

ENTOMOLOGY OF THE AUCKLANDS AND OTHER ISLANDS SOUTH OF NEW ZEALAND: HYMENOPTERA: MYMARIDAE

By **E. W. Valentine**¹

Abstract: Three species in 3 genera of Mymaridae are reported from the subantarctic islands of New Zealand; all species and 2 genera are described as new. One species each is known from the Auckland and Campbell I, while a third occurs on Auckland, Campbell and Antipodes Is. They are related to species from the New Zealand mainland. Each species is illustrated.

INTRODUCTION

The insects described are the first representatives of the family Mymaridae to be recorded from the subantarctic islands south of New Zealand. As no special attention was devoted to collecting these minute Hymenoptera the specimens available were obtained from samples of litter, various mosses and lichens, sward, mat and cushion plants. The mymarid fauna of New Zealand is very rich judging by the 80 or so species already represented in Entomology Division, D.S.I.R., so that it could be expected that many more species will be found in the subantarctic islands. Three species in three genera are reported here, one from the Auckland, one from Campbell I, and one which occurs on Auckland, Campbell and Antipodes Islands. The relationships of these species cannot be assessed at this stage as the mainland fauna could not be adequately checked, but there are indications that all species have close relatives in New Zealand.

Two species are strongly brachypterous, having only minute remnants of wings, each of these being confined to a single island. The third species which is fully winged occurs on several distant islands. Brachyptery in New Zealand Mymaridae is relatively common.

KEY TO SPECIES

- 1(4). Wings strongly atrophied. Abdomen sub sessile.
- 2(3). Head strongly transverse. Abdomen short, ovate, blunt. Antennal club of ♀ 1/2 the length of funicle. Yellow. 0.6-0.7 mm. Auckland.....**Nesopatasson flavidus**
- 3(2). Head quadrate. Abdomen long, conical, pointed. Antennal club of ♀ almost as long as funicle. Brown. 0.6 mm. Campbell I.....**Nesomyrmar magniclave**
- 4(1). Wings fully developed. Abdomen with long 2-segmented petiole. 0.4-0.5 mm. Auckland, Campbell, Antipodes.....**Mymaromma insulare**

Nesopatasson new genus

(from *nesos*, island and the mymarid genus *Patasson*; gender masculine)

Head wide, transverse, about $2 \times$ as wide as long; vertex and frons separated by transversofrontal trabecula; eyes large, laterally placed, with small ommatidia and a few minute setae. Ocelli present, moderately large. Antennae of female 11-segmented, funicle 6-segmented, club 3-segmented. Male antennae 13-segmented, filiform. Antennal insertions wide apart, close to orbital trabeculae. Mandibles 3-dentate. Pronotum entire, very short medianly in dorsal view; mesoscutum with parapsidal sutures; scutellum divided

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into an anterior sensorial area and a posterior shield-like area; axillae well defined, not advanced; metanotum long medianly narrowing markedly laterally, crescentic. Propodeum wide, narrowing sharply posteriorly, width at the base about $2.5 \times$ that at petiolar process. Gaster wide, arched dorsally, abdominal tergite 3 short, tergite 9 very small and barely visible from above. Ovipositor projects forwards within the gaster as far as its base before turning back to extend to its apex; the anterior loop is contained within forwardly directed sternites. The type species is brachypterous with the forewings reduced to minute indistinct vestiges of membrane.

Type-species: *Nesopatasson flavidus* Valentine. Distribution: So far restricted to Auckland Is.

Remarks: In general structure of thorax and abdomen and in the forwardly looped ovipositor this genus shows close affinities with *Patasson* Walker, 1846. The female antenna, in which the 4th funicle segment is shorter than the 3rd or 5th, is similar to the antennae of some species of *Schizophragma* Ogloblin from South America placed by Annecke & Doutt (1961) as a subgenus of *Patasson*. Several other *Patasson*-like species are known from New Zealand mainland, also with 3-segmented clubs, but an assessment of their relationships to the subantarctic species awaits further study.

