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Descriptions Of New Species And Notes On Some Genera Of New Zealand Trichoptera

A. G. McFARLANE and B. COWIE

Canterbury Museum
Christchurch
New Zealand

ABSTRACT: Fourteen species of caddisfly in nine genera and five families are described as follows: Polycentropodidae, *Polyplectropus altera* sp. nov.; Rhyacophilidae, *Hydrobiosis chalcodes* sp. nov., *H. johnsi* sp. nov., *Psilochorema cheirodes* sp. nov., *P. acheir* sp. nov., *Costachorema hecton* sp. nov., *C. hebdomon* sp. nov., *Tiphobiosis childi* sp. nov., *T. salmoni* sp. nov., *T. trifurca* sp. nov., and *Traillochorema* gen. nov. is erected for a Stewart Island species, *Traillochorema rakiura* sp. nov.; Oeconesidae, *Zelandopsyche maclellani* sp. nov.; Helicophidae, *Zelolessica meizon* sp. nov.; Leptoceridae, *Triplectides dolichos* sp. nov.

The taxonomy of species in the genera *Costachorema* and *Tiphobiosis* is reviewed. The males of *Costachorema brachyptera* McFarlane 1939 and *C. callistum* McFarlane 1939 are refigured; also figured are the females of five of the seven known species of *Costachorema*. The female of *Tiphobiosis montana* Tillyard 1924 is figured for the first time from a previously overlooked paratype female. Keys are provided to known adults of both sexes of *Costachorema* and to known males of *Tiphobiosis*. *Tiphobiosis fulva* Tillyard 1924 cannot be recognised and is proposed *species inquirenda*. *Triplectides magna* (Walker 1852) is deleted from the list of New Zealand Trichoptera.

INTRODUCTION

Wise (1977) listed 139 species of Trichoptera known from New Zealand, five of which are restricted to the sub-Antarctic islands. Riek (1976) added two further species in the marine family Chathamiidae (formally Philanisidae). Here we describe 14 new species of caddisfly from New Zealand, 10 of which are in the sub-family Hydrobiosinae of the Rhyacophilidae (7 Hydrobiosini, 3 Psyllobetini). This sub-family now contains over 40% of all known caddisfly species from New Zealand. A rhyacophilid genus *Traillochorema* gen. nov. is erected. The genera *Costachorema* and *Tiphobiosis* are reviewed; five new species are described in these genera and females of several species are figured for the first time. All descriptions should be attributed to A. G. McFarlane. Locality records follow the system used by Crosby *et al.* (1976). Information on known larvae of these species will be incorporated into larval keys currently being prepared.

FAMILY POLYCENTROPODIDAE

Genus *Polyplectropus* Ulmer 1905

Polyplectropus puerilis (McLachlan 1868)

McLachlan described *P. puerilis* from specimens collected at Christchurch and Auckland. He noted that the Auckland specimens were "in very bad condition" and were "darker coloured than those from Christchurch but specifically identical". McLachlan very probably described only South Island material, which was later redescribed by Mosely and Kimmins (1953). *P. puerilis* is widespread throughout the South Island and Stewart Island, but is absent from the North Island where a similar species, described here as *P. altera* sp. nov., is found.

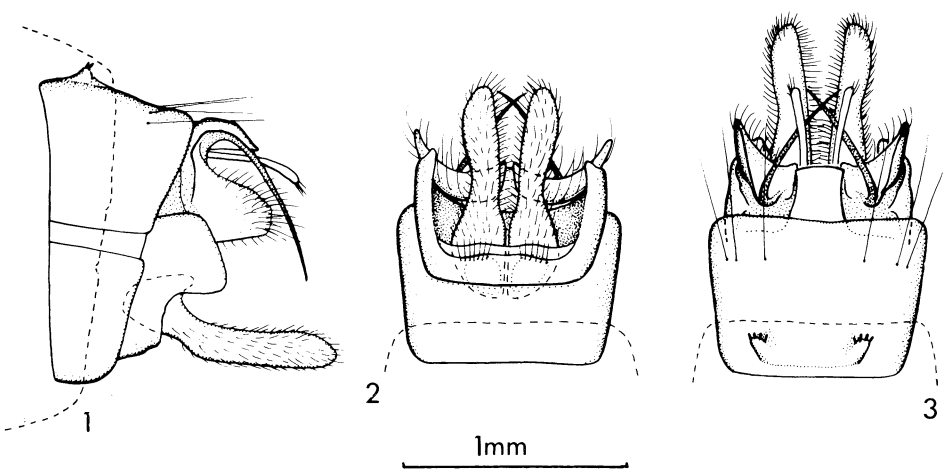
P. puerilis is remarkably variable in size, coloration and wing-pattern colour forms. For example, in eastern Southland entirely light dusty brown forms occur in the Niagara River whereas entirely black forms occur in the Waimatuku River in western Southland. The commonest form throughout the South Island has blackish wings with varying patterns of off-white or golden flecking, particularly along the posterior margin of the forewings and towards the apices. In some specimens larger golden flecks occupy an area almost equal to the black. The whole range of forms may occur together. However, genitalic characters are constant in both sexes for both *P. puerilis* and *P. altera* sp. nov.

Polyplectropus altera McFarlane sp. nov. Figures 1-4

Description

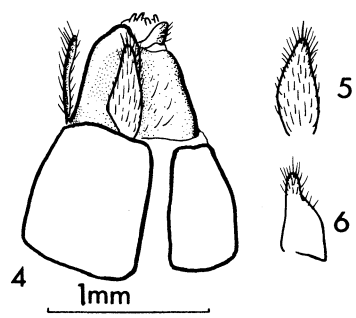
A tawny brown species which closely resembles *P. puerilis* although known specimens are generally larger and less variable in wing colour pattern.

Neuration: As for *P. puerilis* (Figure 248a in Mosely and Kimmins 1953). Wing lengths are highly variable: holotype and paratype males 8-13 mm, paratype females 11-14 mm.



Figures 1-3. *Polyplectropus altera* sp. nov.
Male genitalia: 1 lateral, 2 ventral, 3 dorsal.

Male genitalia (Figs. 1-3): Segment 10 narrower and shorter than in *puerilis.* Paraproctal processes rise from the ventral side of segment 10 and are attached to it for a short distance before breaking free to curve slightly and widen in lateral aspect to asymmetrically rounded apices (in sharp contrast to the forked form of *puerilis*). Superior appendages with broad concave bases; a long slender spine-like process (longer than that in *puerilis)* originates from the dorsal edge and curves sharply to point ventrad; the lateral edge of the apendage forms a longer and more angulate side piece than that of *puerilis.* Inferior appendages similar to *puerilis,* but stouter and more asymmetrically pointed. Tergite 8 with a pair of papillae dorso-laterally near the anterior margin (absent in *puerilis*); each papilla with four short blunt spines. Phallic structure eversible as in all species of this genus.



Figures 4-6. *Polyplectropus,* lobes of female genitalia: 4 *P. altera* sp. nov., 5 *P. puerilis,* 6 *P. waitakeriensis.*

Female genitalia: Lobes (Fig. 4) more slender and more acute than those of *P. puerilis* (Fig. 5) or *P. waitakeriensis* (Fig. 6).

Holotype: Adult male, Whakaangiangi, East Cape, GB, 120 m, A. G. McFarlane, 4 Mar 1956. Deposited in the Canterbury Museum.

Paratypes: One male, Paihia, ND, 5 m, A. G. McFarlane, 12 Oct 1956. One male, Tahora Stream, BP, 120 m, A. G. McFarlane, 7 Feb 1956. Two males, two females, Rangitaiki River, Awakeri, BP, 30 m, A. G. McFarlane, 15 Jan 1958. Two males, Lottin Point, GB/BP, sea level, A. G. McFarlane, 27 Feb 1956. Two females, one pupa, same data as holotype. One male Te Puia Springs, GB, 50 m, A. G. McFarlane, 4 Mar 1956. One male, Mount Egmont, TK, 700 m, A. G. McFarlane, 9 Nov 1969. One female, Kelburn, WN, 30 m, A. G. McFarlane, 9 Nov 1953. All deposited in the Canterbury Museum.

Etymology: altera = other (L), referring to the specimens from Auckland sent to McLachlan by Edwards.

Remarks

P. altera is sporadically distributed in non-forested streams in the North Island. Too few specimens have been viewed to assess accurately its variability.

FAMILY RHYACOPHILIDAE
SUB-FAMILY HYDROBIOSINAE

Tribe Hydrobiosini

Genus *Hydrobiosis* McLachlan 1868

Hydrobiosis chalcodes **McFarlane sp. nov.** Figures 7-11

Description

Fresh specimens are a mid to dark brown colour and have a characteristic bronzy sheen in the forewings between the cubitus and the posterior margin.

Neuration: Concolorous with the membrane through which it runs, and without intermittent lengths of light and dark pigmentations as in *H. umbripennis* McLachlan 1868. Setation on veins strong and upstanding; the edges along the termen lacking light spots between the veins as present in *H. parumbripennis* McFarlane 1951, or if present then very small. Forewing lengths are fairly constant: males average about 12 mm, females about 14 mm.

Abdomen: Male with a small projection on sternite 7, female with a shield and process on sternite 5 and a small process on sternite 6.

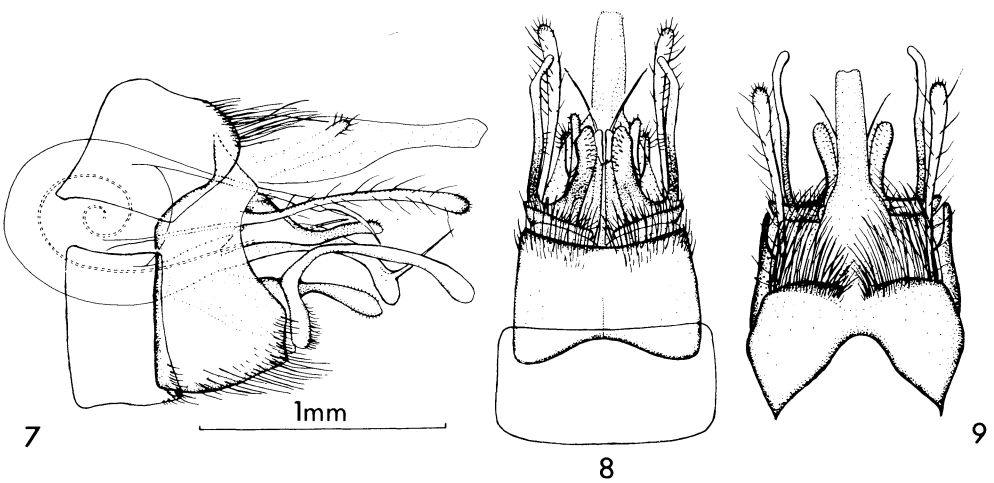
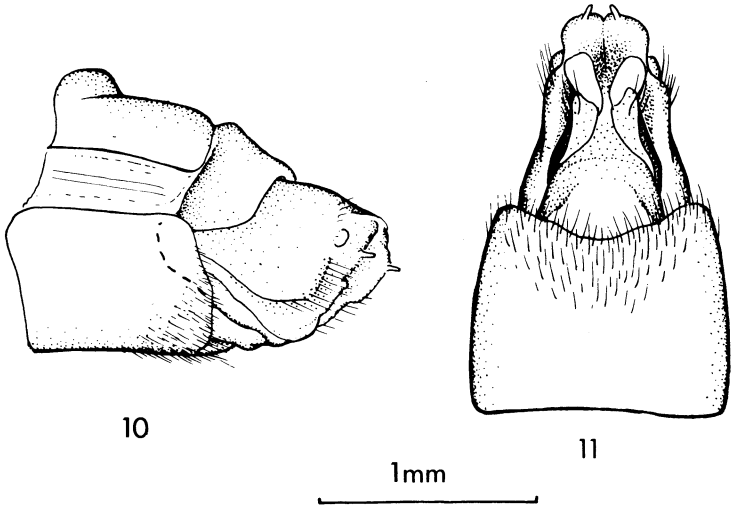


Figure 7-9. *Hydrobiosis chalcodes* sp. nov.
Male genitalia: 7 lateral, 8 ventral, 9 dorsal.

Male genitalia (Figs. 7-9): Segment 10 with a lateral ridge produced distally into a short cercus with short fine hairs (the corresponding ridge in *H. parumbripennis* is hair bearing over its full length and the distal ends scarcely protrude from the segment). Paraproctal processes long, sinuate and strongly sclerotised. Outer arm of inferior appendages long and slender, the inner arm almost half the length of the outer. Upper branch of the phallus simple in lateral aspect, but slightly incised on the lower edge towards the apex (although less so than in *H. umbripennis)*: the lower branch robust, rounded at the apex with a pair of sharp spines set well back from the apex on its dorsal surface.



