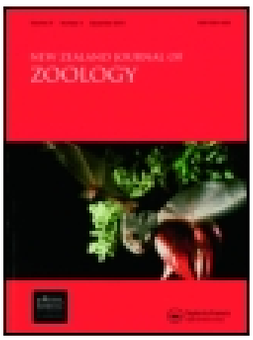

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The Targaremini of New Zealand (Hemiptera: Lygaeidae) a revision

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The following new genera and species are described: *Forsterocoris stewartensis* n.sp.; *Geratarma* n.gen. (type-species *G. eylesi* n.sp.), *G. manapourensis* n.sp.; *Paratruncala* n.gen. (type-species *Tomocoris insularis* Woodward, 1953); *Truncala insularis* n.sp.; *Woodwardiana* n.gen. (type-species *Regatarma evagorata* Woodward, 1953), *W. paparia* n.sp.; *Tomocoris cookensis* n.sp. from the Cook Islands. *Eminocoris* Eyles, 1967, is synonymised with *Millerocoris* Eyles, 1967. The subspecies of *Regatarma forsteri* Woodward, 1953 (except *obsolescens* Woodward, 1953 and *stephensis* Woodward, 1953) are raised to species status. In addition, the following new combinations are made: *Regatarma salmoni* Woodward, 1953 to *Forsterocoris; Regatarma notialis* Woodward, 1953 and *R. nelsonensis* Woodward, 1953 to *Woodwardiana.* Supplementary descriptive details and illustrations, with emphasis on the genitalia, are given for the taxa of Woodward (1953) and Eyles (1967). *Targarema stali* White, 1878 and *T. electa* White, 1878 are redescribed. The genera and species are keyed, and the reasons for taxonomic changes to previously described taxa are discussed. Dorsal views of the body and line drawings of the genitalia and other structures of taxonomic importance are presented.

INTRODUCTION

The tribe Targaremini, erected by Ashlock (1964), comprises a group of Australasian rhyparochromine lygaeids. *Metagerra* and *Targarema* were the first targaremine genera to be described from New Zealand (White 1878). Woodward (1953) described 6 new genera from New Zealand, *Regatarma, Truncala, Forsterocoris, Trypetocoris, Tomocoris,* and *Longihaustrum,* but later (1959) reduced *Longihaustrum* to subgeneric status under *Tomocoris,* and subsequently (1963) to synonymy with that genus. Eyles (1967) added *Millerocoris* and *Eminocoris,* bringing the number of genera known from New Zealand to 9. Of these, 7 are endemic to New Zealand; *Regatarma* occurs also in Tasmania, and the widespread *Tomocoris* in eastern Australia, New Guinea, the Philippines, and Japan. I have recently published a revision of *Metagerra* (Malipatil 1976).

In the present study I have examined the balance of the New Zealand targaremine fauna, with emphasis on the genitalia (adequate data on the external morphology of the majority of the known taxa already exist through the work of Woodward and Eyles). As a result the following taxonomic changes have become necessary. *Eminocoris* is synonymised with *Millerocoris. Tomocoris insularis* Woodward is transferred to a new genus, *Paratruncala. Geratarma* n.gen. is erected for 2 new species, *eylesi* and *manapourensis.* The species and subspecies originally described by Woodward under *Regatarma* are split into 3 groups, and assigned to genera as follows: *salmoni* is transferred to *Forsterocoris; forsteri* sspp. *evagorata, notialis,* and *nelsonensis* are elevated to specific status and included with a new species (*paparia*) in *Woodwardiana* n.gen.; and the remaining subspecies of *forsteri—obsolescens* and *stephensis* —are identified with the nominate form, such that *forsteri* is no longer divided into subspecies.

Tomocoris, as relineated here, is anomalous with regard to several important characters listed in the generic key and diagnosis, indicating the heterogeneous nature of the New Zealand targaremine fauna.

A general paper on the New Zealand Targaremini (Malipatil 1977), being published together with this contribution, includes a discussion of their distribution in New Zealand, the effects of Pleistocene cold climate on their distribution and speciation, wing development in relation to its role in their ecology and distribution, and host-plant relationships. Distribution maps for most of the species treated here are included in the general paper.

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METHODS AND CONVENTIONS

The descriptive details and illustrations presented here for taxa of Woodward (1953) and Eyles (1967) are only additions and amendments to the original descriptions.

The aedeagus inflation method used here, with considerable success, was as follows. After light clearing in 10% KOH solution the pygophore was rinsed in distilled water and soaked in glycerol for several hours to soften the aedeagus inside. To enhance penetration of the glycerol, the pygophore was carefully cracked with fine (jeweller's No. 4) forceps. Using fine needles, and gripping near the helicoid process (which is always visible in the uninflated aedeagus), the aedeagus was gently pulled out of the phallobase until the vesica and conjunctiva were stretched out and the internal structures such as the ejaculatory reservoir became clearly visible. The aedeagus was drawn on its side with the dorsal aspect to the left (unless otherwise mentioned), usually at $\times 40$ magnification.

All dimensions are expressed in millimetres; the lengths and widths given are maxima. Unless otherwise indicated, for each species the dimensions of the holotype (or lectotype) are given first, followed in parentheses by ranges from other material examined.

Specimen localities are recorded under the area codes of Crosby *et al.* (1976), in approximately north-south sequence.

Under Material Examined, the following abbreviations of collectors' names are used: F.A., F.D. Alack; R.C., R.A. Cumber; J.D., J.S. Dugdale; A.E., A.C. Eyles; R.F., R.R. Forster; E.G., E.S. Gourlay; G.K., G. Kuschel; J.M., J.G.R. McBurney; G.R., G.W. Ramsay; J.T., J.I. Townsend; A.W., A.K. Walker; N.W., N.A. Walker; J.W., J.C. Watt; K.W., K.A.J. Wise.

Unless otherwise indicated by the following initials of repositories, the material examined is held at Entomology Division, Department of Scientific and Industrial Research, Auckland (DSIR): AIM – Auckland Institute and Museum; BM – British Museum (Natural History), London; CM – Canterbury Museum, Christchurch; NM – National Museum of New Zealand, Wellington; OM – Otago Museum, Dunedin; UQ – Department of Entomology, University of Queensland, Brisbane.

Specimen label data are given in full for type material and for species represented by few specimens. For well represented species the data are condensed into locality records.

The illustrations are not to scale.

Tribe Targaremini

The following characters, in addition to those given by Ashlock (1964), characterise the New Zealand Targaremini.

Body 2–2½ × as long as wide. Labrum not more than half as long as basal segment of labium. Lateral margins of pronotum with very narrow or occasionally broad carinae. Hemelytra usually modified (mostly coleopteroid), but occasionally macropterous. Fore femora moderately to heavily incrassate, armed usually with 1–4 tubercles or spines in 1 inner series (in *Tomocoris* only slightly incrassate, unarmed). Fore coxae mutic. All spiracles ventral. Inner laterotergites usually present (absent in *Tomocoris truncatus* Woodward). Middle trichobothrium on sternum V equidistant from other 2, or slightly closer to posterior or anterior trichobothrium (the latter in *Targarema electa* White). Median apodeme on sternum VII of male usually as long as sternum VI.

Genitalia. Female. Ramus I traversing over half (up to four-fifths) of gonapophysis I. Spermatheca distinctly divided into proximal part (always relatively short), distal part of variable length, and distal bulb. Male. Paramere hook-like, its blade well developed (in *Tomocoris* flat, short, triangular). Aedeagus short, robust; vesical surface distal to ejaculatory reservoir and proximal to helicoid process with inflatable lobes; gonoporal process distal to helicoid process slitted or strongly flared, short, with up to 4 turns (not coils), and usually encased in inflatable sheath or lobe (in *Tomocoris* not slitted, slender, unusually long, forming regular coils, and not encased in inflatable sheath or lobe).

Key to New Zealand genera of Targaremini

1. Fore femora slightly incrassate, unarmed; paramere short, flat, triangular (e.g., Fig. 13d); phallotheca in ventral aspect with regular sclerotised areas (e.g., Fig. 13e); gonoporal process distal to helicoid process slender, unusually long, regularly coiled, not encased in inflatable sheath or lobe (e.g., Fig. 13e) ..... *Tomocoris*

—Fore femora moderately to heavily incrassate, armed; paramere hook-like, with well developed blade (e.g., Fig. 1d); phallotheca in ventral aspect without regular sclerotised areas (e.g., Fig. 1e); gonoporal process distal to helicoid process robust, short, not regularly coiled, usually encased in inflatable sheath or lobe (e.g., Fig. 1e) 2

2(1) Body about half as wide as long, upper surface shining, more or less 'bumpy' owing to depressions and elevations ..... *Trypetocoris*

—Body usually less than half as wide as long, upper surface not shining and 'bumpy' 3

3(2) Anterior abdominal scent-gland scar *c.*1½ × as wide as posterior 2 scars; pronotum 1½–2 × as wide posteriorly as long; (fore tibiae usually unarmed in ♂) 4

—Abdominal scent-gland scars subequal or widening slightly (less than 1¼×) cephalad; pronotum less than 1½× as wide posteriorly as long, or if more than 1½×, either hemelytra macropterous — submacropterous with well developed membrane or fore tibiae armed in ♂ 6

4(3) Fore femora armed invariably with 1 spine ..... *Metagerra*

—Fore femora armed commonly with 3 spines, but variably from 1 to 4 5

5(4) Scutellum equilateral or slightly (less than 1¼×) longer than wide, with distinct depression on disc in basal half; hemelytra long, extending to or beyond middle of tergum VI, posterior margin nearly rounded; ejaculatory reservoir reduced (e.g., Fig. 3e); gonoporal process distal to helicoid process usually with inflatable lobe (e.g., Fig. 3h) ..... *Forsterocoris*

—Scutellum slightly (less than 1¼×) wider than long, without depression on disc; hemelytra short, extending to but not beyond middle of tergum VI, posterior margin nearly straight (e.g., Fig. 4d); ejaculatory reservoir well developed; gonoporal process distal to helicoid process without inflatable lobe (e.g., Fig. 4c) ..... *Geratarma*

6(3) Pronotum generally less than 1½× as wide posteriorly as long; body usually with long, bristle-like hairs or pubescence; hemelytra usually truncate or nearly truncate, lacking distinct membrane 7

—Pronotum generally at least 1½× as wide posteriorly as long; body with short pubescence or at most short bristles; hemelytra never truncate, membrane distinct though small, but if membrane absent, hemelytra long, extending on to tergum VII 9

7(6) Fore tibiae unarmed in ♂; fore femora armed invariably with 2 spines; distal bulb of spermatheca with distinct partition (Fig. 5a); gonoporal process distal to helicoid process with prominent inflatable lobe (Fig. 5d) ..... *Paratruncala*

—Fore tibiae almost always armed in ♂; fore femora armed with 2 or 3 spines; distal bulb of spermatheca usually with weak or indistinct partition (e.g., Fig. 6a); gonoporal process distal to helicoid process without prominent inflatable lobe (e.g., Fig. 6e) 8

8(7) Body hairs almost always long (e.g., Fig. 7a); labial segment III about 1¼× as long as IV; pronotum less than 1¼× wider posteriorly than long, constriction distinct (e.g., Fig. 7a); proximal part of spermatheca narrower than distal part (e.g., Fig. 6a,f) ..... *Truncala*

—Body hairs short; labial segment III 1¼–1½× as long as IV; pronotum 1¼–1½× wider posteriorly than long, constriction indistinct (Fig. 8a); proximal part of spermatheca as wide as distal part (Fig. 8b); (membrane vestigial, represented by pale spot as in Fig. 8a) ..... *Regatarma*

9(6) Fore tibiae unarmed in ♂; fore femora commonly armed with 1 or 2 spines; hemelytra usually macropterous or submacropterous (e.g., Fig. 10a), occasionally coleopteroid (Fig. 10a′) ..... *Targarema*

—Fore tibiae almost always armed in ♂ (e.g., Fig. 11a), if unarmed, membrane short and flap-like and hind wings absent; fore femora commonly armed with 3 spines (e.g., Fig. 11a); hemelytra coleopteroid 10

10(9) Hemelytra long, extending to tergum VII; hind wings present as small, flap-like structures; antennal segment II more than 1¼× as long as IV, which is pale or yellow (particularly in apical two-thirds) ..... *Millerocoris*

—Hemelytra short, usually extending to middle of tergum VI; hind wings absent; antennal segment II not more than 1¼× as long as IV, which is not pale or yellow ..... *Woodwardiana*

Genus *Trypetocoris* Woodward

Woodward, 1953, Rec. Canterbury Mus. 6: 216. –Slater, 1964, Catalogue Lygaeidae World 2: 870 (bibliography). –Ashlock, 1964, Ann. ent. Soc. Am. 57: 421 (in Targaremini). –Eyles, 1967, N.Z. Jl Sci. 10: 422 (keyed).