***Nesopatasson flavidus* Valentine new species** Fig. 1-6.

♀ and ♂. Overall color yellow with the following areas brownish: vertex, anterior area of scutellum, dorsum of gaster; antennae and legs paler. Dark brown trabeculae, thoracic sutures and thickened (?anterior) margin of sternite 7. Eyes red, ocelli almost colorless.

♀. Head (Fig. 1, 2) wider than thorax, in dorsal view more than $2 \times$ as wide as long; transverso-frontal trabecula entire, orbitals extending around the anterodorsal borders of the eyes from near the antennal insertions almost to posterior ocelli, 7-8 setae on each side. Antennal insertions wide apart almost at lower level of eyes; ocelli large, in an obtuse triangle near the rounded occipital

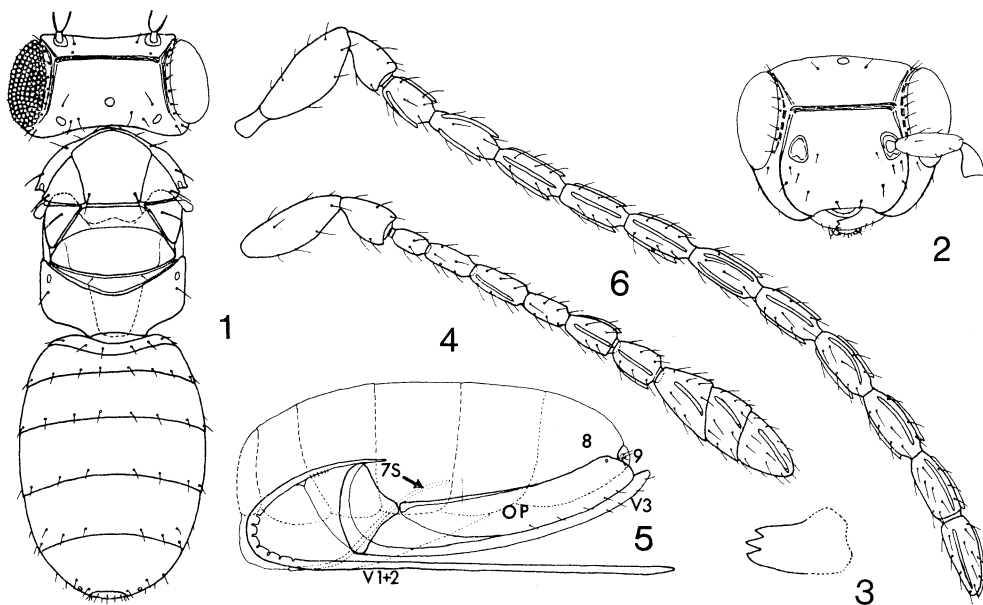


Fig. 1-6. *Nesopatasson flavidus* new genus and species. 1. ♀ body. 2. Head frontal. 3. Mandible. 4. ♀ antenna. 5. Ovipositor lateral. 8, 9, eighth and ninth abdominal tergites; 7S thickened margin of seventh sternite; V 1, 2, 3, valvulae one, two, and three; OP, outerplate. 6. ♂ antenna.

margin; mandibles (Fig. 3) 3-dentate. ♀ antenna (Fig. 4) with radicle short, scape $2.5 \times$ longer than wide; pedicel $1.5 \times$ as long as wide; 1st funicle segment shortest, segments 2, 5 and 6 subequal in length, segment 3 the longest, segment 4 shorter than 3 or 5; club longer than the preceding 3 funicle segments. First 4 funicle segments subequal in width with 3rd slightly thicker, segments 5 and 6 expanded; segments 1, 2 and 4 without longitudinal sensoria. Measurements of lengths in microns (holotype ♀), Funicle I 21; II 35; III 42; IV 28; V 35; VI 35; Club I 42; II 35; III 49.