Figures 10, 11. *Hydrobiosis chalcodes* sp. nov.
Female genitalia: 10 lateral, 11 ventral.

Female genitalia (Figs. 10, 11): Ventral edge of sternite 8 concave; the depth of the excavation about one-third the width of the sternite (this is a good recognition feature). Sternite 9 not visible in ventral aspect.

Holotype: Adult male, Mount White bridge area, Waimakariri River about 2 km north of Cass, MC/NC, 600 m, A. G. McFarlane, 22 Jan 1975. Deposited in the Canterbury Museum.

Paratypes: One male, three males, Waikoropupu Springs, Takaka, NN, 20 m, A. G. McFarlane, 22 Jan 1960, 9 Dec 1979 respectively. One male, Fish Lake, Upper Wairau River, MB, *ca.* 1300m, A. G. McFarlane, 18 Nov 1964. One male, three males (one figured), same data as holotype but 10 Jan 1965, 21 Jul 1976 respectively. One female, Winchmore Irrigation Research Station, MC, 80 m, J. Woods, 9 Sep 1974. Adult female, Jack's Creek, Lake Pukaki, MK, 550 m, A. G. McFarlane, 18 Dec 1959. Seven pupae, Sowburn River, Rock and Pillar Range, CO, 1200 m, J. Child, 9 Nov 1978. One pupa, Rock and Pillar Range, CO, 1200 m, Grant McFarlane, 7 May 1979. One male, Mataura River, Garston, CO/OL, 350 m, A. G. McFarlane, 2 Feb 1961. All deposited in the Canterbury Museum.

Etymology: chalcodes = bronzy, (Gk).

Remarks

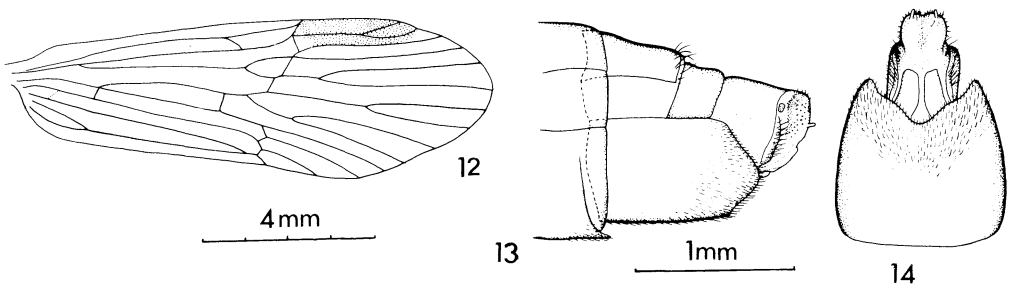
H. chalcodes belongs to the *umbripennis* group in which the males are characterised by: (i) two branched inferior appendages, (ii) large paraproctal processes, and (iii) complicated phallic structures with parameres and conspicuous upper and lower branches; the latter branches are of diagnostic value as is the position and angle of erection of the spines on them. *H. chalcodes* was referred to as a "high country form" in the original description of *H parumbripennis* McFarlane 1951, with which it is sympatric in some areas. *H. chalcodes* occurs predominantly in the South Island high country from Central Otago to Northwest Nelson above 300 m.

***Hydrobiosis johnsi* McFarlane sp. nov.** Figures 12-17

Description

In dorsal view the overall coloration of the insect is a light, somewhat dingy brown, a little darker from the mid-thorax forward; the ventral surface and limbs down to the tibiae are very pale. The apical spurs on the foreleg are markedly unequal in length.

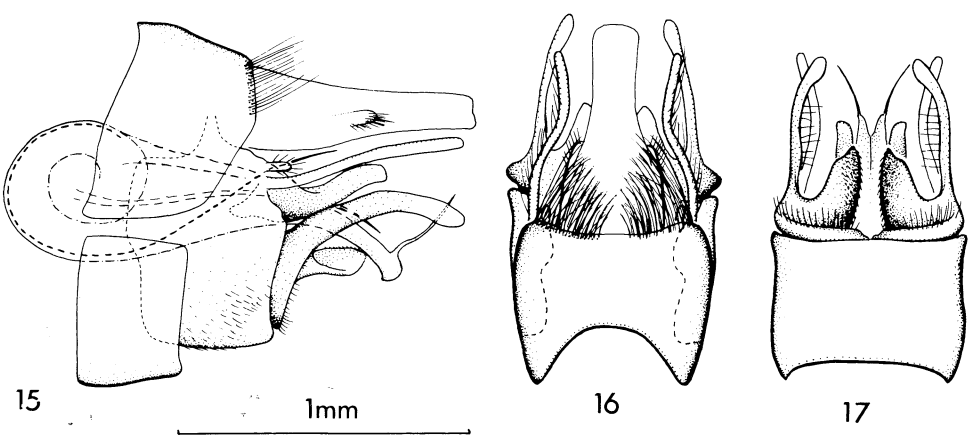
Forewing (Fig. 12): Uniformly light, radial cell shorter than usual in the *umbripennis* group. Lengths vary little: males 11-12 mm, females 12 mm.



Figures 12-14. *Hydrobiosis johnsi* sp. nov.
Male forewing: 12. Female genitalia: 13 lateral, 14 ventral.

Male genitalia (Figs. 15-17): The lateral ridge on segment 10 emerges only slightly distally. Inferior appendages broadly based, the outer arm stout in profile and with a simple curve, the inner branch broad and obliquely truncate. Paraproctal processes large and slightly sinuate: superior appendages slender and not expanding towards the apex. Phallus with both upper arm and parameres small for this group, the lower arm strong, more robust at the tip with a short, sharply downturned lower edge at the apex.

Female genitalia (Figs. 13, 14): Sternite 8 very long, almost equal to the combined lengths of tergites 8, 9 and 10. In lateral view sternite 8 has an almost symmetrical apex. The shield on sternite 5 is continued at its apex into a long process.



Figures 15-17. *Hydrobiosis johnsi* sp. nov.
Male genitalia: 15 lateral, 16 dorsal, 17 ventral.

Holotype: Adult male, 25 Mile Creek, Rees Valley, Lake Wakatipu, OL, 1100 m, P. M. Johns, 20 May 1966. Deposited in the Canterbury Museum.

Paratypes: One male, Waikoropupu Springs, Takaka, NN, 20m, A. G. McFarlane, 22 Jan 1960. Three males, same data as holotype but 24 Oct 1966. Three males, Smithy Creek, Eglinton Valley, FD/OL, *ca.* 500 m, P. Ensor and J. Bassett, 25 April 1980. Two females, Cascade Creek, Eglinton Valley, FD/OL, *ca.* 500 m, P. H. Duckworth, 21 Sep 1967. One female, Mill Creek, North Arm, Paterson Inlet, SI, 5 m, C. J. McFarlane, 16 Jan 1969. Male pupa, Mill Creek, North Arm, Paterson Inlet, SI, 5 m, A. G. McFarlane, 22 Jan 1979. Further pupae and larvae have been collected from cold water streams on Stewart Island (A. G. McFarlane) and Fiordland (A. G. McFarlane, R. M. Ogilvie). All deposited in the Canterbury Museum.

Etymology: The species is named for one of the main collectors of this and other species described here.

Remarks

H. johnsi is one of the larger species of the *umbripennis* group. The genitalia, when viewed in lateral aspect, allow both sexes to be clearly differentiated. Characteristic features of the male are the simple arch of the thick inferior appendage and the relatively stout paraproctal processes: in the female, sternite 8 is relatively much longer than in other species of this group.

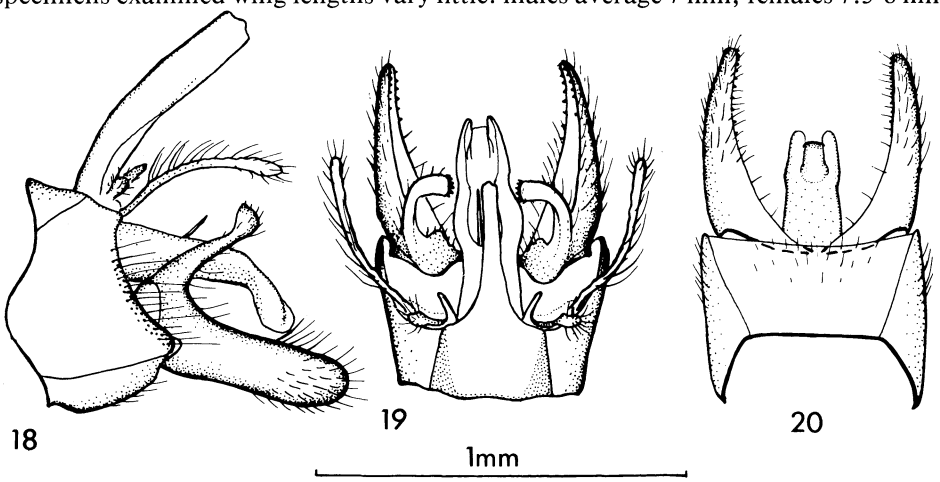
Genus *Psilochorema* McLachlan 1866

***Psilochorema cheirodes* McFarlane sp. nov.** Figures 18-22.

Description

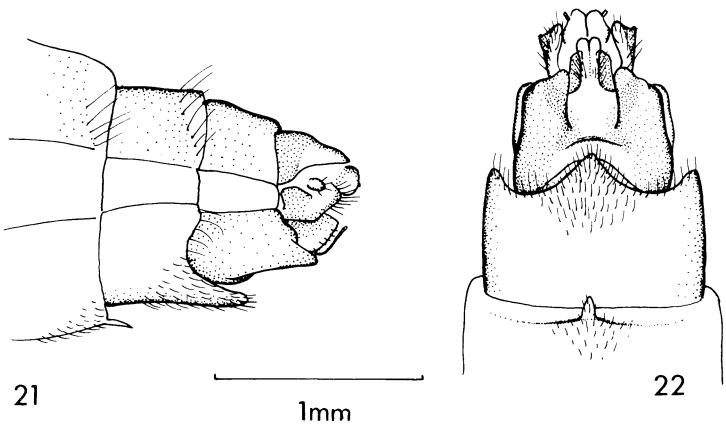
Known specimens are relatively small for the genus, and are dark brown in colour. Tufts of long black stout hairs on the head, pronotum, tegulae, mesoscutum and anal areas of the forewings give the insect a rough, shaggy appearance.

Neuration: Similar to other species in the genus. The dark vestiture interrupted by an ill-defined pattern of small groups of upstanding white hairs. In the high country specimens examined wing lengths vary little: males average 7 mm, females 7.5-8 mm.



Figures 18-20. *Psilochorema cheirodes* sp. nov.
Male genitalia: 18 lateral, 19 ventral, 20 dorsal.

Male genitalia (Figs. 18-20): Segment 10 small, with a pair of cerci and spiniform processes at its base. Inferior appendages in profile long, rounded at the apex and with a dorsal arm which is expanded at the apex. In dorsal view this arm is like a closed hand with a series of short fingers, these formed by short, stout, black, blunt bristles. Superior appendages slender, slightly clavate at the apex, with a few sparse long hairs on the outer surface. Phallus as in the generic diagnosis, long and slender in profile.



Figures 21,22. *Psilochorema cheirodes* sp. nov.
Female genitalia: 21 lateral, 22 ventral

Female genitalia (Figs. 21, 22): Sternite 8 divided by a wide cleft; the parts on each side of the cleft dark brown, strongly sclerotised and glossy, their greatest length on the mesal edge. This feature shows up best in profile (Fig. 21).

Holotype: Adult male, "in snowpatch", Old Man Range, CO, 1560 m, J. Child, 6 Nov 1971.

Paratypes: Eight adult males, five females, one male pupa, same collection data as holotype (except pupa "in streamlet"). Four pupae, one larva, Rock and Pillar Range, CO, 1220 m, A. G. McFarlane, 1 Dec 1968. One adult female, one pupa, one larva, Rock and Pillar Range, CO, 1300 m, J. Child, 13 Nov 1971. Adult male, "near ski hut", Rock and Pillar Range, CO, 1220 m, J. Child, 25 Nov 1972. One male, one female pupae, Rock and Pillar Range, CO, J. Child, 4 Apr 1975. Adult female, "in snowpatch", Rock and Pillar Range, CO, 1430 m, J. Child, 19 Nov 1977. Two adult males, about 40 pupae and 25 larvae, Rock and Pillar Range, CO, J. Child, 3 Feb 1978. Late male pupa, Tautuku, Catlins District, SL, 40 m, A. G. McFarlane, 4 Nov 1971 (this is the only confirmed low country record). All deposited in the Canterbury Museum.

Etymology: cheirodes = hand-like (Gk), referring to the dorsal arm of the inferior appendages.