TYPE-SPECIES: *Trypetocoris rudis* Woodward, by original designation.

Labrum about one-third as long as basal segment of labium. Abdominal scent-gland scars equal, or anterior scar slightly wider than posterior 2.

Genitalia. Female. Ramus I extending to about three-quarters length of gonapophysis I (e.g., Fig. 1a); gonapophysis II spatulate, with 2 bristle-like curved hairs on outer apical margin (e.g., Fig. 1a′). Spermatheca (e.g., Fig. 1b) with proximal part short, faintly pigmented, distal bulb spherical or subspherical. Male. Paramere (e.g., Fig. 1d) with prominent dorsal and ventral lobes, latter more projecting. Aedeagus (e.g., Fig. 1e) with phallotheca faintly pigmented on ventral aspect; ejaculatory reservoir well developed, complete; gonoporal process strongly pigmented; vesica with a large inflatable lobe on dorsal aspect around proximal third; helicoid process with 1–2 loose coils; gonoporal process distal to helicoid process usually encased in prominent inflatable lobe.

Key to species of *Trypetocoris*

1. Pronotum about 1½× as wide posteriorly as long; anterior and posterior margins almost straight, lateral margins nearly parallel in basal two-thirds; fore femora commonly armed with 2 spines; (small species, total length 2.4–3.3) ..... *separatus*

—Pronotum about 2× as wide posteriorly as long; anterior and posterior margins concave, lateral margins either diverging towards base or sinuate near basal quarter; fore femora commonly armed with 3 or 4 spines 2

2. Membranes overlapping at midline of body; lateral margins of pronotum gradually diverging caudad; costal margin of hemelytra straight except at basal and apical angles; spermatheca (Fig. 2a) long, distal part with 4–6 loose turns, partition of distal bulb indistinct ..... *aucklandensis*

—Membranes not overlapping; pronotum with distinct sinuation near basal quarter; costal margin of hemelytra convex for most of length; spermatheca (Fig. 1b) short, distal part with 1–3 turns, partition of distal bulb distinct ..... *rudis*

Trypetocoris rudis Woodward (Fig. 1a–g′)

Woodward, 1953, Rec. Canterbury Mus. 6: 194, 198, 216–17, fig. 11, 26.

Total length 3.5(3.3–4.1), width 1.7(1.5–2.1).

Head length 0.50(0.50–0.60), width across eyes 0.70(0.65–0.73), interocular distance 0.47(0.50–0.52). Antennae slender, thickly covered with long, pale bristles; segment I exceeding apex of head by about one-third, incrassate in distal half; segment II gradually incrassate distad, as thick as III; segment IV as thick as I, gradually narrowed at ends; length of segments – I 0.35(0.35–0.42), II 0.48(0.47–0.59), III 0.39(0.40–0.42), IV missing in holotype (0.46–0.55). Labium robust, nearing hind coxae; basal segment almost reaching base of head; length of segments – I 0.50(0.50–0.54), II 0.42(0.45–0.55), III 0.32(0.36–0.42), IV 0.26(0.27–0.35).

Pronotum: anterior margin strongly concave; posterior margin shallowly concave near base of scutellum; lateral margins straight, gradually incurved in apical quarter, sinuate in basal quarter; length 0.75(0.74–0.80), width at posterior margin 1.25(1.25–1.45). Scutellum: length 0.70(0.70–0.85), width 0.75(0.76–0.90). Hemelytra: claval region sparsely punctate; most of corium irregularly punctate; length 1.7(1.8–2.2). Fore femora long, heavily incrassate, more so in middle third, armed on about distal half with 3 or 4 thorn-like, dark spines, proximal 2 spines usually the more widely spaced; fore tibiae in male shallowly curved in proximal half.

Genitalia. Female. Ovipositor as in Fig. 1a,a′. Spermatheca (Fig. 1b) with bulb strongly pigmented distal to partition. Male. Pygophore as in Fig. 1c,c′. Paramere as in Fig. 1d. Aedeagus (Fig. 1e): basal apparatus and body and wings of ejaculatory reservoir as in Fig. 1f–g′; reservoir duct with 1 coil before entering body of ejaculatory reservoir; vesica more than 2× as long as phallotheca and conjunctiva together, with 2–4 small, leaf-like processes ventrally, slightly distal to large dorsal inflatable lobe; gonoporal process strongly pigmented throughout, slightly narrowed towards proximal end of vesica.

MATERIAL EXAMINED. Holotype ♂, allotype, ♂ and ♀ paratypes (data in original description). **NN.** Kahurangi, homestead, 3♂2♀, 21 Aug 1970, F.A. Mt. Duppa, 1♂1♀, 1970, E.G. **BR.** Mt. Robert, 1360 m, 1♀, 15 Mar 1968, J.M. **FD.** Waiau R., 1♀, 12 Nov 1966, F.A. Hunter Mts, Middle Borland R., 1♀, Jan 1970, J.T. W side L. Hauroko, 1♂2♀, 12 Nov 1966, F.A. Betw. Crombie R. and Wairaurahiri R., 1♀, 28 May 1947, G. Weston (NM). Hump Ridge, 905 m, 1♂, 9 Feb 1968, J.T. **SL.** Dipton, Caroline Hill, 304 m, 5♂2♀, 12 Feb 1968, J.T. Hokonui Hills, 152 m, 1♂, 12 Feb 1968, J.T. Clifden, limestone bluffs, 1♀, 11 Feb 1968, J.T. N Longwood Ra., 213 m, 1♂, 11 Feb 1968, J.T. Orepuki, Pahia Hill, 121 m, 2♂, 7 Feb 1968, J.T. Dunsdale Vly, Hedgehope, 75 m, 1♂3♀, 12 Feb 1968, J.T. Invercargill, Blue Cliffs, 4♀, 9 Oct 1970, F.A. Bluff, 1♂2♀, 27 Nov 1946, R.F. (NM). **SI.** 1♂5♀, 14 Oct 1970, F.A. Codfish I., NW Bay, 1♂1♀, 15 Dec 1966, A.H. Whitaker. E end Sealers Bay, 60 m, 1♀, 9 Dec 1966, J.T. Port William, 1♂, 7 Feb 1969, J.T. Fern Gully, 1♂3♀, 24 Nov 1946, R.F. (NM). Halfmoon Bay, 2♀, 28 Jan 1962, J.T. Port Pegasus: Pearl I., 3♂, 21 Feb 1972, R.G. Ordish (NM); Twilight Bay, 13♂9♀, 27 Feb 1968, G.K. Pegasus Ck, 11♂10♀, 21–25 Feb 1968, G.K. NE Long I., [95–190 m], 50♂39♀, Nov 1968 & [10, 13, 22] Feb 1969, A.E., G.K., J.M., & J.T.

Trypetocoris separatus Woodward (Fig. 1h–l)

Woodward, 1953, Rec. Canterbury Mus. 6: 194, 198, 218, fig. 13, 27.

Total length 2.9(2.4–3.3), width 1.4(1.2–1.6).

Head length 0.41(0.35–0.44), width across eyes 0.60(0.50–0.64), interocular distance 0.49(0.38–0.49). Antennae: basal segment exceeding tylus by about half; segment II slender, gradually swollen in distal half; segment III heavily incrassate in distal half; segment IV heavy; length of segments – I 0.40(0.34–0.40), II 0.50(0.37–0.43), III 0.32(0.26–0.30), IV 0.46(0.40). Labium nearing hind coxae; basal segment nearing base of head; length of segments – I 0.44(0.31–0.44), II 0.49(0.40–0.49), III 0.36(0.30–0.37), IV 0.30(0.23–0.29).

Pronotum: anterior and posterior margins almost straight; lateral margins almost parallel in proximal two-thirds; length 0.76(0.60–0.77), width at posterior margin 1.00(0.82–1.07). Scutellum: length 0.44(0.40–0.50), width 0.60(0.45–0.60). Hemelytra: length 1.4(1.1–1.5). Fore femora armed on distal third with 2 small, thorn-like spines.

Genitalia. Female. Spermatheca (Fig. 1h) short, distal part with about 2 turns. Male. Pygophore as in Fig. 1i. Paramere as in Fig. 1j. Aedeagus (Fig. 1k): wings of ejaculatory reservoir slightly reduced (Fig. 1l).

MATERIAL EXAMINED. Holotype ♂, allotype (data in original description). **ND.** Kamo, nr Whangarei, 1♂2♀, 21 Jan 1966, A.W. Whangarei Heads, Bream I., 1♀, 24 Oct 1968, J.W. Hen and Chickens Is, Coppermine I., 7♂2♀, 30 Oct 1968, J.W. **CL.** Topatai Reserve, nr Tairua, 1♀, 19 Jan 1972, G.R. Mercury Is, Stanley I., 1♂2♀, 24 Nov 1972, G.R. Ohena Is, Koruenga I., 3♂3♀, 27 Nov 1972, G.R. Shoe I., 3♂2♀, 21 Apr 1967, J.A.F. Jenkins (AIM). The Aldermen, Ruamahua-iti I., 1♀, 12 Nov 1972, G.R.

REMARKS. Differs from *rudis* in the character keyed.