Thorax (Fig. 1) longer than wide 215:150; pronotum entire, very short medianly, furnished with 3 and 3 dorsal setae, dorsolateral prothoracic spiracles evident; mesoscutum with straight parapsidal sutures distinct, with a single seta at each posterior lateral margin, parapsides each with a single seta at the posterior lateral angles; axillae well separated and obliquely from the anterior region of the scutellum which is without placoid sensilli; (axillae with single seta,) posterior area short and wide; metanotum crescentic narrowing markedly laterally, with 1 pair of minute setae; propodeum wide narrowing sharply posteriorly, without carinae or reticulation.

Abdomen wide, oval in dorsal view, arched dorsally. Abdominal tergite 3 very short, tergite 8 large enveloping the small 9th tergite, cercoids small each with 3 short setae; ovipositor (Fig. 5) arising about the 3rd gastral segment projects forwards to the base then loops back extending to the apex of the gaster, the loop contained within an envelope formed of forwardly directed sternites, shaft issues from the level of the 3rd gastral segment, outer plates separated from tergite 9.

Legs with the following measurements (holotype ♀); Leg I femur 125; tibia 118; tarsus 125; leg II, 120; 155; 120; leg III, 140; 185; 125. Front tibial spur bifurcate, curved, mid and hind tibial spurs stout and short.

♂ similar to female except in sex characters; antennae (Fig. 6) 13-segmented, the 1st funicle segment the shortest, the following 10 subequal in length, each with 4 longitudinal sensoria.

Length of body: 0.56–0.68 mm.

AUCKLANDS. Fairchild's Gardens, Adams I, 20.I.66, 12 ♀♀, 3 ♂♂, ex sample No. 66/78 (sifted litter under dense *Hebe elliptica*), G. Kuschel; Magnetic Cove, 27.I.66, 1 ♂, beaten from vegetation, G. Kuschel; Fairchild's Garden, 31.I.66, 1 ♂, ex sample No. 66/88 (nest material from burrows of *Procellaria aequinoctialis*), B. D. Bell.

Type locality: Fairchild's Garden, Adams I, Auckland.

Holotype ♀, (described in detail above) Fairchild's Garden, Adams I, Auckland, 20.I.66, G. Kuschel, and paratypes in Entomology Division, Nelson; other paratypes in Dominion Museum, Wellington and Bishop Museum, Honolulu.

Nesomymar new genus

(from *nesos*, island and *Mymar*; gender neuter)

Head wide, quadrate, vertex and frons separated by transversofrontal trabecula; eyes anterolaterally placed, ommatidia moderately large, with a few minute setae. Ocelli present. Antennae of ♀ with 11 segments, funicle 6-segmented, 3-segmented club well developed; insertion low at about level with the lower margins of the eyes. Mandibles 3-dentate. Pronotum strongly developed, divided medianly; mesoscutum triangular with small parapsides at the posterior lateral angles; scutum wide with narrow linear axillae; metanotum a narrow slightly curved band. Propodeum well developed, parallel sided, as wide at apex as at base. Gaster obconical, much longer than thorax, petiole discernable, ninth tergite strongly pointed in dorsal view, ventrally forming the outer plates of the ovipositor, cercoids in longitudinal depressions each with 3 setae. Front wings (of the type species) reduced to remnants of membrane without venation or setae. Legs of normal form.

Type-species: *Notomymar magniclave* Valentine.

Distribution: So far restricted to Campbell I.

Nesomymar magniclave Valentine new species Fig. 7–11.

♀. General color dark brown, antennae and legs paler.