Remarks

This species resembles *P. mataura* McFarlane 1956, from which it is differentiated by the form of the genitalia, particularly of the female where heavy sclerotisation of the parts on each mesal side of the cleft on sternite 8 is characteristic.

***Psilochorema acheir* McFarlane sp. nov.** Figures 23-27.

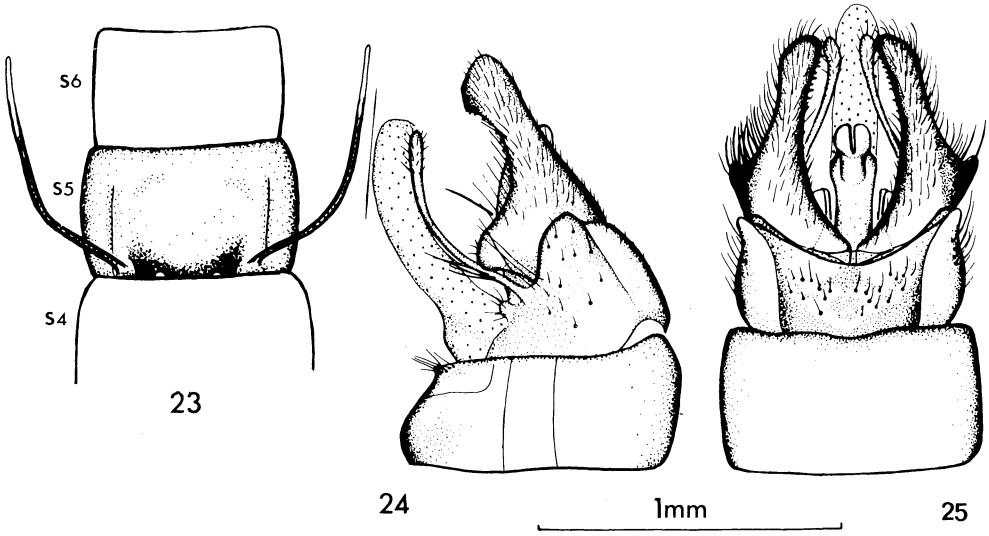
Description

This species is based on numerous late pupae of both sexes, and a damaged adult female. The late pupae suggest a blackish adult form.

Male forelegs: Apical spurs vestigial. Tibiae and tarsi adapted to resemble a raptorial organ, but probably used in mating. A row of spicules on the tarsus engage a groove on the opposable surface of the tibia. A tight row of strong black setae on the edge of the tibial groove increased the groove's holding capacity. All these structures are absent in the female.

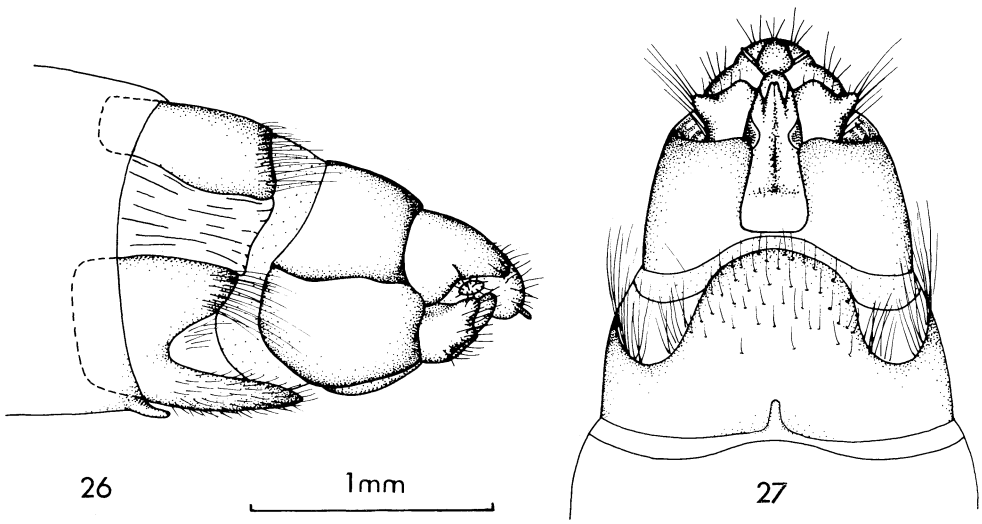
Neuration: Veins of the forewings thickly clad with long black setae. An oblique band of whitish hairs extends basad and irregularly from the junction of R_1 and the margin. A similar but smaller band runs parallel basad to this; a few small whitish tufts occur close to this second band.

Male abdomen: Paired processes on sternite 5, light brown towards the base, thin and pale-tipped (Fig 23); longer than in other species of *Psilochorema*.



Figures 23-25. *Psilochorema acheir* sp. nov.
Male sternite 5: 23.
Male genitalia: 24 lateral, 25 ventral.

Male genitalia (Figs. 24, 25): Very simple in profile. Inferior appendages without dorsal arms; strong black spicules present on the mesal edges of the distal portion; a lamella, quadrate in section, on the mesal surface at the base of the appendage. Superior appendages slender, slightly clavate: cerci small: a short strong brown spine at the base of segment 10: phallus without parameres.



Figures 26, 27. *Psilochorema acheir* sp. nov.
Female genitalia: 26 lateral, 27 ventral.

Female genitalia (Figs. 26, 27): Segment 7 very distinctive in ventral view, the broadly rounded posterior edge of the sternite differing greatly from that of other species of *Psilochorema.* Sternite 9 similar in ventral view to that of *P. cheirodes.*

Holotype: Late male pupa from Mill Creek, Roy's Bay, North Arm, Paterson Inlet, SI, 5 m, Grant McFarlane, 10 Dec 1976. Deposited in the Canterbury Museum.

Paratypes: All are from low altitude bush streams on Stewart Island. Male pupa, North Arm, Paterson Inlet, A. G. McFarlane, 10 Dec 1968. Male pupa; male pupa and 2 female pupae, Mill Creek, North Arm, Paterson Inlet, A. G. McFarlane, 10 Dec 1976, 22 Jan 1979 respectively. Male pupa, Roy's Bay, Paterson Inlet, A. G. McFarlane, 23 Jan 1978. Male pupa (figured), Roy's Bay, Paterson Inlet, C. J. McFarlane, 23 Jan 1979. Two male pupae, two female pupae (one figured), two prepupae, Little Kuri, R. A. Savill, 25 Mar — 6 Apr 1978. Adult female, Paterson Inlet, P. Ensor, Apr 1980. All deposited in the Canterbury Museum.

Etymology: acheir (Gk). = without a hand in contrast with cheirodes.

Remarks

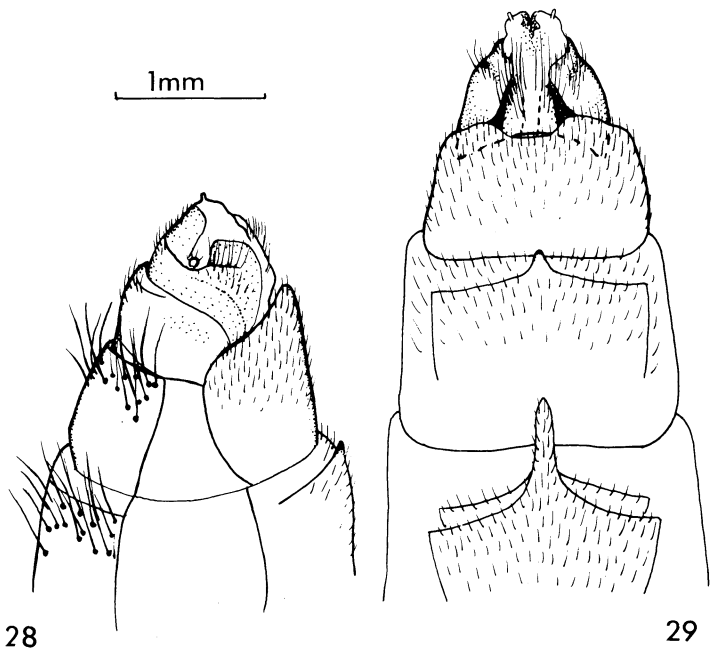
There are in the Canterbury Museum female pupae and adults of another species of *Psilochorema* from Stewart Island and nearby Codfish Island, but the three available male pupae are too immature to base the species on. An immature female pupa from Stewart Island that is probably *P. cheirodes* sp. nov. is also held. Thus at least three species of *Psilochorema* appear sympatric on Stewart Island.

Genus *Edpercivalia* McFarlane 1964

Edpercivalia shandi (McFarlane 1951)

Designation of a Neotype

The unique male holotype of this species (Port Ligar, Pelorous Sound, Marlborough, A. G. McFarlane, Dec 1945) has been lost. We designate as neotype a male from Lee Bay, Stewart Island (A. C. Harris, 20 Dec 1975). No other specimen has been recorded geographically closer to the original type locality than the Rock and Pillar Range, Central Otago, where three late pupae were collected by J. Child, Jan 1975 (at 1300 m).



Figures 28, 29. *Edpercivalia shandi.*
Female genitalia: 28 lateral, 29 ventral.

Female genitalia (Figs. 28, 29): The specimen figured was collected from Mill Creek, Roy's Bay, North Arm, Paterson Inlet, Stewart Island, Grant McFarlane, 21 Jan 1979.

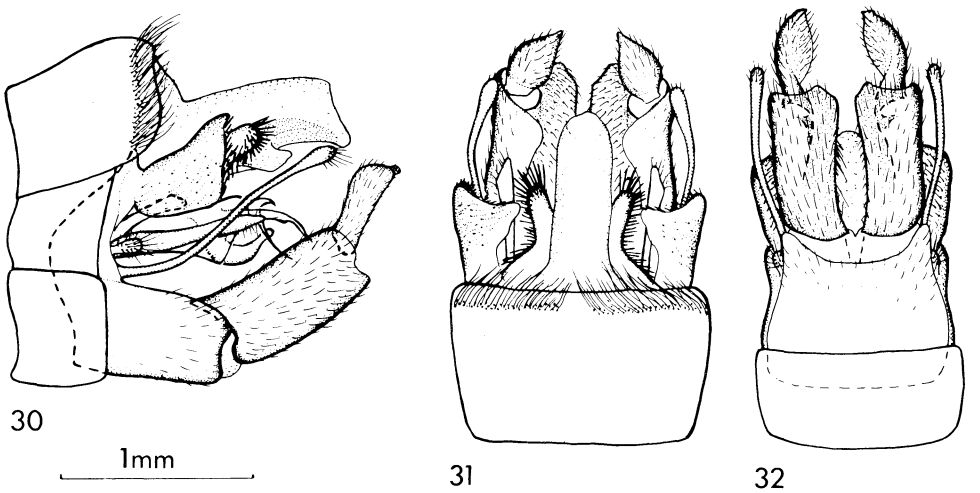
Remarks

Other records, all from Stewart Island, are: one female, Long Island, P. M. Johns, 22 Aug 1965; 2 males, same data as neotype; 3 late pupae, Mill Creek, Grant McFarlane, 21 Jan 1979; 1 male, Flourcask, Paul Ensor, 5 Mar 1979.

Genus *Costachorema* McFarlane 1939

Two new species are added to this genus bringing the number to seven, six from the two main islands of New Zealand and one from Campbell Island.

Costachorema hecton McFarlane sp. nov. Figures 30-32



Figures 30-32. *Costachorema hecton* sp. nov.
Male genitalia: 30 lateral, 31 dorsal, 32 ventral.

Description

Male genitalia (Figs. 30-32): Segment 10 long and membranous, a sclereotised strip on the ventral surface ends as a short wide fork. The paraproctal processes consist of two elements originating at the same point (which suggests the U-shaped form of *C. psaroptera*): the outer arm short, foliate, cut off obliquely, the dorsal angle directed mesad, the inner surface with a dense mat of stout setae which are adpressed and directed dorsad: the inner arm longer, round in section; the setae distally and on the inner surface directed both ventrad and dorsad. Phallus with three parameres on each side: the distal one sinuate: the proximal pair consisting of a long, stout outer element tapering to an acute point, and a short thick blunt inner element directed slightly dorsad. Superior appendages slender and slightly clubbed, a dorsal cercus close to the base of each appendage. Inferior appendages similar to those of *C. psaroptera,* the harpes robust and chisel pointed, the coxopodites relatively longer in proportion to the harpes than in *C. psaroptera.*

Holotype: Late male pupa, Rock and Pillar Range, CO, *ca.* 1300 m, J. Child, 6 Mar 1978. Deposited in the Canterbury Museum.

Etymology: hecton = sixth (Gk).