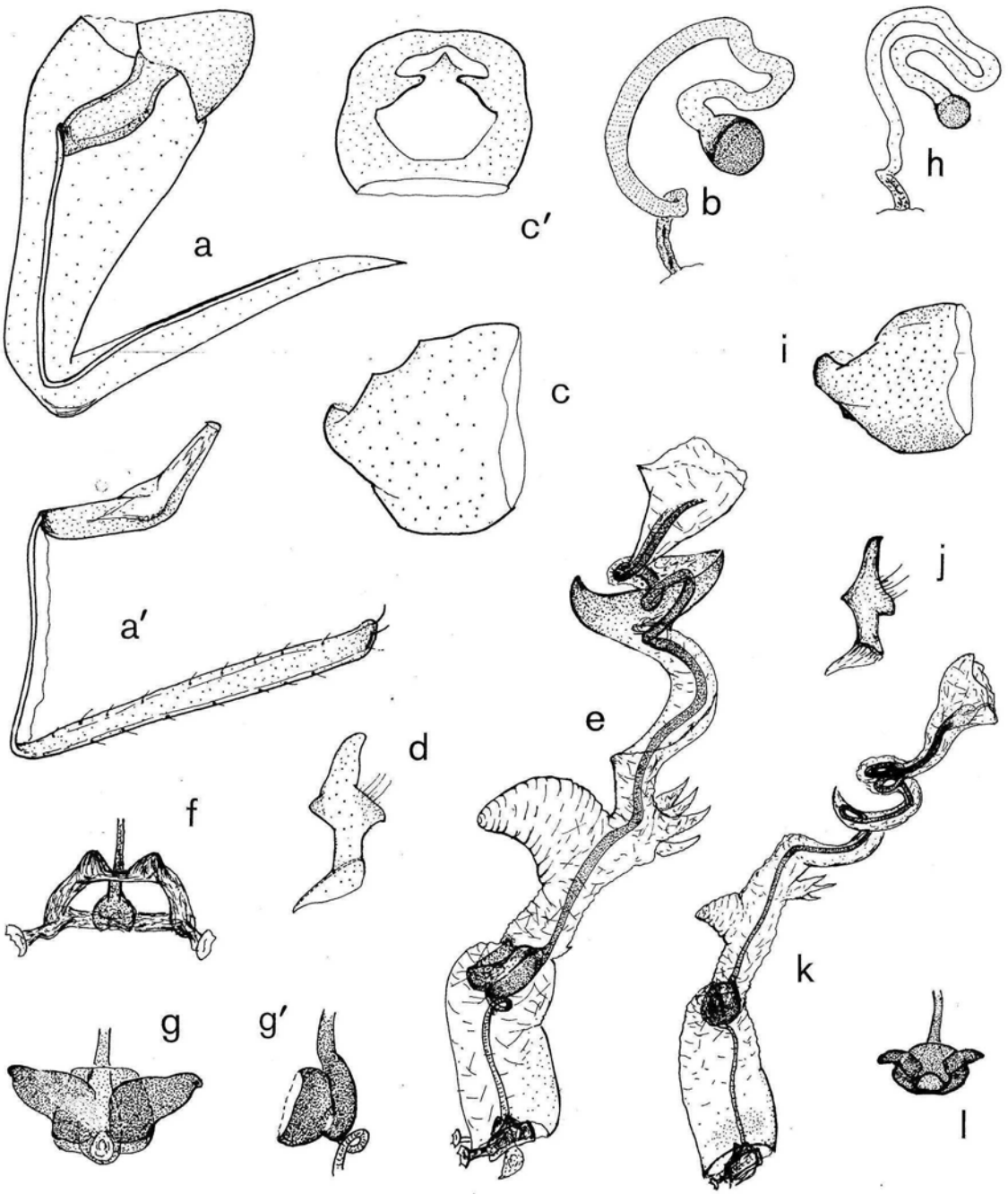


Fig. 1. *Trypetocoris* spp. **a–g′,** *rudis* (a–b, allotype; c–g′, paratype): (a,a′) ovipositor; (b) spermatheca; (c,c′) pygophore, lateral and dorsal views; (d) right paramere, dorsal or inner view; (e) aedeagus; (f) basal apparatus; (g,g′) ejaculatory reservoir, and body in lateral view. **h–l,** *separatus*: (h) allotype, spermatheca; (i) pygophore, lateral view; (j) right paramere, dorsal or inner view; (k) aedeagus; (l) ejaculatory reservoir.

Trypetocoris aucklandensis Woodward (Fig. 2)

Woodward, 1953, Rec. Canterbury Mus. 6: 194, 217–18, fig. 12.

Total length 2.8(2.7–3.3), width 1.5(1.5–1.7).

Head except tylus finely granulate above; length 0.44(0.40–0.50), width across eyes 0.69(0.60–0.65), interocular distance 0.49(0.46–0.50). Antennae: segments II and III slender, gradually incrassate distad; length of segments – I missing in holotype (0.40–0.44), II 0.49(0.43–0.48), III 0.36(0.30–0.37), IV 0.50(0.36–0.46). Labium exceeding middle coxae; length of segments – I 0.44(0.42–0.45), II 0.44(0.40–0.45), III 0.32(0.32–0.36), IV 0.27(0.25–0.30).

Pronotum: lateral margins nearly straight for most of length, gradually diverging caudad; length 0.69(0.62–0.65), width at posterior margin 1.10(1.10–1.20). Scutellum: length 0.87(0.65–0.75), width 0.89(0.72–0.78). Hemelytra: length 1.8(1.6–1.8). Fore femora armed on distal half with 3 (occasionally 2) thorn-like spines; fore tibiae in male almost straight, armed with minute tubercles visible only at high magnification.

Genitalia. Female. Spermatheca as in Fig. 2a. Male. Pygophore as in Fig. 2b. Paramere as in Fig. 2c. Aedeagus (Fig. 2d): body and wings of ejaculatory reservoir as in Fig. 2e; vesica with 1 or 2 small, inflatable lobes ventrally near level of large dorsal inflatable lobe; gonoporal process distal to helicoid process without prominent inflatable lobe, but with sheath.

MATERIAL EXAMINED. Holotype ♂, allotype, ♀ paratype (data in original description). **ND.** Mangamuka Rd, 9♂6♀, 21 Jan 1972, G.R.; ——Saddle, 380 m, 1♂, 5 Nov 1967, J.T. & J.M. Omahuta Kauri Reserve, 3♂3♀, 21 Jan 1972, G.R. Puketi State Forest, Manginangina Scenic Reserve, 6♂5♀, 21 Jan 1972, G.R. Moerewa, Kawakawa, 2♂, 20 Jan 1972, G.R. Waipoua Kauri Forest, 4♂8♀, 10 Jan 1966 & 19 Jan 1972, G.R., J.T. & J.W. Trounson Park, 1♀, 19 Jan 1972, G.R.

REMARKS. Differs from other species of *Trypetocoris* in the characters keyed, and in lacking a prominent inflatable lobe on the gonoporal process distal to the helicoid process. Recorded from altitudes of 300–900 m.

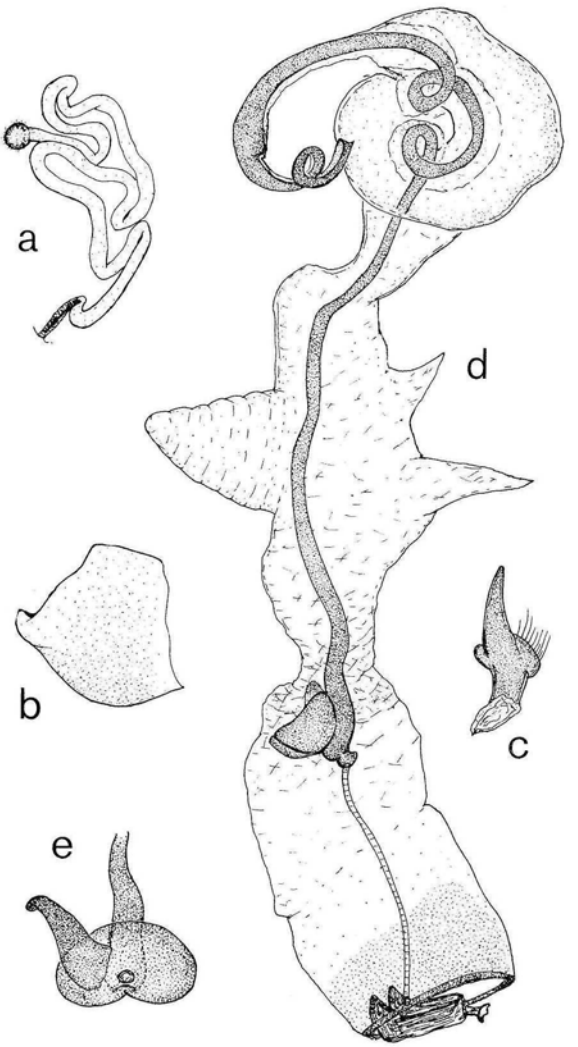


Fig. 2. *Trypetocoris aucklandensis* (a, paratype; b–e, holotype ♂): **a,** spermatheca; **b,** pygophore, lateral view; **c,** right paramere, dorsal or inner view; **d,** aedeagus; **e,** ejaculatory reservoir, body and right wing.

Genus *Forsterocoris* Woodward

Woodward, 1953, Rec. Canterbury Mus. 6: 209. –Slater, 1964, Catalogue Lygaeidae World 2: 862. –Ashlock, 1964, Ann. ent. Soc. Am. 57: 421 (*"Fosterocoris"*; in Targaremini). –Eyles, 1967, N.Z. Jl Sci. 10: 421 (*"Fosterocoris"*; keyed).

TYPE-SPECIES: *Forsterocoris bisinuatus* Woodward, by original designation.

Head wider than pronotum across anterior angles. Segment IV of antennae slightly the longest. Labium usually nearing hind coxae. Pronotum relatively short, before base with a weak or strong sulcus and with sides shallowly or deeply incurved; lateral carinae at most weakly acute. Prosternum with a minute tubercle anterior to median carina between fore coxae. Scutellum equilateral or slightly longer than wide. usually with distinct depression in centre of disc. Groove immediately outside metathoracic scent-evaporating area usually distinct. Hemelytra usually markedly convex, extending to middle or posterior margin of tergum VI or even on to tergum

VII; distal margin rounded or nearly rounded; membrane absent or, if vestigial, represented by pale spot. Fore femora armed in distal third with 1–3 small, thorn-like spines on inner aspect, size and number of spines variable even within a series of specimens; fore tibiae unarmed or weakly armed in male. Anterior abdominal scent-gland scar up to 1½× as wide as posterior 2, which are subequal. Trichobothria on sterna III and IV moderately distinct, though reduced.

Genitalia. Female. Proximal part of spermatheca narrower than distal part (e.g., Fig. 3a). Male. Paramere (e.g., Fig. 3c) with large ventral and small dorsal lobes; several bristles along ventral lobe region. Aedeagus (e.g., Fig. 3d): ejaculatory reservoir moderately or much reduced (e.g., Fig. 3e); helicoid process with 1–2 coils; gonoporal process distal to helicoid process usually gradually thickened.

REMARKS. *Regatarma salmoni* Woodward is transferred to *Forsterocoris* on the basis of several important characters, listed in the generic key and diagnosis.