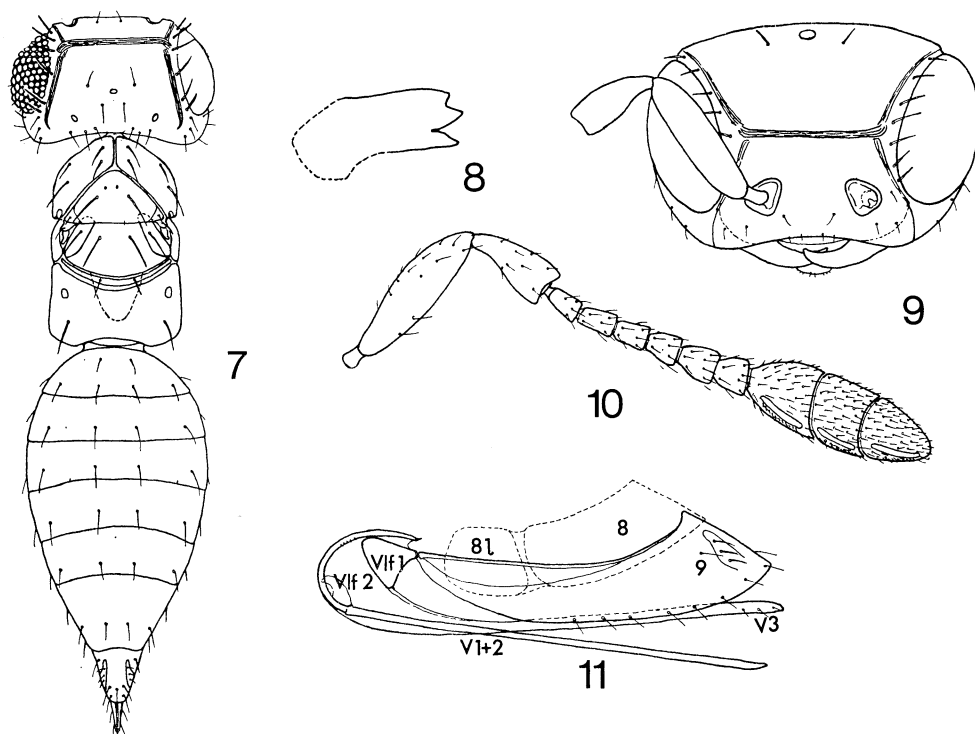


Fig. 7-11. *Nesomyrmar magniclave* new genus and species. 7. ♀ body. 8. Mandible. 9. Head frontal. 10. ♀ antenna. 11. Ovipositor lateral. 8, 9, eighth and ninth abdominal tergites; Vlf 1, 2, valvifers one and two; V 1, 2, 3, Valvulae one, two, and three.

Head (Fig. 7, 9) length, in dorsal view, more than $1/2$ the width, much wider than the thorax; eyes anterolaterally placed; transversolateral trabecula entire, prominent, orbital trabeculae extending from near the posterior ocelli to the antennal insertions, 7-8 stiff setae on each side; antennal insertions at lower level of eyes; ocelli small about the size of an ommatidium; mandibles (Fig. 8) 3-dentate with the upper 2 closely joined, mouthparts directed ventrad. Antennae (Fig. 10) with club almost as long as funicle; length measurements in microns (holotype ♀) funicle I, 17; II, 23; III, 24; IV, 21; V, 22; VI, 21; club I, 40; II, 35; III, 42. All funicles devoid of longitudinal sensoria; the club with a pair of sensoria, almost parallel to each other, on the ventral surfaces of each segment, with a row of minute sensory setae at the inner edges of each sensorium.

Thorax (Fig. 7) much longer than wide (186:123); pronotum strongly developed, divided medianly, with 4 and 4 stout dorsal setae; mesoscutum subtriangular with a single pair of long setae, posterior margin straight; parapsides very small at the posterior lateral angles, each with 1 minute seta; axillae narrow, linear, on the lateral edges of the scutellum, each with a single seta; scutellum with a pair of long setae anteriorly; metanotum narrow, strap-like, with 1 pair of fine setae; propodeum wide, parallel sided to its apex, spiracular setae well removed from spiracles, smooth without carinae or reticulation.