Remarks

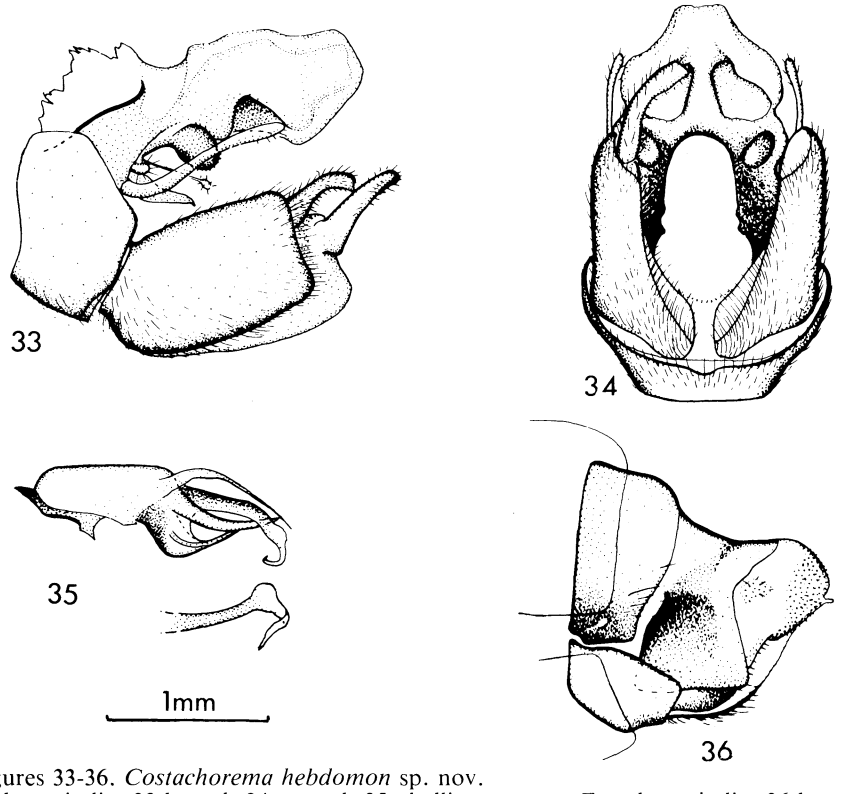
C. hecton is known only from the unique holotype. It is most similar to *C. psaroptera* from which it is best distinguished by the form of the paraproctal processes.

***Costachorema hebdomon* McFarlane sp. nov.** Figures 33-36.

Description

A robust insect, blackish in colour except for the wing membrane which is paler. Stout glossy black upstanding hairs occur in tufts over the head, pronotum, tegulae and forewing.

Venation: Atypical of the genus in the only known adult but probably highly variable as in its apparently closest relative *C. brachyptera*. Forewing length 15 mm.



Figures 33-36. *Costachorema hebdomon* sp. nov.
Male genitalia: 33 lateral, 34 ventral, 35 phallic structure. Female genitalia: 36 lateral.

Male genitalia (Figs. 33-35): Segment 10 broad dorsally; short and blunt with light sclerotisation; four well-defined pits on the underside, the distal pair much larger. Beneath the segment on each side there is a large firm globose stucture, blackish distally and densely covered with short dark upstanding spicules. Coxopodites of inferior appendages appear roughly oblong in slightly ventro-lateral aspect, the width slightly more than half the length: harpes small and blunt. Superior appendages slender, very slightly clavate, a small cercus dorsal to each. Strongly sclerotised dark paraproctal processes, slightly sinuate and acutely pointed. A slender process rising just dorsal to the paraproctal processes and about equal in length ends in a small globule covered all over with short stiff widely spaced spicules. Phallus strongly sclerotised, three parameres on each side, two of these tapering simply, the third with a complicated form distally (figured as inset to Fig. 35.).

Female genitalia (Fig. 36): Posterior margin of sternite 6 with a curved upturned process about half as long as the sternite; a thickened triangular extension dorsad on sternite 7. Sternite 8 longest in the lateroventral dimension and reduced to a narrow

band mid-ventrally. Tergite 8 a narrow pigmented band, its strap-like form obscured by an unpigmented translucent area towards the posterolateral angle; an oblique cleft on the lateral margin extends caudad to a clear rounded depression. Tergite 9 strongly sclerotised and heavily pigmented; the tergite extends over the lateral area where there is a depression, almost black in colour and sharply defined along its anterior margin. Segment 10 weakly sclerotised and unpigmented, with weakly defined, rounded sclerites laterally (possible vestigial cerci): the posterior end with a dense covering of fine short spicules.

Holotype: Adult male, Homer Forks near Homer Tunnel, FD, *ca.* 1100 m, J. T. Salmon, 22 Jan 1946. Deposited in the National Museum, Wellington.

Paratypes: All are pupae collected from the Rock and Pillar Range, CO, 1200-1300 m. 15 pupae, J. Child, 7 Feb 1978. 7 pupae, J. Child, 8 Feb 1978. 1 pupa, J. Child, 7 Apr 1979. 21 pupae, Grant McFarlane, 7 May 1979. All deposited in the Canterbury Museum. Light trapping on the Rock and Pillars in the late autumn failed to attract adults.

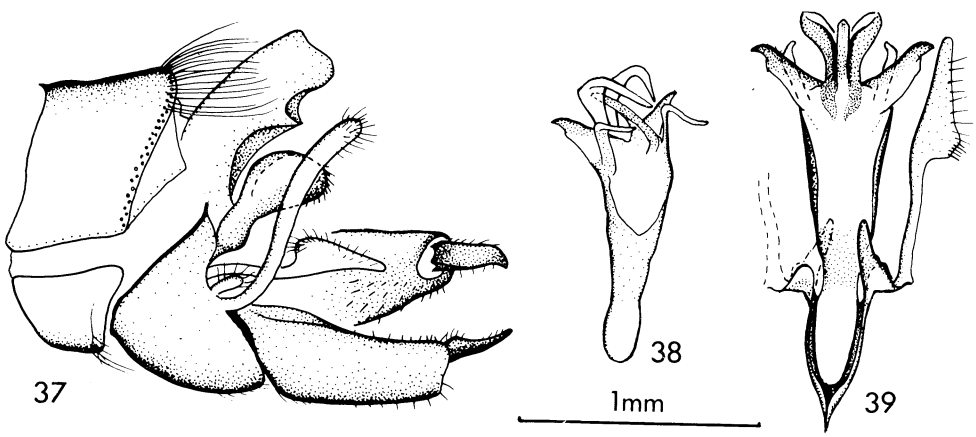
Etymology: hebdomon = seventh (Gk).

Remarks

C. hebdomon is most similar to *C. brachyptera* from which is distinguished by the very broad form of the inferior appendages and the globose structures at the base of segment 10 in the male, and the acute posteroventral angle of tergite 10 in the female.

Costachorema callistum McFarlane 1939 Figures 37-39, 43

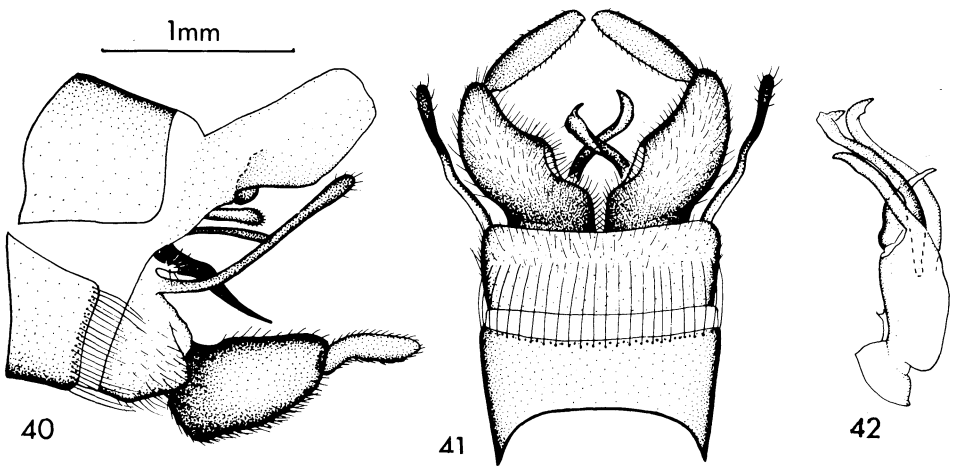
The original figures of the male genitalia are inadequate for recognition purposes. The genitalia are refigured in Figures 37-39; note the phallic structure and the distinctive expanded paremeres and bulky paraproctal processes. The female genitalia are shown in Figure 43. *C. callistum* is widespread but not common in bush areas at altitudes of about 200-1000 m in both islands.



Figures 37-39. *Costachorema callistum.*
Male genitalia: 37 lateral. Phallic structure: 38 latero-dorsal, 39 ventral.

***Costachorema brachyptera* McFarlane 1939** Figures 40-42, 44

The genitalia of both sexes are refigured (Figs. 40-42, 44). In the male note the distinctive opposed basal excavations on the ventral surface of the coxopodites of the inferior appendages. This flightless species occurs above about 900 m in the South Island high country where the larvae inhabit fast, turbulent streams flowing through sub-alpine scrub.



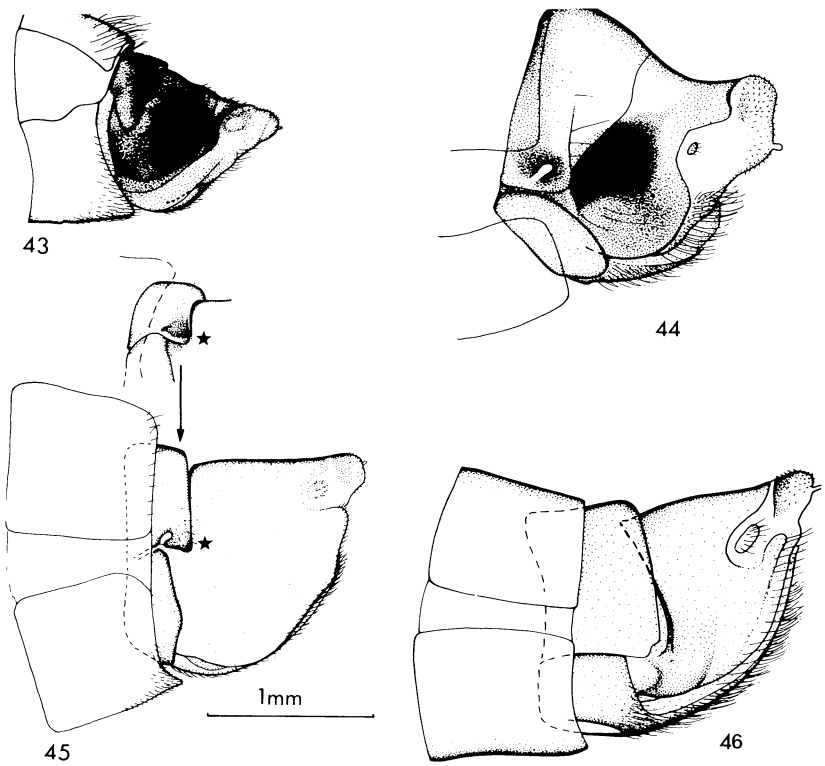
Figures 40-42. *Costachorema brachyptera.*
Male genitalia: 40 lateral, 41 ventral (excluding phallic structure), 42 phallic structure.

***Costachorema psaroptera* McFarlane 1939** Figure 45

Freshly captured specimens of both sexes have a distinctive light yellow wing colour. The female genitalia are shown in Figure 45; the inset draws attention to the distinctive shape of the sub-cuticular crease on the mesal edge of tergite 8. Kimmins' figures of the male genitalia (Figure 324 in Mosely and Kimmins (1953)) are satisfactory. *C. psaroptera* is found in the South Island high country between about 300-1000 m.

***Costachorema xanthoptera* McFarlane 1939** Figure 46

Freshly captured specimens have a distinctive grey and blackish mottled pattern on the forewings. The female genitalia are shown in Figure 46 and the male genitalia were accurately figured and further described by Mosely and Kimmins (1953; their figure 322). *C. xanthoptera* is common throughout both islands below 800 m.