Key to species of *Forsterocoris*

1. Labial segment III shortest, about half as long as I; pronotum with a strong sulcus before base and with sides deeply incurved 2
—Labial segment IV shortest, segment III about one-quarter shorter than I; pronotum with a shallow sulcus before base and with sides shallowly incurved 3
2. Body with long hairs forming a furry down; pronotum without subapical sinuation; fore femora commonly armed with 3 spines; gonoporal process distal to helicoid process encased in distinct inflatable lobe (Fig. 3h) ..... *sinuatus*
—Body with short, recumbent hairs; pronotum with subapical sinuation; fore femora commonly armed with 1 or 2 spines; gonoporal process distal to helicoid process not encased in inflatable lobe (Fig. 3d) ..... *bisinuatus*
3. Pale markings distinct on both pronotum and hemelytra; hemelytra long, extending on to tergum VII; fore tibiae weakly armed in ♂; distal part of spermatheca short, crescent-shaped; ejaculatory reservoir much reduced ..... *salmoni*
—Pale markings distinct only on hemelytra (Fig. 3k); hemelytra short, extending to middle of tergum VI; fore tibiae unarmed in ♂; distal part of spermatheca long, with 9–15 turns and loops (Fig. 3l); ejaculatory reservoir slightly reduced Fig. 3o) ..... *stewartensis*

Forsterocoris bisinuatus Woodward (Fig. 3a–e)

Woodward, 1953, Rec. Canterbury Mus. 6: 194, 198, 204, 209–10, fig. 6, 22, 36.

Total length 2.6(2.4–3.1), width 1.2(1.1–1.3).

Head length 0.43(0.42–0.52), width across eyes 0.64(0.60–0.65), interocular distance 0.45(0.42–0.51). Antennae: length of segments – I 0.31(0.30–0.32), II 0.37(0.34–0.40), III distal 2 segments missing in holotype (0.28–0.31), IV (0.39–0.45). Labium: length of segments – I 0.40(0.37–0.44), II 0.39(0.33–0.42), III 0.22(0.21–0.23), IV 0.27(0.24–0.30).

Pronotum: length 0.54(0.46–0.56), width at posterior margin 0.90(0.82–0.90). Scutellum: length 0.50(0.42–0.54), width 0.50(0.43–0.53). Hemelytra: length 1.4(1.2–1.5). Fore femora armed with 1 or 2 minute spines in both sexes, but male commonly with 2 spines and female with 1.

Genitalia. Female. Spermatheca (Fig. 3a) long; distal part with 6–10 irregular, loose turns; distal bulb elongately spherical, weakly pigmented, with weak constriction proximal to middle. Male. Pygophore as in Fig. 3b. Paramere (Fig. 3c) with blade slightly curved. Aedeagus (Fig. 3d): ejaculatory reservoir reduced (Fig. 3e).

INTRASPECIFIC VARIATION. Coloration varies considerably; the yellowish costal patch towards the apex of the hemelytra is sometimes indistinct or even absent. In specimens from the Hollyford Valley the punctures on the pronotum and hemelytra are obscure.

The specimens from Gouland Downs, Nelson, differ as follows. Generally slightly smaller. Pronotum: sulcus before base sometimes shallower; punctures sometimes more distinct; posterior margin slightly more concave. Fore femora in both sexes slightly more swollen, armed with 1 obsolete spine.

The specimens from the Paparoa Range differ as follows. Dorsal surface entirely castaneous or black, pale areas indistinct or even absent. Antennae, labium, and legs uniformly castaneous. Generally longer (3.3–3.5), width 1.4–1.6. Head length 0.47–0.60, width across eyes 0.66–0.72, interocular distance 0.52–0.57. Antennae slender; length of segments – I 0.40–0.43, II 0.46–0.53, III 0.36–0.43, IV 0.50–0.56. Labium: length of segments – I 0.50–0.56, II 0.46–0.53, III 0.26–0.30, IV 0.28–0.29. Pronotum: punctures obsolete; length 0.63–0.73, width at posterior margin 1.07–1.20. Scutellum: punctures obsolete; length 0.60–0.66, width 0.57–0.60. Hemelytra: punctures obsolete; length 1.7–1.9. Fore femora in both sexes less swollen, armed with 3 small, spur-like, variably developed spines. Median apodeme on sternum VII in male reduced, shorter than sternum VI. Trichobothria on sterna III and IV more reduced. Spermatheca generally wider.

MATERIAL EXAMINED. Holotype ♂, ♂ and ♀ paratypes (Governor's Bush, Mt. Cook; data in original description). **NN.** Gouland Downs [Blue Duck Ck, 760 m], 5♂1♀, 5 Feb 1966, J.T. Denniston: 640 m, 2♀; road to ——, 228–365 m, 2♀; 1 Nov 1965, J.T. **BR.** Paparoa Ra: Lochnagar Ridge, 1200 m, 1♂3♀; Mt. Dewar, 1060–1220 m, 1♂2♀; 10 Dec 1969, J.W. Rahu Saddle, W side, 487 m, 1♂, 1 Jun 1965, J.T. **WD.** Franz Josef, Gibbs Hills, 316 m, 1♀, 6 Dec

1966, A.W. Haast: 6 km S, 1 ♀, 26 Mar 1967, A.W.; ——Pass, 548 m, 1 ♂, 28 Feb 1966, G.K.; 1 ♂, 11 Nov 1968, J.T.; E side, 517 m, 2 ♂, 28 Oct 1966, J.T. **SC.** Hakataramea Pass, 548 m, 1 ♀, 28 Feb 1966, J.T. **FD.** Hollyford Vly: Key Summit, 548 m, 1 ♂, 11 Dec 1966, A.W.; Lower ——, below Hidden Falls, 7 ♂ 5 ♀, 14 Jan 1967, A.W. Milford area, Cleddau Canyon, 304 m, 3 ♂ 1 ♀, 1 Nov 1966, J.T. Eglinton Vly: L. Gunn, 1 ♀, 30 Oct 1966, J.T.; Cascade Lodge, 1 ♂, 10 Jan 1967, A.W. **DN.** Mt. Maungatua, 609 m, 1 ♀, 14 Jan 1965, G.K. **SL.** Tapanui Forest, Black Gully, 1 ♀, 13 Sep 1968, J.W. Mokoreta-Clinton Rd 18 km SW of Clinton, 1 ♂, 3 Nov 1966, J.T.

REMARKS. Recorded from altitudes of 228–1220 m.

Forsterocoris sinuatus Woodward (Fig. 3f–i)

Woodward, 1953, Rec. Canterbury Mus. 6: 194, 198, 204, 211, fig. 7, 23, 37.

Total length 2.8(2.8–3.4), width 1.3(1.3–1.6).

Head length 0.45(0.46–0.50), width across eyes 0.63(0.63–0.70), interocular distance 0.50(0.50–0.53). Antennae: length of segments – I 0.30(0.31–0.33), II 0.40(0.39–0.45), III 0.35(0.33–0.36), IV 0.43(missing in specimens measured). Labium: length of segments – I 0.42(0.41–0.46), II 0.39(0.40–0.42), III 0.23(0.23–0.25), IV 0.27(0.26–0.28). Pronotum: length 0.61 (0.64–0.68), width at posterior margin 1.00(1.00–1.16). Scutellum: length 0.50(0.50–0.60), width 0.44(0.45–0.58). Hemelytra: length 1.5(1.6–1.9).

Genitalia. Female. Spermatheca (Fig. 3f) short, distal part crescent-shaped. Male. Pygophore nearly flat posteroventrally in lateral view. Paramere as in Fig. 3g; blade nearly straight, widest near midlength. Aedeagus (Fig. 3h): ejaculatory reservoir greatly reduced (Fig. 3i).

INTRASPECIFIC VARIATION. Coloration varies slightly even within a single series of specimens, particularly in the white or sordid yellow spots on the hemelytra.

MATERIAL EXAMINED. Holotype ♂, ♂ and ♀ paratypes (data in original description). **FD.** Eglinton Vly, Mackays Stm, 1 ♂ 3 ♀, 30 Oct 1966, J.T. Turret Ra., Wolfe Flat, 600–800 m, 2 ♂ 1 ♀, 23 Jan 1970, J.M. Hunter Mts W of Borland Saddle, 760 m, 1 ♂ 1 ♀, 12 Jan 1970, J.T. L. Hauroko, National Park boundary, 152 m, 1 ♂ 1 ♀, 2 Nov 1966, J.T. **SL.** Maclennan, 30 m, 1 ♂, 13 Feb 1968, J.T.

REMARKS. To some extent sympatric with *bisinuatus*. Recorded from altitudes of 30–800 m.

Forsterocoris salmoni (Woodward) (Fig. 3j)

Woodward, 1953, Rec. Canterbury Mus. 6: 202–4, fig. 33 (*Regatarma*).

[Dimensions: holotype, followed by allotype (when different) in parentheses.] Total length 3.2, width 1.5. Pronotum, scutellum, and hemelytra covered with very short, recumbent, pale hairs. Yellow or whitish areas present on both pronotum and hemelytra, pattern as in original description.

Head length 0.47(0.44), width across eyes 0.63(0.64), interocular distance 0.49(0.50). Antennae: length of segments – I 0.36(0.34), II 0.46(0.49), III 0.40(distal 2 segments missing in allotype), IV 0.46. Labium: length of segments – I 0.47(0.45), II 0.46(0.45), III 0.36, IV 0.30(0.29).

Pronotum before base with a shallow sulcus and with sides shallowly incurved; lateral margins moderately acute, less rounded anteriorly; length 0.74 (0.67), width at posterior margin 1.20. Scutellum: length 0.66, width 0.60. Hemelytra less markedly convex than in *bisinuatus* and *sinuatus*, extending on to tergum VII; length 1.6. Fore tibiae of male with minute tubercles.

Genitalia. Spermatheca: distal bulb as in Fig. 3j. Other details as for *sinuatus*.

MATERIAL EXAMINED. Holotype ♂, allotype (data in original description). **SL.** Dipton, Caroline Hill, 304 m, 1 ♀, 12 Feb 1968, J.T.

REMARKS. Resembles *F. sinuatus*, but differs in the characters described above.

Forsterocoris stewartensis n.sp. (Fig. 3k–o)

Total length 3.2(3.0–3.6), width 1.4(1.3–1.6). Dorsal ground colour uniform reddish brown. Hemelytra: in male with pale areas generally as in Fig. 3k; in female distalmost pale area greatly enlarged to merge with intermediate area, apicad of this fuscous except for inner third and margins of pale areas. Antennae and legs generally yellowish brown. Bases of femora, apex of labium, distal area of antennal segment III and all of IV dark brown. General coloration darker in some type specimens. Some variation in intensity of pale areas and their margining areas. Pronotum, scutellum, and hemelytra covered with very short, recumbent, pale hairs.

Head length 0.50(0.45–0.53), width across eyes 0.66(0.63–0.72), interocular distance 0.47(0.46–0.53). Antennae: length of segments – I 0.34(0.33–0.37), II 0.50(0.41–0.54), III 0.44(0.34–0.46), IV 0.53(0.48–0.55). Labium: length of segments – I 0.51(0.50–0.54), II 0.50(0.46–0.52), III 0.34(0.34–0.40), IV 0.28(0.29–0.33).

