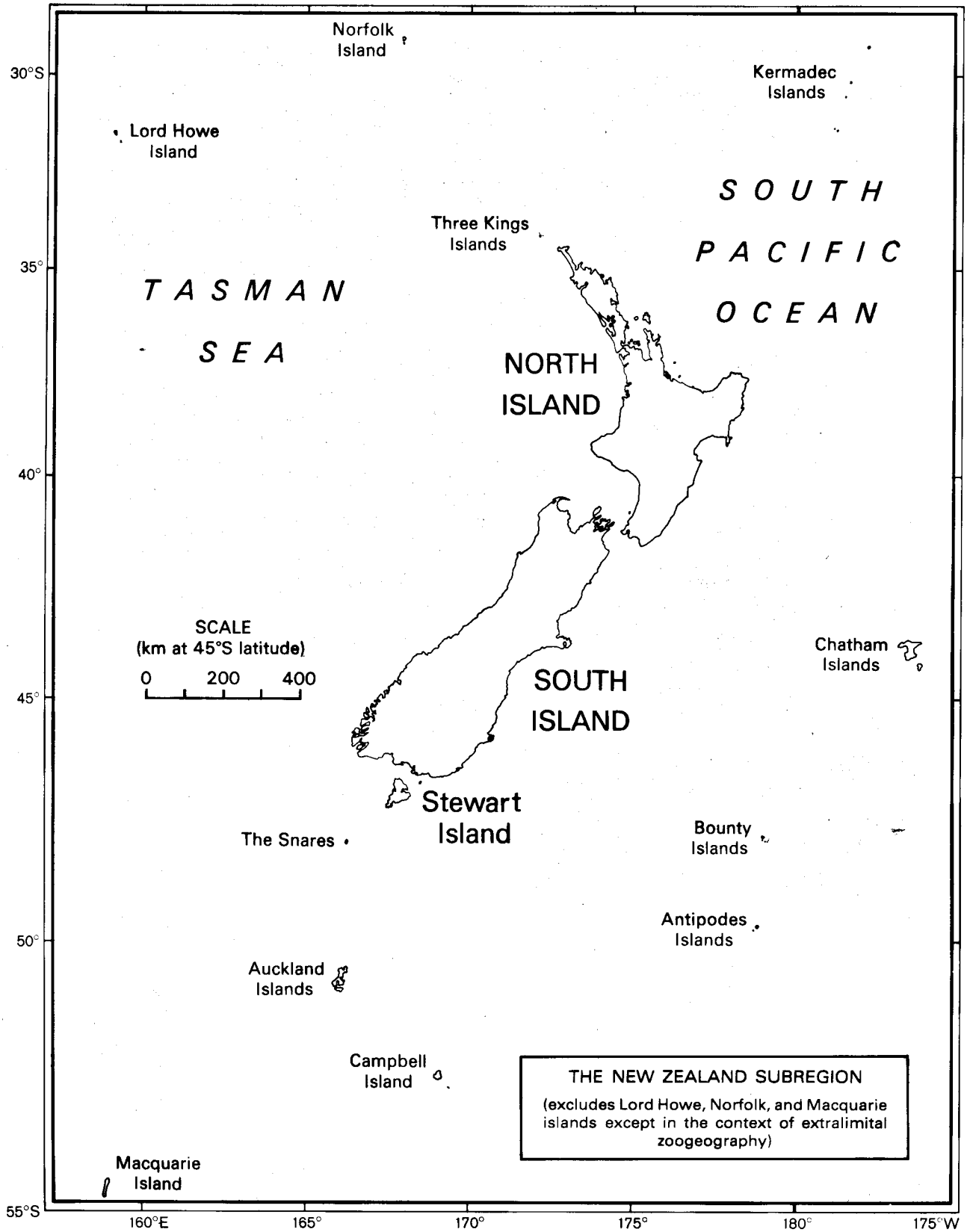
Fauna of New Zealand

Number 6

Hydraenidae

(Insecta: Coleoptera)

R. G. Ordish



THE NEW ZEALAND SUBREGION

(excludes Lord Howe, Norfolk, and Macquarie islands except in the context of extralimital zoogeography)