Figures 43-46. *Costachorema.* Female genitalia, lateral: 43 *C. callistum,* 44 *C. brachyptera,* 45 *C. psaroptera,* 46 *C. xanthoptera.*

Key to males of *Costachorema* (excluding *C. notoptera* Wise)

1 — Coxopodites of the inferior appendages in lateral aspect at least three times as long as broad, harpes not longer than one quarter the length of the coxpodites 2

— Coxopodites little more than twice as long as broad, harpes substantially more than one quarter the length of the coxopodites . 3

2 (1) — Paraproctal processes flattened, curving up in a 90 degree bend, phallic structure very complicated, harpes short, simple and chisel pointed ..... *xanthoptera* McFarlane

— Paraproctal processes not flattened and without any distinct bend, parameres with an expanded triangular distal portion, harpes bent near tip ..... *callistum* McFarlane

3 (1) — Coxopodites of the inferior appendages massive, in lateral aspect little more than 1½ times as long as broad, the distal edge of the coxopodites conspicuously excavated in ventral view .... *hebdomon* McFarlane

Coxopodites about twice as long as broad and with no excavation on the distal edge 4

4 (3) — Coxopodites with opposed circular excavations ventrally near their bases, paraproctal processes thin and narrow and very small for the genus ..... *brachyptera* McFarlane

— Coxopodites without excavations, paraproctal processes prominent, at least half as broad as long 5

5 (4) — Paraproctal processes leaf-shaped and rounded with no sharp angles ..... *psaroptera* McFarlane

— Paraproctal processes trapezoid with a sharp, acute angle at the distal dorsal edge ..... *hecton* McFarlane

Key to known females of *Costachorema*

1 — Conspicuous heavily sclerotised brown-black areas laterally and/or all over tergite 10 2

— Pigmentation of tergite 10 no darker than other sclerites of the abdomen 4

2 (1) — Dark pigmentation all over tergites 9 and 10, tergite 9 reduced in size and tapering to a rounded point laterally .... *callistum* McFarlane

— Dark pigmentation confined to a mid-lateral area near the anterior margin of tergite 10, tergite 9 nearly squared off laterally 3

3 (2) — In lateral view, the posteroventral angle of tergite 10 acute and only very slightly rounded ..... *hebdomon* McFarlane

— The posteroventral angle of tergite 10 broadly rounded .... *brachyptera* McFarlane

4 (1) — Tergite 9 not more than one-third the width of either tergite 8 or 10, sternite 9 not produced mid-ventrally ..... *psaroptera* McFarlane

— Tergite 9 almost as wide as either tergite 8 or 10, sternite 9 produced mid-ventrally ..... *xanthoptera* McFarlane

Genus *Traillochorema* gen. nov.

Diagnosis: Spurs 2, 4, 4 : radial and medial cells open in both fore and hind wings; thyridial cells present in both wings; all five forks in forewing; R_1 forks in the pterostigma; forks 2, 3 and 5 present in the hindwing: inferior appendages of male single segmented.

Type species: *Traillochorema rakiura* sp. nov.

Etymology: This genus is named for Mr Roy Traill of Stewart Island who has enthusiastically encouraged and supported many scientific expeditions to that island.

***Traillochorema rakiura* sp. nov.** Figures 47-51

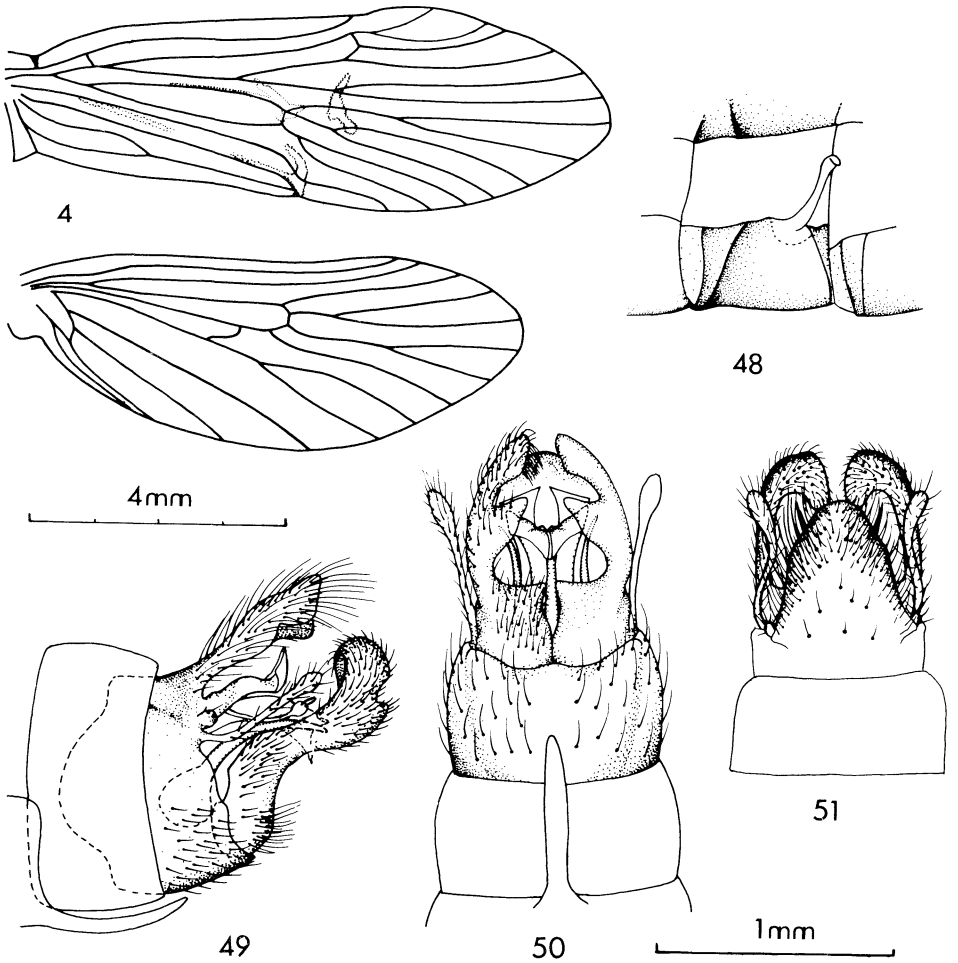
Description

A black medium-sized species with fine short antennae; very long middle and hind legs; wings with rather coarse black fringes and three white transverse markings about mid length: terminalia very conspicuous.

Dimensions: Antennae 7.75 mm; forewings 9 mm; legs from front to rear: 6 mm, 7.7 mm and 10.2 mm.

Neuration: Male (Fig. 47).

Abdomen: All sclerotised portions black or brownish black, as are the sclerites on thorax, limbs and head, except for a process on sternite 5 (Fig. 48) which is translucent yellowish: a long process mid-ventrally from the margin of sternite 7 and a similar but shorter process on sternite 6.



Figures 47-51. *Traillochorema rakiura* sp. nov.
Male wings 47. Male sternite 5 48. Male genitalia: 49 lateral, 50 ventral, 51 dorsal.

Male genitalia (Figs. 49-51): In dorsal view segment 10 broad, the base almost as wide as segment 9 into which 10 merges: texture of 10 membranous with generally distributed sparse setation increasing in density towards the blunt apex. Cerci small: superior appendages clavate. Inferior appendages in ventral view rising from broad bases and curving mesad; in lateral view the proximal and distal third directed dorsad; a conspicuous excision in the ventral edge suggests a short broad branch. Paraproctal processes brown, strongly sclerotised, slightly sinuate and broadened at

the tip; they arise laterally from a round, externally convex base and in profile curve ventrad. Paraproctal processes with a slender curved branch rising about midway along the ventral surface; this process slighly bulbous at the apex which bears two or three strong, spine-like setae. Phallic structure consisting of a broad curving transparent slightly sclerotised portion bordering on a very distinctive, narrow, strongly sclerotised central portion. The transparent portion is very difficult to detect so that the structure in ventral view appears as a narrow stalk ending in a cleft fish-tail.

Type Material: All type specimens are from very low altitude bush streams entering Paterson Inlet, Stewart Island. All are deposited in the Canterbury Museum.

Holotype: Adult male, stream entering Abrahams Bay, A. G. McFarlane, 29 Dec 1980.

Paratypes: Late male pupa, Euchre Creek, A. G. McFarlane, 15 Dec 1968 (figures drawn from this specimen); 1 prepupa, Mill Stream, North Arm, C. J. McFarlane, 16 Jan 1969; 1 male pupa, small stream above township at Oban, A. G. and Grant McFarlane, 22 Jan 1979; 1 female pupa, Kapipi, Paul Ensor, 20 Apr 1980. The female pupa is too immature to provide reliable information, but suggests a truncate apex to the abdomen.

Etymology: rakiura = the Maori name for Stewart Island.

Remarks

The larvae of this species are similar to those of *Hydrochorema* Tillyard 1924.

Tribe Psyllobetini Neboiss 1977

Neboiss (1977) erected the Psyllobetini for the Australian genera *Psyllobetina* Banks 1939 and *Allobiosis* Mosely 1953, the Tasmanian genus *Moruya* Neboiss 1977 and the New Zealand genus *Tiphobiosis* Tillyard 1924. *Tiphobiosis* largely conforms to the tribal description, particularly in the form of the female abdomen, the last three segments of which are fused and probably serve as an ovipositor. One feature in which species of *Tiphobiosis* do not conform to the tribal definition is by their having upright short stout hairs in the wing vestiture; this is probably unimportant however and the inclusion of *Tiphobiosis* in the tribe is considered valid.

Genus *Tiphobiosis* Tillyard 1924

Type species: *Tiphobiosis montana* Tillyard 1924.

Tillyard's generic diagnosis, modified to accommodate information gained from more recently discovered species, is given below. The additional features are placed in brackets.

"Wings narrow, forewing with posterior margin parallel to costa, [apex sometimes symmetrically pointed and lying between R_5 and M_1, or apex asymmetrical and wings widest between the pterostigma and the posterior margin;] hindwing also pointed, apex just below R_5. Forewing with all five apical forks present; [R_1 forked within the pterostigma, Af_2 relatively longer in females than in males;] hindwing with only 1, 2 and 5. Pterostigma strongly developed in the forewing. No closed cells present in either wing, except only thyridial cell of forewing. Sc well developed in both wings, R_1 and basal part of M obsolescent in hindwing [i.e., present but weak]. Forewing with fork of Cu_1 of specialised form, very narrow, 2A meets 1A close to its end and 3A meets 2A about half-way along its length. Tibial spurs 2, 4, 4, those of the fore tibiae greatly reduced. Male with short gonopophyses, but long pre-anal (superior) appendages and outgrowth of tenth tergite. Female with end segments of the abdomen very long and narrow, forming an elongated ovipositor with two minute, ear-like gonapophyses at the extremity."

Tiphobiosis montana Tillyard 1924

The male of this species is atypical of the genus, particularly in wing form. The almost symmetrically pointed forewing apices of *montana* are unique for both the genus and tribe, as is the structure of the inferior appendages, in which the branches merge into segment 10, rather than distinctly originating from it as in other known species of the genus. Unfortunately, Tillyard had seen no other males of *Tiphobiosis* when he designated *T. montana* the type species.

Tillyard collected all known material of *T. montana,* eight males and single female, at the same place and time, Ben Lomond Range, Queenstown, 1220 m, 15-18 Dec 1919. He did not attach paratype labels to the "several paratypes" designated in his species description. On the evidence of the writing style on the specimen labels and Tillyard's text reference, we have retrospectively labelled the six National Museum specimens (one of which is a previously overlooked female) as paratypes. Similarly, Wise (1970) assigned paratype labels to two Entomology Division, D.S.I.R. specimens of *T. montana.*

Tillyard's allotype female (Gouland Downs, Nelson Province, 610 m, R. J. Tillyard, 7 Feb 1922) has been accidently destroyed. His original description of this allotype could apply to almost any female of the genus, and no figures were given. The paratype female from the National Museum collection is described and figured here. This specimen, badly damaged by pests, has been transferred from dry mount to alcohol.

The larva McFarlane (1951) described as *T. montana* was very probably incorrectly identified. It cannot yet be assigned to any species of *Tiphobiosis.*

T. montana, female Figures 52-54

The single known female is not so atypical in wing form of the genus as are the known males.

Description

A small, dark brown insect, the wings very pale.

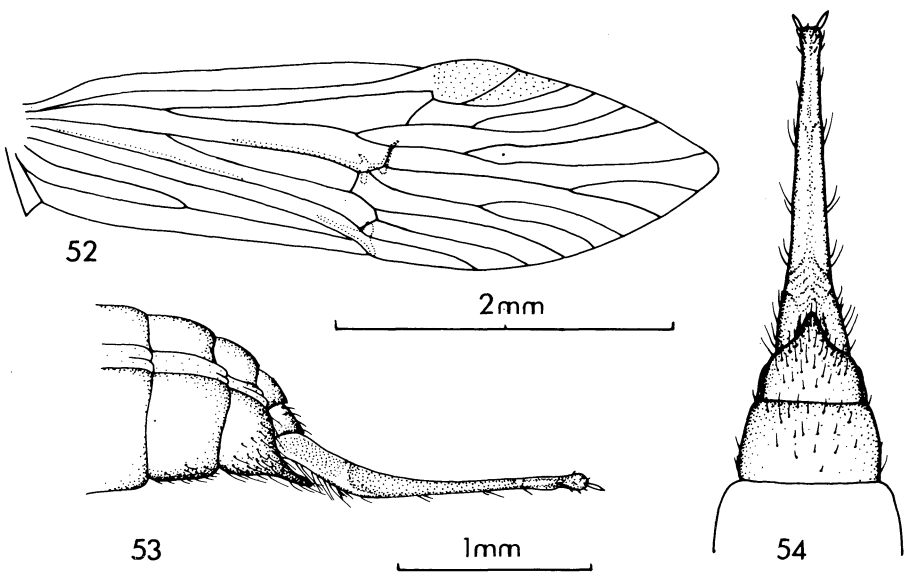
Neuration (Fig. 52): Forewing less acute apically than the male: its length 4.5 mm. R_5 forks basad of the anastomosis instead of at it the male: Af_2 expands in the area of the wing spot and is relatively longer than in the male. The *r-m* and *m-c* cross veins are not aligned as in the male. Hyaline strips occur along M_{1+2} with two cross-bars at about the anastomosis; similar strips occur along Cu_1 and an irregular small hyaline patch is found near the tornus. Hindwing neuration as in the generic diagnosis, all veins fairly well defined with R_1 and M complete.