Pronotum moderately sinuate near base; lateral margins narrowly carinate, gradually rounded anteriorly; collar and constriction between lobes moderately distinct, more so in male than in female; posterior margin shallowly concave in front of scutellum: length 0.73(0.66–0.73), width at posterior margin 1.15(1.07–1.26). Scutellum: length 0.54(0.48–0.67), width 0.52(0.50–0.64). Metathoracic scent-gland spout with groove less distinct than in other species of *Forsterocoris*. Hemelytra short, exposing part of tergum VI and all of VII; lateral margins narrowly carinate; posterior margins gradually rounded; punc-

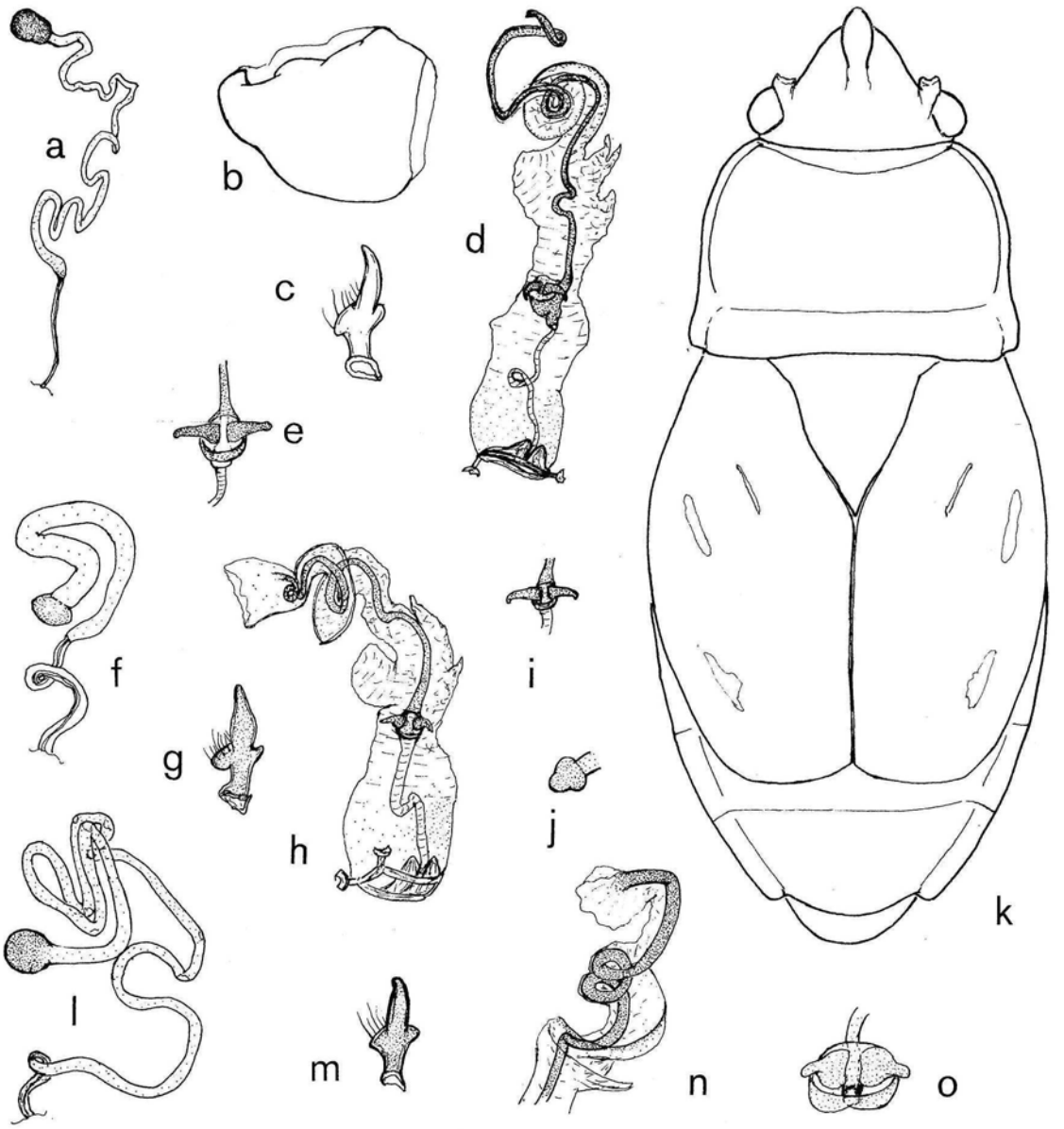


Fig. 3. *Forsterocoris* spp. **a–e,** *bisinuatus,* paratypes: (a) spermatheca; (b) pygophore, lateral view; (c) left paramere, dorsal or inner view; (d) aedeagus; (e) ejaculatory reservoir. **f–i,** *sinuatus,* paratypes: (f) spermatheca; (g) left paramere, dorsal or inner view; (h) aedeagus; (i) ejaculatory reservoir. **j,** *salmoni,* allotype, distal end of spermatheca. **k–o,** *stewartensis* (k, holotype ♂; l–o, paratypes): (k) dorsal outline of body, excluding appendages (length 3.2 mm); (l) spermatheca; (m) left paramere, dorsal or inner view; (n) distal part of aedeagus; (o) ejaculatory reservoir.

tures fuscous, minute, shallow, nearly irregular, similar to those in *salmoni;* membrane absent; length 1.5(1.4–1.7). Fore femora moderately incrassate, armed on distal third with 2–4 (commonly 3) small, spur-like spines; fore tibiae of male almost straight, unarmed.

Genitalia. Female. Spermatheca (Fig. 3l) long, with 9–15 sharp turns; distal part looped, slightly

distended towards subspherical distal bulb. Male. Pygophore moderately constricted on posteroventral aspect. Paramere as in Fig. 3m. Ejaculatory reservoir moderately developed (Fig. 3o). Gonoporal process distal to helicoid process gradually thickened distad, encased in inflatable lobe (Fig. 3n).

INTRASPECIFIC VARIATION. The general coloration is uniformly pale in one Big South Cape Island specimen (Feb 1969); the fore femora are uniformly yellow in some specimens. The left lateral margin of the pronotum in one female paratype is compressed and straightened (probably an artefact).

TYPE DATA. Holotype ♂, allotype, 11 paratypes (10♂1♀; 1 pair dissected): New Zealand, Stewart Island, Big South Cape Island, November 1968, J.G.R. McBurney (holotype, allotype and some paratypes, Entomology Division Coll., DSIR, Auckland; other paratypes AIM, BM, CM, NM, OM, UQ). Also 29 non-type specimens as follows. **SI.** Rakeahua Vly, 1♀, Feb 1968, G.K. Table Hill, 424–700 m, 1♂1♀, 14 & 16 Feb 1968, J.D., G.K., & J.M. Port Pegasus, Twilight Bay, 1♂1♀, 22 Feb 1968, G.K. Big South Cape I: SW, 106 m, 1♀, 22 Jan 1969; NE, 6♂5♀, Feb 1969; J.T. Long I: NE, 1♂1♀, 28 Feb 1969, J.T.; North Peak, 183–213 m, 5♂5♀, [26] Feb 1969, J.M.

REMARKS. Similar to *F. salmoni* in features such as the length of the 2 distalmost segments of the labium, the sulcus on the pronotum, and the punctation on the hemelytra, but differing from it mainly in the pattern of pale areas on the shorter hemelytra, the unarmed fore tibiae in the male, and the generally longer spermatheca. Recorded from altitudes from near sea level to 700 m.

Geratarma n.gen.

TYPE-SPECIES: *Geratarma eylesi* n.sp.

General body shape as in Fig. 4d. Pilosity generally similar to that of *Regatarma* Woodward. Segment III of labium less than 1¼× as long as IV. Pronotum more than 1½× wider posteriorly than long; lateral margins moderately carinate and explanate, shallowly rounded anteriorly; a shallow sulcus near base. Scutellum slightly wider than long. Hemelytra (e.g., Fig. 4d) extending only to anterior margin of tergum VI, exposing small median area of tergum V, most of VI, and all of VII; posterior margin straight or nearly straight; membrane absent. Fore tibiae in male nearly straight, unarmed. Anterior scent-gland scar up to 1½× as wide as posterior 2, which are subequal.

Genitalia. Female. Proximal part of spermatheca relatively short, distal part long, rather wider; distal bulb spherical, with indistinct partition (e.g., Fig. 4a). Male. Ejaculatory reservoir well developed. Gonoporal process distal to helicoid process gradually thickened before narrowing towards distal end, not encased in inflatable lobe or sheath (e.g., Fig. 4c).

The name *Geratarma* is an anagram of *Margareta* White.

REMARKS. Resembles *Forsterocoris* in having the pronotum at least 1½× wider posteriorly than long and the anterior abdominal scent-gland scar up to 1½× wider than the posterior 2, but differs in the wider scutellum, short, nearly truncate hemelytra, and well developed ejaculatory reservoir.

Regatarma tasmaniensis Woodward, 1956 should also be referred to *Geratarma*, from which it differs only in the extremely short membrane and the minute tubercles on the fore tibiae of the male.

Key to species of *Geratarma*

Pale areas on hemelytra indistinct; segment II of antennae slightly longer than IV; metathoracic scent-gland spout prominently raised above surface of evaporating area; larger species (4.0–4.4) ..... *eylesi*

Pale areas on hemelytra distinct, generally as in Fig. 4d; segment II of antennae slightly shorter than IV; metathoracic scent-gland spout only slightly raised above surface of evaporating area; smaller species (2.9–3.3) ..... *manapourensis*

Geratarma eylesi n.sp. (Fig. 4a–c)

Total length 4.0(4.1–4.4), width 1.8(1.9–2.0). Generally castaneous or fuscous brown. Large, triangular area on disc of head between eyes medially towards head base, pronotum, scutellum, and hemelytra uniformly reddish fuscous brown. Remainder of head, antennae, labium, and legs yellowish brown or brown. Eyes and apical area of labial segment IV black or fuscous. Abdomen shiny brown. Pronotum thickly covered with shiny pubescence; scutellum and hemelytra rather sparsely pilose.

Head length 0.50(0.53–0.60), width across eyes 0.76(0.76–0.83), interocular distance 0.60(0.60–0.62). Eyes reduced. Antennae: length of segments – I 0.44(0.44–0.50), II 0.63(0.63–0.70), III 0.53(0.54–0.56), IV 0.60(0.63–0.68). Labium nearing or reaching middle coxae; length of segments – I 0.53(0.54–0.60), II 0.52(0.56–0.60), III 0.43(0.43–0.44), IV 0.31(0.33–0.34).

Pronotum: anterior and posterior margins concave; collar moderately distinct, but obscured by dense hairs; calli shallowly depressed; constriction between lobes indistinct; posterior lobe region obsoletely punctate; length 0.80(0.83–0.86), width at posterior margin 1.40(1.50–1.60). Scutellum not depressed on disc; length 0.73(0.83–0.86), width 0.80(0.85–0.90). Hemelytra: length 1.9(2.0–2.1). Fore femora moderately incrassate, armed on distal half with 3 or 4 unequally spaced spines (holotype: 4 spines on right femur, only 3 on left).