Abdomen long obconical, longer than the thorax (446:186) coming to a sharp point distally, ovipositor shortly extruded; tergites of about equal length except tergite 8 which is longer, tergite 9 very narrow; cercoids in longitudinal furrows, each with 3 setae; ovipositor (Fig. 11) arises from within the 3rd gastral segment, straight gonostyli and shaft shortly extruded, outer plates joined to tergite 9.

Length of body: 0.06-0.64 mm.

CAMPBELL I. Mt Lyall, 180 m, 10.I.69, 2 ♀♀, ex sample No. 69/5, (mat plants of various

kinds, also *Phyllachne clavigera*, *Coprosma pumila*, *Astelia subulata*, *Scirpus aucklandicus*, with *Gentiana*, *Bulbinella*, *Epilobium* on nearly flat ground, eastern slope), G. Kuschel; Mt Lyall, 180 m, 10.I.69, 13 ♀♀, ex sample No. 69/6, (plants the same as in 69/5, taken from cracks and fissures in a basalt wall), G. Kuschel; St Col Peak, 300 m, 24.I.69, 4 ♀♀, ex sample No. 69/15, (varied mat plants, mosses and lichens), G. Kuschel; Yvon Villarceau, 330 m, 24.I.69, 1 ♀, ex sample No. 69/25, (mat plants), R. Taylor and G. Kuschel.

Type locality: Mt Lyall, Campbell I.

Holotype ♀ (described in detail above) Mt Lyall, Campbell I, 10.I.69, G. Kuschel, and paratypes in Entomology Division, Nelson; other paratypes in Dominion Museum, Wellington, and Bishop Museum, Honolulu.

Genus *Mymaromma* Girault 1920

Type: *Mymaromma goethei* Girault, 1920, *Insec. Inscit. Menstr.* 8: 38.

The genus *Mymaromma* was erected by Girault (1920) for the Australian species *goethei*. In 1922 Blood & Kryger described the genus *Petiolaria* for the male of the European species *anomala*. The female was discovered and described by the same authors in 1936. Girault (1930) indicated that the two genera were synonymous and this has subsequently come to be accepted. DeBauche (1948) gives a detailed diagnosis of the genus based on *M. anomalum*.

Among the collections from Auckland, Campbell and Antipodes Islands are specimens of a species with the habitus and general structure of *Mymaromma*. It differs from the generic diagnosis in having, in the female, a 2-segmented club, compound eyes composed of a small number of large ommatidia, mandibles of a simpler structure, a long slender slightly curved front tibial spur, wings of a different shape and a gaster of a different structure from that described for *anomalum*, differences which could justify its exclusion from *Mymaromma*. However five further species are known to me from the New Zealand mainland which show a variety of form and fusion of mesothoracic segments, simple or divided club, differing size and shape of wings (one being apterous), and the presence or absence of ocelli. These characters exist in various combinations and until a critical study can be made of these species and the type of the genus, the present species is conveniently placed in *Mymaromma*.

Mymaromma insulare Valentine new species Fig. 12-17.

Color. Generally dull yellow, gaster and occipital area brownish; antennae and legs paler, tarsi almost colorless; eyes black.

♀. Head (Fig. 12-14) lenticular, without carinae, excavated in the occipital region, the foramen placed very low, almost level with the buccal region. From the front the head subtriangular slightly wider than high, mouth opening very wide occupying the full width of the head; mandibles large, widely separated, having 2 teeth, dorsal tooth longest and both curving outwards, a small indistinct protuberance on laterodorsal surface of the tooth; other mouthparts vestigial, palps reduced to bristles. Compound eyes oval, composed of 14 large ommatidia, ocelli absent. Antennae placed high on the face, insertions subcontiguous separated only by a slender protuberance. ♀ antenna (Fig. 15) with 11 segments, radical very short, scape about $4 \times$ as long as wide, slightly arched, pedicel $2.25 \times$ as long as wide, first 6 funicle segments slender of equal width, segments 1 and 2 subequal in length, increasing in length from 3 to 6, segment 7 shorter and wider than 6; club expanded, the terminal segment wider than the 1st and a little more than $2.25 \times$ its length, both segments clothed in short setae but with sparse long setae on the dorsal surfaces, terminal segment with a single row of stiffer sensory setae ventrally on the apical $2/3$. Antennae are completely devoid of longitudinal sensoria. Reticulation and head as shown in Fig. 13, 14; on occiput concentrically striate.