Female genitalia (Figs. 53, 54): Sternite 7 produced caudad ventrally, ending posterior to tergite 8. The ovipositor a dull brown colour with no distinct articulations between segments.

Tiphobiosis fulva Tillyard 1924

We propose that this species be considered *species inquirenda* on the following grounds:

(i) The description is so broad as to cover several other species in this genus.
(ii) The abdomen of the unique female holotype (Entomology Division, D.S.I.R., Auckland) had been lost before the publication of the species description and Tillyard's description of it was based on Hudson's notes and is inadequate.
(iii) In the holotype, only parts of the hindwings remain and all the legs are missing.



Figures 52-54. *Tiphobiosis montana,* female.
Forewing: 52. Genitalia: 53 lateral, 54 ventral.

(iv) As substantial differences in neuration occur between the sexes of some known species of *Tiphobiosis,* there is little possibility that even if the male were to be found that it could be correctly associated with the female; instead it would almost inevitably be described as a new species.
(v) The figure of the distal portion of the forewing (Figure 13b in Tillyard 1924) does not agree with the holotype wing remnant. In the absence of the holotype abdomen, this species is not recognisable.

Tiphobiosis intermedia Mosely 1953

This species is known from the unique male holotype (Arthurs Pass, Jan 1903, G. V. Hudson), which is held in the British Museum. *T. trifurca* sp. nov., which is described below, is similar to *T. intermedia* and was also collected from Arthurs Pass; however the genitalia of the new species are quite distinct from those of *T. intermedia* as figured by Mosely and Kimmins (1953).

Tiphobiosis plicosta McFarlane 1960

T. plicosta is known only from the unique holotype. The male genitalia are very distinctive compared with other species of *Tiphobiosis.* The characteristic organ on abdominal segment 2 is absent in other species except *T. kuscheli* Wise 1972.

Tiphobiosis veniflex McFarlane 1960

Further males have been recorded from Dawson Falls, Mount Egmont, TK, 920 m, K. Fox, 24 Mar 1970. The female is not yet known.

***Tiphobiosis kuscheli* Wise 1972**

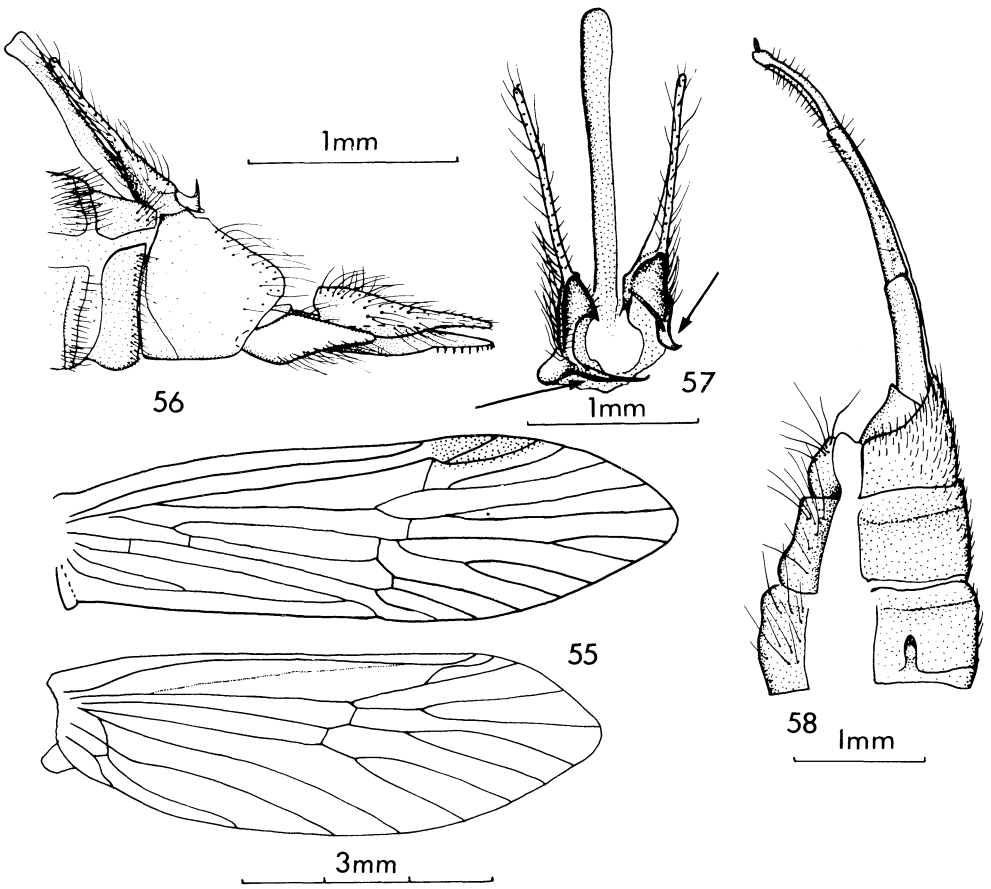
This species from the Auckland Islands is readily recognisable from the figures of the abdomen of the unique male holotype (Wise 1972) and from the figures of the larva (Wise 1978). The neuration of the holotype is grossly abnormal and each side differs from the other.

***Tiphobiosis childi* McFarlane sp. nov.** Figures 55-58

Description

Adults of both sexes vary in colour from tawny through brown to a metallic blue-black.

Wing form and neuration highly variable, the most common pattern is shown in Figure 55. Forewing lengths: males 4.8 — 6.4 mm, females 7.6 — 8.7 mm.



Figures 55-58. *Tiphobiosis childi* sp. nov.
Male wings 55. Male genitalia: 56 lateral, 57 ventral (segment 10). Female genitalia, lateral 58.

Male genitalia (Figs. 56, 57): Superior appendages a little shorter than segment 10; broad basally, where the ventral side is conspicuously concave; slender from there to the end. Inferior appendages in lateral view with an elongate triangular basal segment from which two tapering branches rise on the inner surface: the inner branch with short, strong spines on the ventral edge; the outer branch sparsely setate, in lateral view widest near the base just before which the dorsal edge turns to form a wide lobe. Phallus with a pair of strongly sclerotised arms (? parameres) sheathing a tubular portion that tapers to a point where the parameres turn dorsad; the tube then tapers more sharply to a fine point.

Several pairs of specimens now preserved in alcohol were taken *in copulo.* The specimen figured here is in the copulation position in which the tenth segment and superior appendages are rotated through about 150° to a position which enables the clasping spurs on the bases of the superior appendages (arrowed in Fig. 56) to encircle the female ovipositor at about mid-length. This clasping function of the superior appendages is probably unique in the Hydrobiosinae.

Female genitalia (Fig. 58): Sternite 7 truncate, the distal margin slightly excavated and ending at the same level as the opposing dorsal sclerite. The ovipositor a clear amber yellow colour; the intersegmental articulations clearly visible except in ventral view.

Holotype: Adult male, "under stones by torrent", Rock and Pillar Range, CO, 1280 m, J. Child, 19 Nov 1977. Deposited in the Canterbury Museum.

Paratypes: Three males, 3 females, same collection data as holotype. Adult female, "spring by ski hut", Rock and Pillar Range, CO, *ca.* 1200 m, J. Child, 25 Nov 1972. Adult female, Rock and Pillar Range, CO, 1370 m, J. Child, 26 Mar 1978. All deposited in the Canterbury Museum.

Remarks

The few known adults of this species show clearly how features such as body coloration and neuration can vary intraspecifically in this genus. Possible larvae have been collected by Dr J. Child at Kokonga on the Taieri River at the northern end of the Rock and Pillar Range. The species is named for its collector.

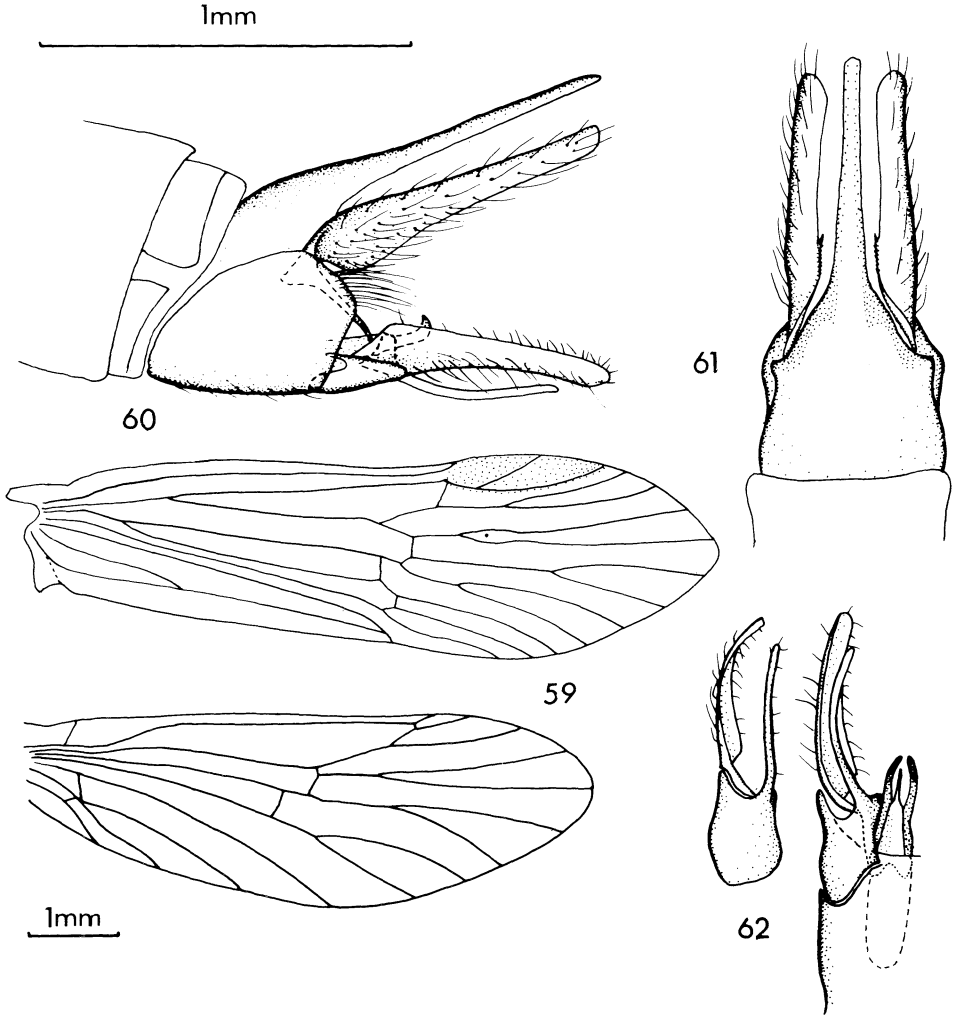
***Tiphobiosis salmoni* McFarlane sp. nov.** Figures 59-64

Description

This is the largest known species in the genus. The long fringes on the wings make them appear unusually broad. The pinned specimens are a bright clear yellow but with a slightly brown tinge.

Neuration (Fig. 59): In both sexes as in the generic diagnosis. Fork 2 stalked, expanding at the wing spot in the male but not the female: R_1 absent in the hind-wing. Forewing lengths: males 7.5 mm, female, 7.6 mm.

Male genitalia (Figs. 60-62): Superior appendages robust, slightly shorter than segment 10, rounded distally, mesal surface concave, clasping spurs at the proximal end well developed. Inferior appendages in lateral view with an acute triangular proximal portion, the outer branch similar in form to the superior appendage, i.e., broad at the base and tapering gradually to a blunt point, blade-like in ventral view: the inner branch slender and curved in profile. Phallus short, in ventral view with two slender upturned lateral branches between which there is a fine tapering projection.