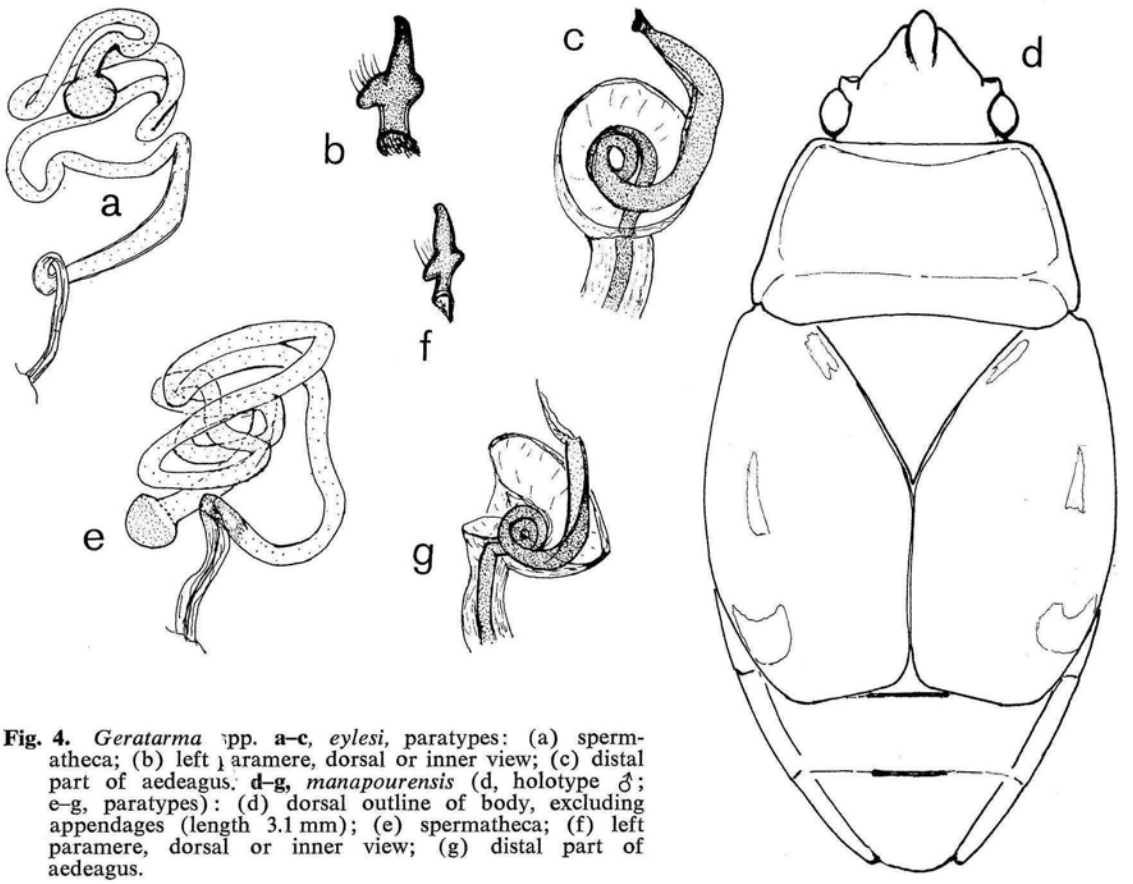


Fig. 4. *Geratarma* spp. **a–c**, *eylesi*, paratypes: (a) spermatheca; (b) left paramere, dorsal or inner view; (c) distal part of aedeagus. **d–g,** *manapourensis* (d, holotype ♂; e–g, paratypes): (d) dorsal outline of body, excluding appendages (length 3.1 mm); (e) spermatheca; (f) left paramere, dorsal or inner view; (g) distal part of aedeagus.

Genitalia. Female. Ramus I slightly over half as long as gonapophysis I. Spermatheca as in Fig. 4a. Male. Paramere as in Fig. 4b. Gonoporal process distal to helicoid process with distal end slightly twisted (Fig. 4c).

INTRASPECIFIC VARIATION. The coloration is variable. In one male paratype the pronotum (except calli) is generally paler than the scutellum and hemelytra. Teneral specimens are generally paler, the antennae, labium, legs, and most of the head being almost yellow.

TYPE DATA. Holotype ♂, 1♂ paratype: New Zealand, Otago, Wilmot Pass, Mt. Barber summit, 1342 m, *Chionochloa* and *Poa* humus, January 1970, A.C. Eyles (Manapouri Expedition) (Entomology Division Coll., DSIR, Auckland). Allotype, 5♂2♀ paratypes: same data except under stones near *Poa* sp. and *Chionochloa* sp. (allotype DSIR; paratypes AIM, BM, CM, NM, UQ). Other paratypes: 1♂, same data except 1330 m, *Chionochloa* and *Poa;* 1♂, same data except "mats"; (DSIR). Also 8 non-type specimens from Turret Range (Manapouri Expedition), as follows. Mt. Grey, 1100–1200 m, 3♂2♀, Jan. & [14] Feb 1970, J.M. & G.R. Wolfe Flat, 1100–1182 m, 3♂ (teneral), [16 & 24] Jan 1970, J.D., G.K., & J.T.

REMARKS. Named after Dr A.C. Eyles, collector of the type series, who has contributed much to our knowledge of the New Zealand Heteroptera. Recorded from high altitudes (1100–1350 m).

Geratarma manapourensis n.sp. (Fig. 4d–g)

Total length 3.1(2.9–3.3), width 1.4(1.3–1.5). Generally reddish brown. Antennae, labium, and legs yellowish brown. Segment IV of labium fuscous. Proximal areas of segments III and IV of antennae fuscous brown. Hemelytra with pale areas generally as in Fig. 4d. General body form as in Fig. 4d.

Head length 0.44(0.40–0.46), width across eyes 0.63(0.57–0.63), interocular distance 0.46(0.43–0.46). Antennae: length of segments – I 0.35(0.34–0.35), II 0.45(0.44–0.45), III 0.44(0.36–0.43), IV 0.48(0.46–0.49). Labium extending to or exceeding middle coxae but not exceeding hind coxae; length of segments – I 0.48(0.46–0.48), II 0.46(0.41–0.46), III 0.34(0.30–0.34), IV 0.27(0.26–0.27).

Pronotum: length 0.70(0.60–0.66), width at posterior margin 1.16(1.05–1.10). Scutellum: length 0.56(0.46–0.54), width 0.64(0.56–0.62). Hemelytra: length 1.5(1.3–1.5). Fore femora armed on distal third to half with 1–3 nearly equidistant but widely spaced spines; several minute tubercles exterior to spines in male.

Genitalia. Female. Spermatheca as in Fig. 4e. Male. Paramere as in Fig. 4f. Gonoporal process distal to helicoid process as in Fig. 4g. Other details as for *eylesi*.

INTRASPECIFIC VARIATION. Coloration is variable even within the type series: collar region, midline and posterior lobe region of pronotum, interior two-thirds of hemelytra, and margins and midline of scutellum darker (holotype); dorsum uniformly reddish brown, segments III and IV of antennae fuscous brown (some paratypes); apical third of hemelytra fuscous (some paratypes, particularly females); apex of scutellum fuscous (some female paratypes).

TYPE DATA. New Zealand, Otago, January 1970 (Manapouri Expedition). Holotype ♂: Wilmot Pass. 630–800 m, "mats", J.S. Dugdale (Entomology Division Coll., DSIR, Auckland). Allotype: Wilmot Pass-Deep Cove. A.E. (DSIR). Paratypes: 1♂, same data as holotype; 1♂2♀, type loc., 300–630 m, J.T.; 1♀, type loc., under grass above bush line, J.D.; 2♂, Wilmot Pass-Deep Cove, J.T.; (AIM, BM, CM, DSIR, NM, OM, UQ). Also 3 non-type specimens, as follows. Manapouri Expedition, Jan 1970: West Arm (L. Manapouri), 1♀, A.E.; Doubtful Sound [Deep Cove], 2♂, A.E. & J.T.

REMARKS. Differs from *G. eylesi* in the characters keyed. Recorded from altitudes of 300–800 m.

Paratruncala n.gen.

TYPE-SPECIES: *Tomocoris insularis* Woodward, 1953, designated here.

Body about 2½× as long as wide. Pilosity similar to that of *Truncala* Woodward. Antennae: length of segments in descending order – IV, II, I, III. Labium: basal segment reaching base of head; segments I and II subequal, about 1½× as long as IV; segment III less than 1¾× as long as IV. Labrum about one-third as long as basal segment of labium. Pronotum about 1¾× as wide posteriorly as long, slightly narrower posteriorly than at midlength; lateral margins nearly straight for most of length, narrowly carinate; constriction between lobes shallowly demarcated. Hemelytra short, entirely exposing terminal 3 tergites, truncate, sparsely and finely punctate; membrane absent. Fore femora slightly swollen, armed with spur-like spines; fore tibiae in male almost straight, unarmed. Dorsal abdominal scent-gland scars subequal in width. Suture between terga IV and V abruptly curved cephalad before joining connexivum.

Genitalia. Female. Ramus I extending to three-quarters length of gonapophysis I. Spermatheca robust (Fig. 5a); proximal part short, narrow; distal bulb with distinct subproximal partition. Male. Paramere with well developed blade and lobes. Aedeagus with well developed ejaculatory reservoir; gonoporal process distal to helicoid process with prominent inflatable lobe.

REMARKS. Resembles *Truncala* Woodward (particularly species *sulcata* Woodward) in general body form, pilosity, and the nature of the hemelytra, but differs in having segment IV of the antennae longer than segment II; the pronotal constriction and sulcus less distinct; the scutellum slightly wider than long; the fore femora only slightly swollen, and the fore tibiae almost straight and unarmed in the male; and the gonoporal process distal to the helicoid process with a prominent inflatable lobe.

Paratruncala insularis (Woodward) (Fig. 5)

Woodward, 1953, Rec. Canterbury Mus. 6: 194, 198, 204, 213–14, fig. 9, 25, 39 (*Tomocoris*).

Total length 2.9(2.5–2.7), width 1.1(0.9–1.0). Body and appendages covered with long, pale, sparse, suberect hairs, longer on pronotum and hemelytra.

Head length 0.48(0.37–0.40), width across eyes 0.60(0.50–0.51), interocular distance 0.52(0.43). Antennae: segment III dumb-bell-shaped, IV incrassate towards middle; length of segments (antennae missing in holotype) – I (0.36–0.38), II (0.39–0.40), III (0.30–0.31), IV (0.41–0.45). Labium: length of segments – I 0.48(0.40), II 0.52(0.39–0.40), III 0.40 (0.30–0.33), IV 0.28(0.26).

Pronotum: length 0.68(0.50–0.53), width at posterior margin 0.84(0.66). Scutellum: length 0.40 (0.31–0.35), width 0.48(0.38–0.40). Hemelytra: length 1.0(0.9). Fore femora with 2 small, thorn-like spines on distal third.

Genitalia. Female. Spermatheca (Fig. 5a) short; distal part with about 2 loose turns; distal bulb subspherical. Male. Pygophore as in Fig. 5b,b'. Paramere (Fig. 5c) with pointed blade. Aedeagus (Fig. 5d) generally short, robust; phallotheca weakly pigmented near base; body and wings of ejaculatory reservoir as in Fig. 5e–e''.

MATERIAL EXAMINED. Holotype ♀ (data in original description). **Three Kings Is,** Great I: NE of Castaway Camp, 80 m, 6♂2♀, 22 Nov 1970, G.K. & G.R.; Tasman Valley, 240 m, 2♂1♀, 25 Nov 1970, J.W.