AK – Auckland

BP – Bay of Plenty

CL – Coromandel

GB – Gisborne

HB – Hawke's Bay

ND – Northland

RI – Rangitikei

TK – Taranaki

TO – Taupo

WA – Wairarapa

WI – Wanganui

WN – Wellington

WO – Waikato

BR – Buller

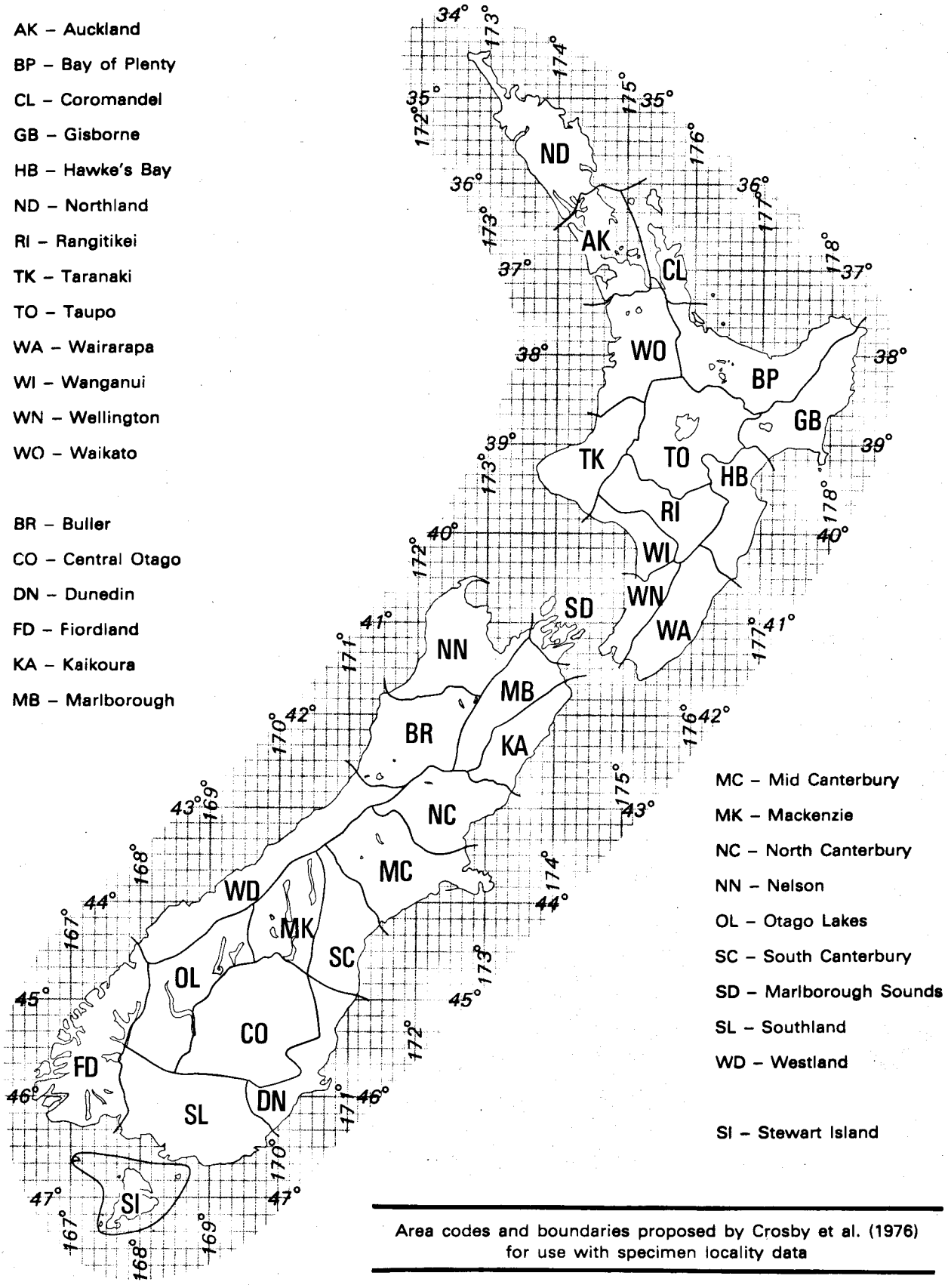
CO – Central Otago

DN – Dunedin

FD – Fiordland

KA – Kaikoura

MB – Marlborough



MC – Mid Canterbury

MK – Mackenzie

NC – North Canterbury

NN – Nelson

OL – Otago Lakes

SC – South Canterbury

SD – Marlborough Sounds

SL – Southland

WD – Westland

SI – Stewart Island

Area codes and boundaries proposed by Crosby et al. (1976) for use with specimen locality data

Fauna of New Zealand

This series of occasional publications has been established with two major objectives: to encourage those with expert knowledge of elements in the New Zealand fauna to publish concise yet comprehensive accounts; and to provide a means of identification accessible to the non-specialist. It will deal largely with non-marine invertebrates, since the vertebrates are well documented, and marine forms are covered by the series *Marine Fauna of New Zealand*.

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IN PREPARATION

Arachnida: Acari — Ixodidae, by G. W. Ramsay; Cryptostigmata review, by M. Luxton.

Crustacea: Copepoda — Harpacticoida, by M. H. Lewis. Amphipoda — Talitridae, by K. W. Duncan.

Insecta: Coleoptera — Introduced Curculionoidea, by G. Kuschel; Key to families, by J. C. Watt. Diptera — Calliphoridae, by J. P. Dear. Hemiptera — Pseudococcidae, by J. Cox; Psyllidae, by P. Dale. Hymenoptera — Ambositrinae, by I. Naumann; Apoidea, by B. J. Donovan; Chalcidoidea (in several parts), by J. S. Noyes and E. W. Valentine; Key to families, by E. W. Valentine; Pompilidae, by A. C. Harris. Lepidoptera — Catalogue of types, by J. S. Dugdale. Protura, by S. L. Tuxen. Thysanoptera — Tubulifera, by L. A. Mound & A. K. Walker.

A further twenty-plus contributions had been promised up to the time this number went to press.

Mollusca: Gastropoda — Punctidae, by F. M. Climo; Introduced Pulmonata, by G. M. Barker.

DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH, WELLINGTON, NEW ZEALAND

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