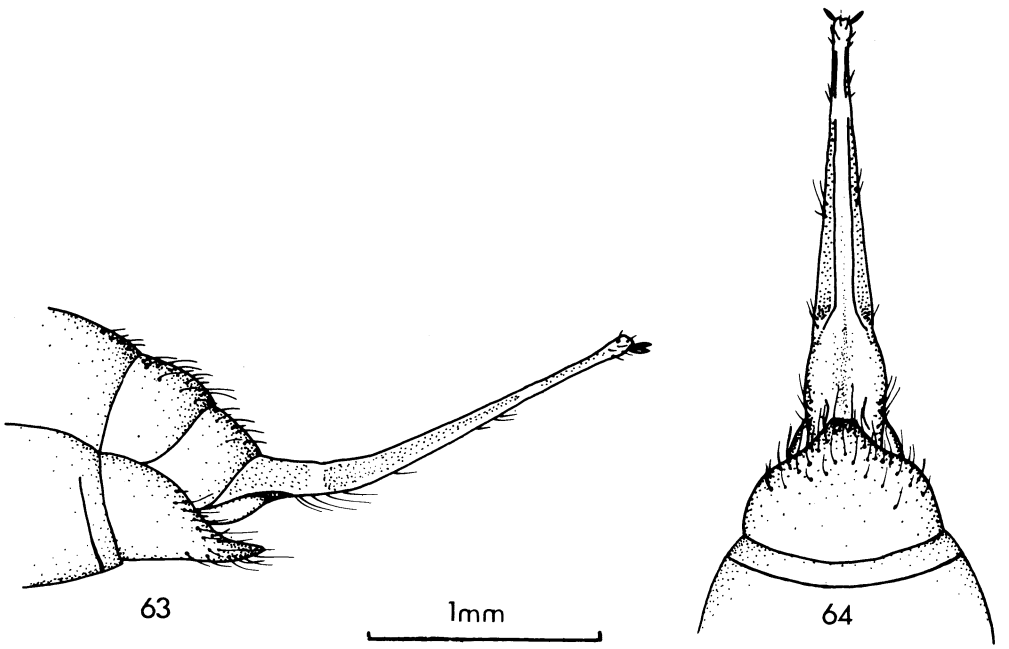


Figures 59-62. *Tiphobiosis salmoni* sp. nov.
Male wings 59. Male genitalia: 60 lateral, 61 dorsal, 62 inferior appendages (two views) and phallic structure.

Female genitalia (Figs. 63, 64): Sternite 7 produced caudad; in lateral view equal to the combined length of terga 6 and 7. Divisions of the ovipositor clear in lateral view.

Holotype: Adult male, "in cirque" above Homer Tunnel, FD, 1365 m, J. T. Salmon, 28 Jan 1946. Deposited in the National Museum.

Paratypes: Adult male, same collection and deposition data as holotype. Adult female, Lake Sylvester, upper Cobb Valley, NN, 1320 m, A. G. McFarlane, 5 Nov 1966. Deposited in the Canterbury Museum.



Figures 63, 64. *Tiphobiosis salmoni* sp. nov.
Female genitalia: 63 lateral, 64 ventral.

Remarks

The species is named for its original collector. The sexes are associated on the basis of their relatively large size, bright yellow colour, their almost identical neuration and the similar altitude at which they were collected. *T. salmoni* may well occur at altitudes of about 1200-1500 m throughout the South Island; such stratification is not uncommon amongst New Zealand Hydrobiosinae (McFarlane 1938).

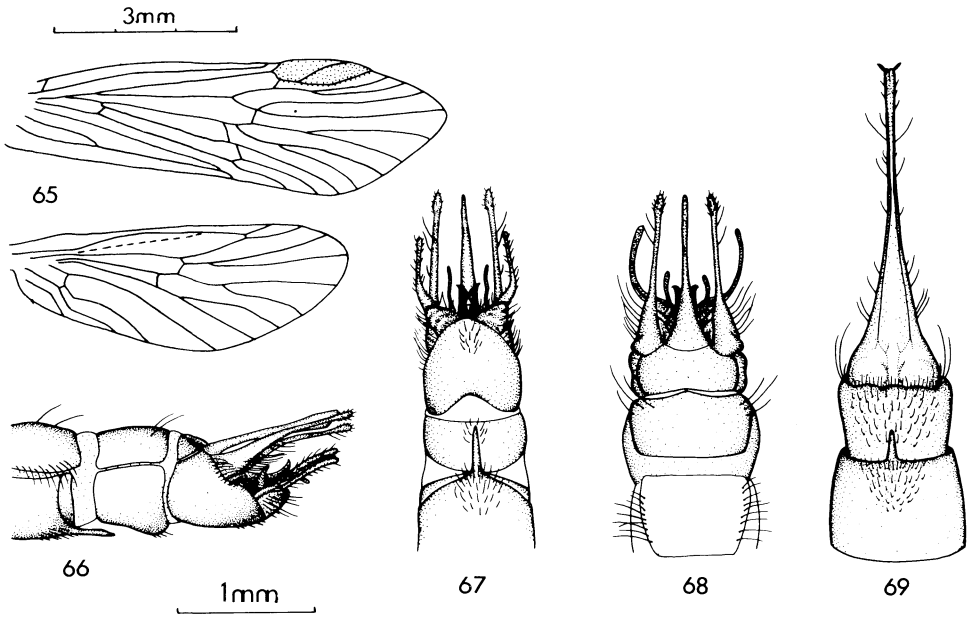
***Tiphobiosis trifurca* McFarlane sp. nov.** Figures 65-69

Description

A medium sized species for this genus. Dry specimens are a tawny yellow colour.

Neuration (Fig. 65): As for the generic diagnosis in both sexes, which are nearly identical. Forewing lengths: male 6.4 mm, female 6.2 mm.

Male genitalia (Figs. 66-68): Segment 10 sclerotised laterally, membranous dorsally and ventrally: segment 9 in dorsal view of similar texture to segment 10 so that the two appear fused. Sternite 9 well sclerotised and triangular in lateral view: tergite 8 clearly defined, produced caudad mid-dorsally: sternite 7 with a long slender process. Superior appendages in lateral view narrowly triangular in the basal half and slender, slightly clavate in the distal half. Inferior appendages consisting of a triangular basal segment with three branches: an outer strong curved branch, an inner slender branch in lateral view directed upward basally and curving ventrad in an open hook, and on the upper mesal edge a short curved spur directed dorsad: the latter structure is not present in other known species of the genus. Phallic structure very robust, dark brown, strongly sclerotised and bifid distally; the two points upturned, short and blunt.



Figures 65-69. *Tiphobiosis trifurca* sp. nov.
Male wings 65. Male genitalia: 66 lateral, 67 ventral, 68 dorsal. Female genitalia, ventral 69.

Female genitalia (Fig. 69): Sternite 6 with a mid-ventral process smaller than that on sternite 7 of the male: sternite 7 not produced caudad as in other known species. Segments of the ovipositor appear fused in both dorsal and ventral view, but in lateral view ill-defined divisions are evident.

Holotype: Adult male, in malaise trap, Otira Gorge, WD, 560 m, P. Leaf, 18 Jan 1975, Deposited in the Canterbury Museum.

Paratype: One adult female, same collection and depostion data as for holotype.

Etymology: trifurca (L), referring to the structure of the inferior appendages.

Remarks

The assumption that the specimens described are associated is based upon their being collected at the same place and time, their similar size, the near identical neuration and their possession of abdominal sternal processes, the only known species in the genus that does.

Key to Adult Males of *Tiphobiosis*, (excluding *T. kuscheli* Wise)

1 — Inferior appendages two branched, the origin of the branches not always visible. No abdominal process on sternite 7 2

— Inferior appendages with three branches, an abdominal process on sternite 7 ..... *trifurca* McFarlane

2 (1) — Branches approximately equal in length 3
— Outer branch much longer than inner branch and dilated distally ..... *plicosta* McFarlane

3 (2) — Origin of branches not distinct, the branches appearing to grow out of the basal portion rather than articulate with it 4

— Basal portion pointed and clearly separated from branches; branches closely articulating with proximal portion 5

4 (3) — Branches of inferior appendages short and flattened in cross-section: anterior wing asymmetrically pointed, the distal wing margins straight ..... *montana* Tillyard

— In profile, branches of inferior appendages slender and similar; edges forming apex of anterior wing convex .... *intermedia* Mosely

5 (3) — Branches of inferior appendages equally broad basally in lateral aspect and similar in profile 6

— Branches in lateral view dissimilar in profile, the inner branch slender, the outer branch stout and tapering from the base .... *salmoni* McFarlane

6 (5) — Basal portion acute, almost as long as the branches; branches broad basally, tapering to slender points ..... *childi* McFarlane

— Basal portion short, about one-third of the combined length of branches and base portion; the inner branch strongly sclerotised and terminally blunt with a cluster of spicules, or sharper with the spicules extending along the ventral edge ..... *veniflex* McFarlane

FAMILY OECONESIDAE

Genus *Zelandopsyche* Tillyard 1921

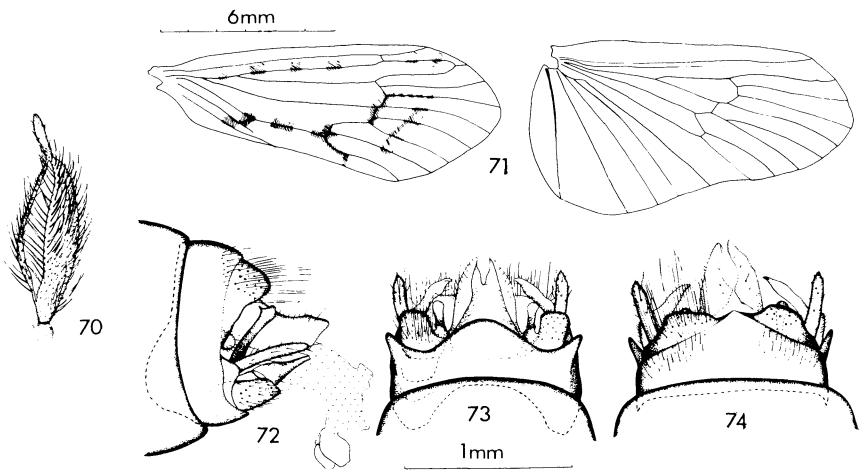
***Zelandopysche maclellani* McFarlane sp. nov.** Figures 70-74

Description

This is the largest caddisfly known from New Zealand. Males are a mid-brown colour, darker than those of *Z. ingens* Tillyard 1921. The strong antennae, broad wings with patches and lines of dark pigmentation, and large sparse upstanding black and brown setation, give this species a distinctive appearance.

Maxillary palpi (Fig. 70): Single segmented, similar to those of *Z. ingens* but narrower with a smaller terminal extension.

Neuration (Fig. 71): The two known specimens have small differences as is common in other Oeconesidae, but the figured holotype is sufficiently representative to separate this species from *Z. ingens.* Wing setation similar in colour and form to the tufts on the prothorax; sparse except where tufts occur along the line of R_1 (six tufts), on the cubital and anal veins (four tufts) and along the bases of the three posterior cellules. A narrow band of dark setae occurs in line with the end of the radial cell; a broader and larger band between that and the termen. Length of male forewing 18 mm.



Figures 70-74. *Zelandopsyche maclellani* sp. nov.
Maxillary palp 70. Male wings 71. Male genitalia: 72 lateral, 73 ventral, 74 dorsal.

Male genitalia (Figs. 72-74): Segment 9 obtusely pointed mid-dorsally, each side of the apex with a roughly rounded flap which may represent a divided tergite 10 or a specialised superior appendage. The phallic structure consists of a strongly sclerotised half tube, cleft at the apex and forming a cover over the eversible aedeagus: laterally a short cercus, or possibly a rudimentary superior appendage is present. Inferior appendages consisting of a stout proximal segment with three "branches", the tapering, sclerotised terminal branch being the harpago. Below this on the unsclerotised dorso-mesal surface is a soft sausage-shaped branch with a granular outer hair bearing surface and a clear smooth inner surface: at the mesal base of the first segment and fused to it is a strong brown sclerotised arm directed dorsad, and slightly clavate at the apex where there is a short projection directed forward.

Holotype: Adult male, Fuchsia Creek, Lower Buller Gorge, BR, *ca.* 160 m, I. D. McLellan, 10 Jan 1967. Deposited in the Canterbury Museum.

Paratype: Adult male, Ohika River, Lower Buller Gorge, BR, *ca.* 150 m, I. D. McLellan, 23 Aug 1969. Deposited in the Canterbury Museum.

Remarks

The species is named for its collector, Mr I. D. McLellan of Westport. The female is not known, but the probable larva has been collected from several forest streams in the Buller region.