Thorax wide anteriorly, narrowing towards the apex of the propodeum, higher than wide. Propleurae strongly developed, the size and shape of the pronotum difficult to discern but appears to be reduced to

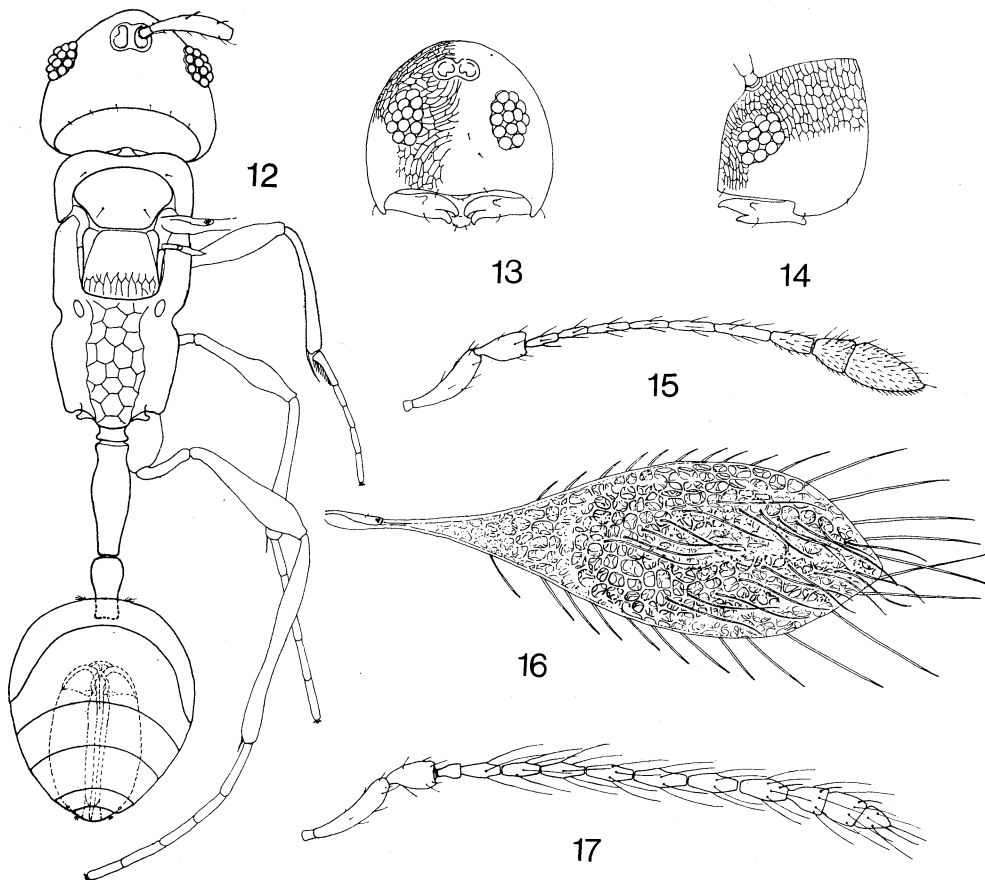


Fig. 12-17. *Mymaromma insulare* new species. 12. ♀ body. 13. Head frontal. 14. Head lateral. 15. ♀ antenna. 16. Right front wing of ♀. 17. ♂ antenna.

a narrow band partly overlaid by the anterior margin of the scutum as in *M. anomalum*. Scutum wider than long, parapsidal sutures absent, scuto-scutellar suture straight and $1/2$ the greatest width of the scutum. Scutellum quadrangular, axillae narrow depressed and set wide apart; postscutellar region indicated by sculpture on the posterior $1/3$ (Fig. 12), slightly depressed with posterior margin almost straight. Metanotum difficult to discern, apparently reduced to a mere strap which is overlaid medianly by the scutellum. Propodeum long, intimately fused with the meta- and mesopleurae both of which are strongly developed, raised medianly and with reticulate ridges (Fig. 12), a short outwardly curving process from each side at the base of petiolar process.