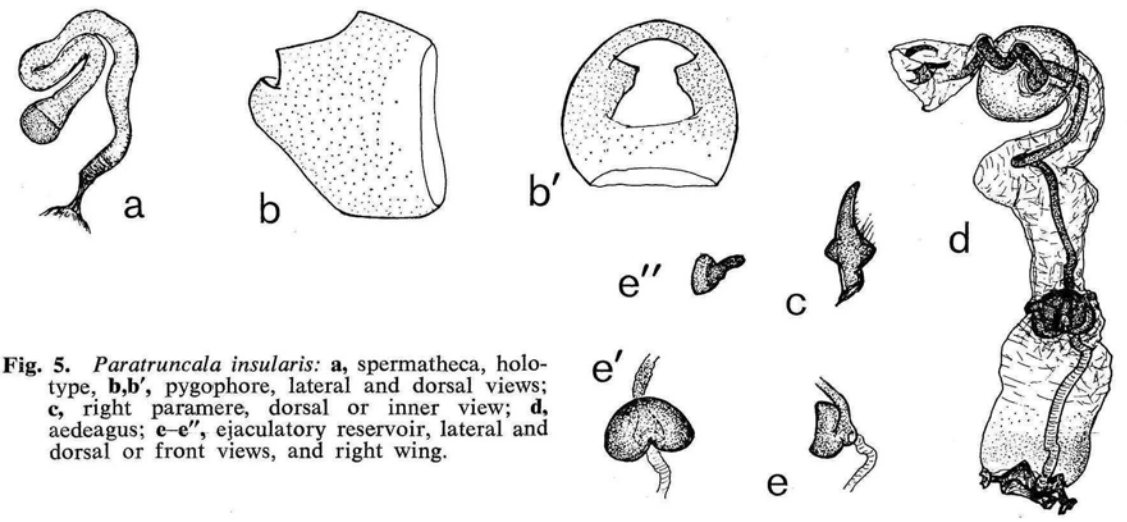


Fig. 5. *Paratruncala insularis:* **a,** spermatheca, holotype, **b,b′,** pygophore, lateral and dorsal views; **c,** right paramere, dorsal or inner view; **d,** aedeagus; **e–e″,** ejaculatory reservoir, lateral and dorsal or front views, and right wing.

Genus *Truncala* Woodward

Woodward, 1953, Rec. Canterbury Mus. 6: 203, 205. –Slater, 1964, Catalogue Lygaeidae World 2: 869. –Ashlock, 1964, Ann. ent. Soc. Am. 57: 421 (in Targaremini). –Eyles, 1967, N.Z. Jl Sci. 10: 421 (keyed).

Arrategma Woodward, 1953, Rec. Canterbury Mus. 6: 208 (as subgenus of *Truncala,* with *T. sulcata* Woodward as monotype). **New synonymy.**

TYPE-SPECIES: *Truncala hirsuta* Woodward, by original designation.

Antennae: segment III almost subfusiform, gradually thickening apicad, narrowed at ends; segment II scarcely or up to ¼ longer than IV. Labium reaching or exceeding middle coxae; segment II subequal to I, longer than III, IV the shortest. Pronotum: sides incurved before base, scarcely or up to 1½× as wide posteriorly as long in male; anterior lobe region slightly longer and more gibbous in male. Fore femora slightly more incrassate in male, armed with 1–4 thorn-like spines, the number variable even on either leg of same individual, usually also with several minute tubercles exterior to spines in male; fore tibiae usually with 1 row of thorn-like tubercles in male. Hemelytra usually truncate; apical margin straight or gradually and shallowly convex (e.g., Fig. 7a); membrane absent, vestigial, or distinct and narrow flap-like; corium with punctures irregularly or almost regularly arranged, impunctate along costal margin and usually also at outer apical angle. Dorsal abdominal scent-gland scars subequal or slightly widening cephalad. Submedian trichobothria on sternum IV arranged in linear series.

Genitalia. Female. Gonapophysis II slender, spatulate (e.g., Fig. 6b). Spermatheca (e.g., Fig. 6a) with generally long, tubular distal part and a distinct distal bulb. Male. Paramere (e.g., Fig. 6d) with well developed blade and lobes. Aedeagus (e.g., Fig. 6e): phallotheca usually weakly pigmented ventrally, ejaculatory reservoir complete, well developed; vesica with a large dorsal inflatable lobe; gonoporal process distal to helicoid process usually more pigmented and gradually thickened, and encased in an indistinct or moderately developed inflatable sheath.

REMARKS. Subgenus *Arrategma* was erected as being smaller than typical *Tuncala* and in having antennal segments II and III subequal, the sides of the pronotum more strongly incurved before the base, and the scutellum smaller. All 20 specimens of *T.* (*A.*) *sulcata* measured have segment II of the antennae slightly longer than IV. The sides of the pronotum are somewhat variably incurved before the base in different species of *Truncala,* and the strongly incurved condition in *sulcata* appears simply to be the extreme of this character. Finally, there is no significant difference in the length ratios of pronotum to scutellum between *sulcata* and other species of *Truncala.* On this evidence, retention of the subgeneric division of *Truncala* seems unwarranted.

Key to species of *Truncala*

1. Fore tibiae of ♂ unarmed; membrane present and distinctly demarcated (Fig. 7a); (insular species) ..... *insularis*
   —Fore tibiae of ♂ armed with 1 row of thorn-like tubercles; membrane absent, or if present inconspicuous and indistinctly demarcated 2
2. Pronotum in ♂ less than 1½× as wide posteriorly as long, sides strongly incurved before base; spermatheca with relatively long proximal part and a distinct constriction on distal bulb (Fig. 6k); gonoporal process distal to helicoid process encased in moderately developed inflatable sheath (Fig. 6n) ..... *sulcata*

—Pronotum in ♂ up to 1½× as wide posteriorly as long, sides shallowly incurved before base; spermatheca with relatively short proximal part and without a distinct constriction on distal bulb (e.g., Fig. 6a); gonoporal process distal to helicoid process naked or encased in weakly developed inflatable sheath (e.g., Fig. 6e) 3

3. Hemelytra generally testaceous; metathoracic scent-gland spout narrow, peritreme scarcely raised above surface of evaporating area; paramere blade pointed at apex (Fig. 6g); smaller (3.1–4.7) and less hirsute species; (membrane present although greatly reduced) ..... *hirta*

—Hemelytra generally yellow or pale yellowish brown; metathoracic scent-gland spout wider, peritreme distinctly raised above surface of evaporating area; paramere blade bluntly rounded at apex (Fig. 6d); larger (4.1–5.8) and more hirsute species ..... *hirsuta*

Truncala hirsuta Woodward (Fig. 6a–e)

Woodward, 1953, Rec. Canterbury Mus. 6: 194, 198, 204–6, fig. 4, 16, 20, 34.

Total length 4.1(4.1–5.8), width 1.7(1.7–2.3).

Head length 0.70(0.63–0.74), width across eyes 0.85(0.90–0.96), interocular distance 0.63(0.66–0.68). Antennae: length of segments – I 0.52(0.57–0.61), II 0.76(0.76–0.80), III (distal 2 segments missing in holotype) (0.59–0.63), IV (0.67–0.69). Labium: length of segments – I 0.62(0.66–0.73), II 0.58(0.63–0.66), III 0.42(0.43–0.47), IV 0.40(0.41–0.43).

Pronotum: length 0.95(1.00–1.16), width at posterior margin 1.24(1.46–1.53). Scutellum: length 0.76(0.83–0.93), width 0.70(0.78–0.80). Hemelytra: length 1.7(1.9–2.2). Fore femora armed with 2 or 3 spines, if 3, proximalmost greatly reduced; fore tibiae in male slightly curved, armed with tubercles of variable size and spacing.

Genitalia. Female. Ramus I traversing slightly over half of gonapophysis I; gonapopyhsis II as in Fig. 6b. Spermatheca (Fig. 6a) with 6–8 loose turns; distal part ending in a spherical distal bulb. Male. Pygophore as in Fig. 6c. Paramere as in Fig. 6d. Aedeagus as in Fig. 6e.

MATERIAL EXAMINED. Holotype ♂, ♀ paratype (Upper Rangitikei R.; data in original description). **ND.** Paihia, 1♂1♀, 4 Dec 1964, R.C. **CL.** Coromandel Pen., Tapu Hill, 1♂, 5 Apr 1967, R.C.; ——Ra., 3♂2♀, 19 Jan 1972, G.R. **WO.** Marokopa, 1♂, 4 Dec 1947, A.J. Healy (NM). Awakino Gorge, 1♀, 23 Jan 1972, G.R. **TO.** Tongariro, Ketetahi Track, 1005 m, 1♂, 30 Nov 1965, B.M. May. Ruapehu, lower track to Silica Springs, 1170 m, 1♂, 29 Dec 1965, J.T. **TK.** Mt. Messenger, 303 m, 1♀, 21 Jan 1966, A.W. Dawson Falls: 914 m, 1♂1♀, 23 Jan 1972, G.R.; Wilkies Pools Track, 974 m, 1♂, 16 Jun 1965, J.T. **HB.** Kaweka Ra., Makahu Spur, 969 m, 1♂, 24 Feb 1971, A.E. **WN.** Karori, 2♂, 22 Jan 1947, R.F. (NM).

REMARKS. The colour markings vary considerably even within series of specimens from a single locality. Recorded mainly from mountain ranges at altitudes up to 1170 m.

Truncala hirta Woodward (Fig. 6f–j′)

Woodward, 1953, Rec. Canterbury Mus. 6: 198, 204, 206–7, fig. 21, 35.

Total length 3.7(3.4–4.7), width 1.6(1.4–2.1).

Head length 0.62(0.50–0.62), width across eyes 0.80(0.73–0.80), interocular distance 0.55(0.52–0.56). Antennae: length of segments – I 0.46(0.43–0.53), II 0.64(0.57–0.70), III 0.46(0.43–0.51), IV 0.51(0.50–0.56). Labium: length of segments – I 0.54(0.46–0.62), II 0.53(0.50–0.63), III 0.43(0.34–0.46), IV 0.32(0.31–0.34).

Pronotum: length 0.90(0.78–1.00), width at posterior margin 1.18(1.08–1.33). Scutellum: length 0.72(0.63–0.80), width 0.67(0.60–0.72). Hemelytra: length 1.7(1.5–1.9). Fore femora armed with 3 spines, proximalmost strongest, distalmost somewhat reduced. Submedian trichobothria on abdominal sterna III and IV reduced.

Genitalia. Female. Ramus I traversing to three-quarters length of gonapophysis I; gonapophysis II slightly wider than in *hirsuta*. Spermatheca (Fig. 6f) slender, distal part with 4–8 loose turns. Male. Paramere (Fig. 6g) with broad, somewhat abruptly narrowed blade. Aedeagus (Fig. 6h): ejaculatory reservoir as in Fig. 6i; gonoporal process distal to helicoid process gradually thickened and pigmented, naked or encased in indistinct sheath.

Material of this species conforms to 2 geographical morphs, a truncate-winged form and a round-winged form. The round-winged form differs from the above description as follows: less hairy; apical margin of hemelytra gradually rounded (Fig. 6j′) instead of truncate (Fig. 6j); punctures on hemelytra more dense and distinct; scutellum slightly more raised above level of claval region; gonoporal process distal to helicoid process with a distinct inflatable lobe or sheath.