FAMILY HELICOPHIDAE

Genus *Zelolessica* McFarlane 1956

Zelolessica meizon McFarlane sp. nov. Figures 75-79

Description

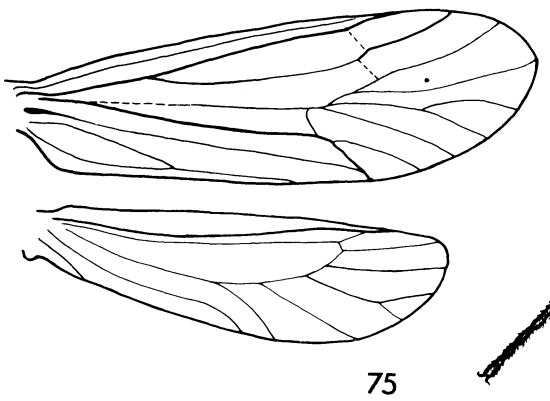
A small blackish insect very like *Z. cheira* McFarlane 1956 but larger and more robust. The sclerotised cuticle over the head and body, other than abdominal pleurae, from mid to dark brown. In strong contrast with this dark portion are the

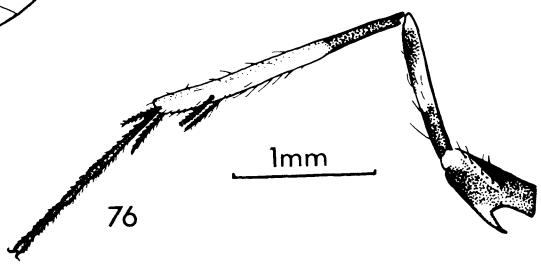
white hair bearing tubercules on the head, the meso- and metascutulla and abdominal pleurae. Further, the abdominal terga have white spots towards the outer edges in which the abdominal hairs are set either individually or in groups.

Head: White hair-bearing warts consist of: (i) elongate post-orbital strips, (ii) longer crescentic occipital warts, and (iii) smaller ovoid warts on the vertex adjacent to the fork. Eversible sense organs occur in the male between the central projection on the frons and the scape of the antenna; these appear as soft white mounds but evert to form a branched structure, the outer branch smaller than the maxillary palp, the inner branch very much shorter. (In *Z. cheira* the inner branch is vestigial.) Antennal scape short, white; flagellum short, stout and dark.

Neuration (Fig. 75): Male as figured, but small differences in known specimens indicate this is somewhat variable.

Forewings: In the male R, R_1 and Cu_1 are very strong veins; proximal portion of M and the two cross-veins within the radius very weak; posterior wings with a short broad apical fork. Female with no such fork and with one more vein than the male: Sc the only strong vein. Length: male 5 mm, female 5.25 mm. The female wings when folded are not long enough to cover the abdomen completely.





Figures 75, 76. *Zelolessica meizon* sp. nov.
Male wings 75. Male foreleg 76.

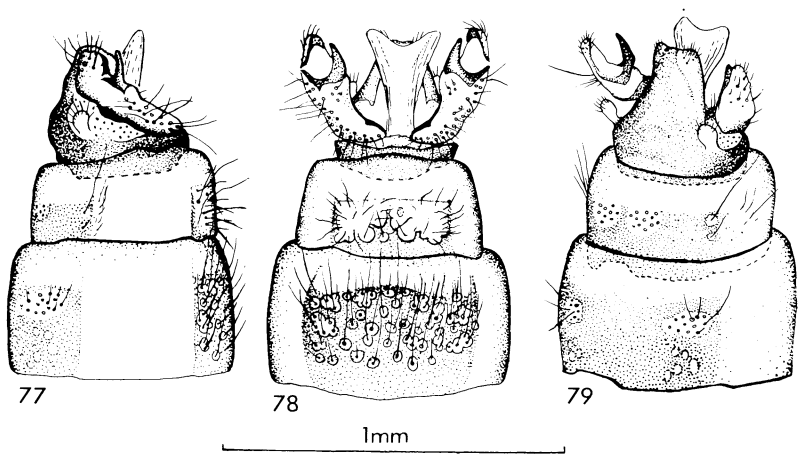
Foreleg: Male, as in Figure 76.

Male genitalia (Figs. 77-79): Segment 10 broad and short, more gently rounded than in *Z. cheira;* inferior appendages more robust. In other respects the teminalia of both species are very much alike.

Holotype: Adult male, Rock and Pillar Range, CO, 1280 m, J. Child, 19 Nov 1977, "under stones by torrent". Deposited in the Canterbury Museum.

Paratype: Adult male, North Arm, Paterson Inlet, SI, sea level, A. G. McFarlane, 10 Dec 1968. Deposited in the Canterbury Museum.

Etymology: meizon = greater (G.); of greater size than *cheira.*



Figures 77-79. *Zelolessica meizon* sp. nov.
Male genitalia: 77 lateral, 78 ventral, 79 dorsal.

Remarks

Other type material of *Z. meizon,* including the only known female, was stolen from the Canterbury Musuem and has not been recovered.

Cowley (1978) recognised two species of *Zelolessica* as larvae but he regarded the sandgrained case larva (Figure 33 in Cowley) as *Z. cheira* whereas in fact it is *Z. meizon.* Similarly, his Figure 34 is of *Z. cheira.*

FAMILY LEPTOCERIDAE

Genus *Triplectides* Kolenati 1859

Triplectides magna (Walker 1852)

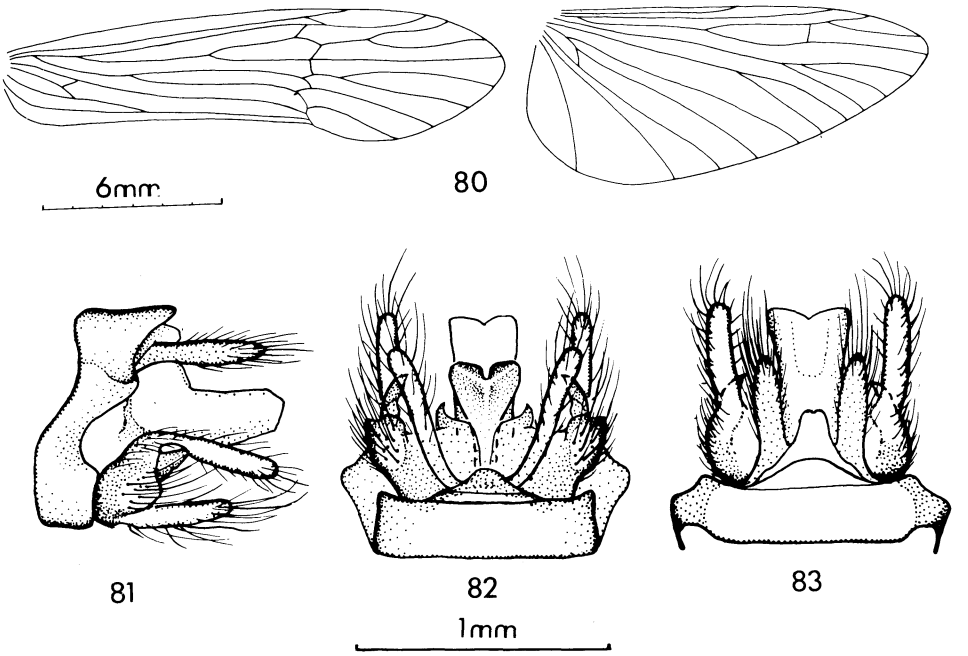
Mosely and Kimmins (1953) noted that *T. magna* was widely distributed throughout the Far East including Australia and New Zealand, the latter record being based on early specimens from "Van Dieman's Land" which is in fact Tasmania. A. G. McFarlane has examined a large number of specimens of *Triplectides* from New Zealand: none conforms to figures of *T. magna.* On these two grounds, we propose that *T. magna* be deleted from the list of New Zealand Trichoptera.

Triplectides dolichos McFarlane sp. nov. Figures 80-86

Description

A large tawny to mid-brown insect with forewings similar in colour to the body except for several lightly pigmented patches along Sc. Hindwings very pale.

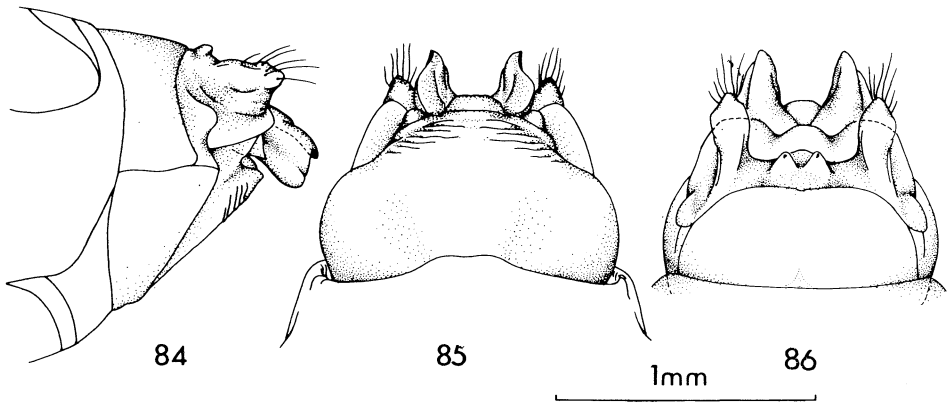
Forewing (Fig. 80): Membrane lightly pigmented, vestiture soft and fine, difficult to maintain in good condition and easily rubbed off; in undamaged specimens it appears mottled with small brown and off-white areas. Lengths vary little: males average 17 mm, females 19 mm.



Figures 80-83. *Triplectides dolichos* sp. nov.
Male wings 80. Male genitalia: 81 lateral, 82 ventral, 83 dorsal.

Male genitalia (Figs. 81-83): Segment 9 very short. Below its posterior dorsal margin, which is not produced as in *T. obsoleta,* is a soft, unpigmented central projection, which overlaps the bases of the superior appendages. Segment 10 longer than the superior appendages. Phallus similar in form to that of *T. obsoleta* but with a notch in the middle of the distal margin. Inferior appendages stout basally and with a slightly raised hair bearing area which originates near the base laterally. Beyond this the appendage narrows and bends through almost 90 degrees to point backwards. A strongly sclerotised branch with a single point (bifid in other endemic species) rises at the inner surface at the level of the bend and points mesad. Another branch rises ventrally from the base and is long and slender. Strongly sclerotised structures, with distal hook extensions, rise from bases of the inferior appendages within the genital chamber, and partly encircle the phallus. These structures are much smaller in *dolichos* than in *obsoleta.*

Female genitalia (Figs. 84-86): Sternite 9 concave in mid-section, glossy, transversely striated towards the apex. Lobe of ovipositor directed ventrad, rectangular in lateral view, the dorsal margin folded mesad. Dorsal to the semi-transparant valves are a pair of opaque projections triangular in lateral view, hair bearing on the dorsal surface and symmetrically rounded. In dorsal view the genital segment is domed on the posterior margin, with a pair of papillae present below the apex.



Figures 84-86. *Triplectides dolichos* sp. nov.
Female genitalia: 84 lateral, 85 ventral, 86 slightly retro-dorsal.

Holotype: Adult male, Abrahams Bay, Paterson Inlet, SI, sea level, A. G. McFarlane, 29 Dec 1980. Deposited in the Canterbury Museum.

Paratypes: Five males, Govenors Bay, Lyttleton Harbour, MC, 5 m, H. Ensor, 12 Mar 1979. One male, Lindis Pass, OL/MK/CO, *ca.* 900 m, A. G. McFarlane, 7 Dec 1959. Four males (one figured), Haast Pass, WD/OL, 550 m, P. M. Johns, 2 Dec 1966. One female, Martins Bay, FD, 10 m, R. R. Forster, Jan 1953. Eleven males, one female (figured), same collection data as holotype but A. G. and M. McFarlane. Three adult males, one female late pupa, Roys Bay, Paterson Inlet, SI, sea level, A. G. McFarlane, 22 Jan 1978. One female, Whalers and Sealers Bay, Codfish Island, SI, 5 m, J. I. Townsend, 16 Dec 1966. All deposited in the Canterbury Museum.

Etymology: dolichos = long (Gk), referring to the male genitalia, particularly the inferior apendages.

Remarks

This species is similar to *T. obsoleta* (McLachlan 1862), but differs in the venation adjacent to the tornus, the greater relative lengths of the elements of the male genitalia, and the form of segment 9 in the male. *T. dolichos* is widespread on the central plateau of the North Island, the high country of the South Island and on Stewart Island. In many areas it is sympatric with *T. obsoleta. T. dolichos* is very constant in form throughout its geographic range: Stewart Island was chosen as the type locality as it is abundant there and it is the only species of *Triplectides* that has been collected from that island. Larvae have been collected in small bush streams where the substrate is mainly mud and decaying plant material.

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