Front wings (Fig. 16) almost reaching the tip of the abdomen, pedunculate, the disc enlarged, coming to a blunt point distally, about $2 \times$ as wide as long; membrane entirely reticulate, the disc concave with raised ridges indicated by rows of long sinuate setae. Marginal fringe of 28 to 30 stiff setae, shortest on the anterior margin, longest towards the apex, the 1st seta on the posterior margin separated from but not longer than those of the posterior fringe. Venation very short reduced to a straight thickened vein with (?) 3 sensilli at its extremity. Retinaculum not discernable. Hindwing reduced to a vestige of membrane, without hooks.

Legs very long and slender; coxae strongly developed with trochanters long and slightly sinuate; femora dilated towards their apices; tibiae not so markedly thickened, hind tibia narrower centrally than at base or

apex; front tibial spur moderately long slender and gently curved, spurs of other tibiae shorter and straight; tarsi very slender each longer than its tibia, claws minute; comb of front metatarsus well developed.

Abdominal petiole long, the 1st segment twice as long as the 2nd, attached to the gaster anteroventrally. Gaster pyriform wide at base, conical behind. 6 tergites visible, the 1st short, extending anteriorly and laterally onto the venter, 2nd tergite long medianly. Ovipositor occupies about 2/3 of the length of the gaster, not extruded.

♂ similar in color, size and structure to the ♀ except for sex characters; abdomen shorter and more globular, genital structures small. Antenna (Fig. 17) long, moniliform with 13 segments. 1st segment of the flagellum the shortest, simple without setae, following 7 segments dilated centrally each bearing a single whorl of long fine setae, terminal 3 segments expanded and closely joined. Segments increase in length from 1st to 6th then decrease in length towards the apex. Antennae devoid of longitudinal sensoria.

Length of body: 0.42–0.48 mm.

Remarks: This species can be readily distinguished by its possession of a divided club in the female and by the form of the front wing.

AUCKLANDS. Fairchild's Garden, Adams I, 20.I.66, 1♂, sample 66/77 (unsifted litter ex shallow water channel, consisting of *Chionocloa antarctica*, *Poa foliosa*, *P. litorosa*, with a little *Anisotome latifolia* and *Stilbocarpa polaris*), G. Kuschel; CAMPBELL I. Lookout Bay, 16.I.69, 1 ♂, ex sample No. 69/8, (litter and soil from under *Stilbocarpa*), G. Kuschel; ANTIPODES. Reef Point, 1.II.69, 1 ♀, ex sample No. 69/31, (litter on a rock outcrop, consisting of *Poa foliosa*, *P. litorosa*, *Coprosma antipoda*, *Agrostis magellanica*, *Gentiana antipoda*, *Blechnum durum*, *Asplenium obtusatum*), G. Kuschel; Reef Point, 11.II.69, 2 ♀♀, 2 ♂♂, ex sample No. 69/40, (litter from under large clump of *Stilbocarpa polaris*, abundant dead leaves of *Stilbocarpa* and a little of *Urtica australis* and *Poa litorosa*), G. Kuschel.

Type locality: Reef Point, Antipodes.

Holotype ♀ (described in detail above), Reef Point, Antipodes, 11.II.69, G. Kuschel, and paratypes in Entomology Division, Nelson; other paratypes in Dominion Museum, Wellington and Bishop Museum, Honolulu.

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