MATERIAL EXAMINED. **Truncate-winged Form.** Holotype ♂, ♂ and ♀ paratypes (Awakino Valley; data in original description). **MC.** Ribbonwood Ck nr Cass, 761 m, 2♀, 28 May 1954, J.D. Kowai Bush, 2♀, 1 Mar 1965, N.W. Rakaia, Pudding Hill: 2♂1♀; ——Stm, N bank, 3♀, S bank, 3♂; [1 & 9] Sep 1966, A.D. Lowe. Mt. Algidus: 547 m, 2♂1♀; Wilberforce R., 1♂ (incomplete) 3♀, 16 Mar 1965, G.R. & J.T. Mt. Hutt, McClennans Bush, 1♂4♀, 11 Dec 1973, G.K. **SC.** Peel Forest, 1♂, 27 Feb 1965, N.W. Waimate, Kelsey's Bush, 213 m, 2♂1♀, 20 Jan 1966, J.T. **MK.** Sebastopol Track, 1♂, A.E. **Round-winged Form. SD.** Opouri Saddle, 1♂1♀, 22 May 1964, J.T. Picton: 1♂, 10 Nov 1962, J.T.; Reservoir Reserve, 1♀, 22 Sep 1965, J.T.; Shakespeare Bay, 1♂2♀, 11 Aug 1969, J.M. Rarangi, 8♂2♀, 2 Sep 1969, G.K. **MB.** Wakamarina Vly, Mountain Camp Ck, 1♂1♀, 10 Feb 1967, J.T. Wairau R., SE side opp. St.

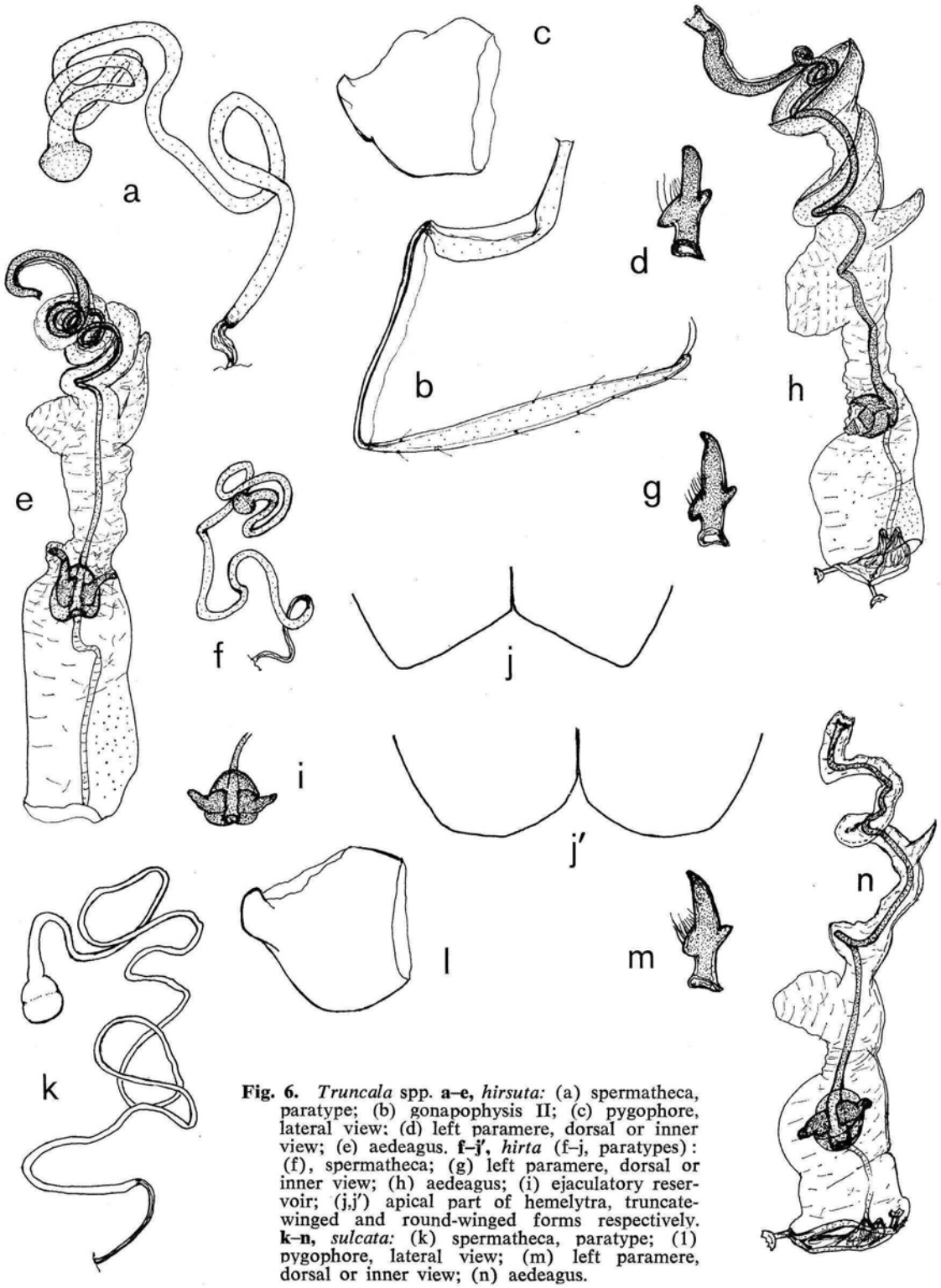


Fig. 6. *Truncala* spp. **a–e,** *hirsuta:* (a) spermatheca, paratype; (b) gonapophysis II; (c) pygophore, lateral view; (d) left paramere, dorsal or inner view; (e) aedeagus. **f–j′,** *hirta* (f–j, paratypes): (f), spermatheca; (g) left paramere, dorsal or inner view; (h) aedeagus; (i) ejaculatory reservoir; (j,j′) apical part of hemelytra, truncate-winged and round-winged forms respectively. **k–n,** *sulcata:* (k) spermatheca, paratype; (l) pygophore, lateral view; (m) left paramere, dorsal or inner view; (n) aedeagus.

Rowan's Well, 730 m, 1 ♀, 7 Sep 1966, L.P. Marchant. Head of Fabians Vly, 914 m, 1 ♂, 28 Oct 1963, J.T. **KA.** Rakautara Vly, 1 ♀, 29 Sep 1965. **NN.** Whangamoa: 1 ♀, 17 Nov 1966 (pit trap); ——Saddle, 364 m, 1 ♀, 26 Aug 1965, A.W. & J.T. Dun Mt./Dun Track: 4 ♂, 14 Feb 1942, A. Hamilton; 1 ♀, Apr 1945 (No. 926); 1 ♂, 14 Feb 1948 (No. 691); halfway betw. Third House and Mineral Belt, 1 ♂, 4 Sep 1964, G.K.; Third House, 2 ♀, Saddle, Wooded Peak, 1 ♀, and 1 ♂, 14 Sep 1971, G.R. Jenkins Hill summit, 760 m, 1 ♂4 ♀, 15 Oct 1965, N.W. **BR.** L. Rotoiti area: Tophouse, 1 ♂, 14 Feb 1957, E.G.; 530 m, 1 ♀, 17 Mar 1968; Mt. Robert Track, 786 m, 1 ♂, 8 Jun 1965, J.T.; 1 ♀, 23 Dec 1964, J.T.; 2 ♀, 21 Mar 1965, N.W. Grey Duck, 609 m, 2 ♀, 27 Jul 1965, J.T. & N.W. L. Rotoroa, 1 ♂, 13 Jan 1939, A. Hamilton.

Specimens from Port Underwood Saddle, Marlborough (4 ♂4 ♀, 1 Sep 1969, G.K.) differ from other round-winged specimens as follows: shorter body (3.1–3.6), much shorter and sparser body hairs, less posteriorly incurved pronotum.

REMARKS. Truncate-winged form recorded from altitudes of 213–761 m, round-winged form up to 914 m.

Truncala sulcata Woodward (Fig. 6k–n)

Woodward, 1953, Rec. Canterbury Mus. 6: 194, 208–9, fig. 5 (in subgenus *Arrategma*).

Total length 3.0(2.8–4.2), width 1.1(1.0–1.6).

Head length 0.50(0.50–0.67), width across eyes 0.57(0.56–0.73), interocular distance 0.46(0.43–0.56). Antennae: length of segments – I 0.42(0.43–0.57), II (distal 3 segments missing in holotype) (0.50–0.73), III (0.40–0.56), IV (0.46–0.66). Labium: length of segments – I 0.46(0.45–0.63), II 0.47(0.46–0.68), III 0.32(0.33–0.52), IV 0.29(0.26–0.34). Pronotum: length 0.80(0.66–0.94), width at posterior margin 0.83(0.75–1.02). Scutellum: length 0.62(0.43–0.63), width 0.50(0.43–0.62). Hemelytra: length 1.3(1.1–1.7). Fore femora armed usually with 2 or 3 spines, if 3, the distalmost 2 closer together.

Genitalia. Female. Ovipositor similar to that of *hirta*. Spermatheca (Fig. 6k) very long and slender; distal part with 10–20 irregular loose turns; distal bulb subspherical with distinct constriction near middle. Male. Pygophore as in Fig. 6l. Paramere (Fig. 6m) with broad, apically narrowed blade. Aedeagus (Fig. 6n): gonoporal process distal to helicoid process encased in moderately developed inflatable sheath.

INTRASPECIFIC VARIATION. There is considerable variation in the size, number, and spacing of the spines on the fore femora, and of the tubercles on the fore tibiae of the male. Female, D'Urville I. – 4 spines on left fore femur, only 2 on right; 2 specimens, Pelorus Bridge – 1 armed with 4 or 5 minute tubercles on distal half of fore tibiae, the other with only 2 small tubercles; male, Tadmor R., Kiwi – fore tibial tubercles indistinct.

MATERIAL EXAMINED. Holotype ♂, ♀ paratype (Snip Cove; data in original description). **SD.** D'Urville I., Kapowai, 1 ♂4 ♀, Apr 1971, F.A. Port Underwood Saddle, 3 ♂5 ♀, 1 Sep 1969, G.K. Picton, Reservoir Reserve, 1 ♂1 ♀, 22 Nov 1965, L.P. Marchant. Clova Bay, 1 ♂, 17 Mar 1970, J.T. Rarangi, 1 ♂1 ♀, 2 Sep 1969, G.K. **NN.** Ridge above Onekaka Iron Ore Pit, 6 ♂, 20 May 1967, F.A. Puramahoi, 1 ♂, 26 Oct 1965, L.P. Marchant. Sandy Bay: 1 ♂4 ♀, 17 Aug 1965, J.T. & A.W.; Marahau, 1 ♂, 15 Aug 1970, J.D. Takaka Hill, Canaan Saddle, Canaan side, 852 m, 1 ♂, 27 Feb 1967, J.T. Canaan, 1 ♂, 4 Feb 1965, L.P. Marchant. Totaranui, track to Canaan, 471 m, 1 ♂, 7 Oct 1965, J.T. Riwaka, 1 ♂1 ♀, 7 Jan 1942 (No. 610); ——Vly, 1 ♂, Sep 1970, J.D. Dovedale, 1 ♂, 11 Oct 1963, J.T. Wairoa Gorge, 1 ♂, 9 Nov 1962, J.T., 3 ♂3 ♀, 20 Oct 1971, G.R. Waimea, Eves Valley, Palmer's Bush, 8 ♂6 ♀, 20 Oct 1971, G.R. Nelson: Maitai, 1 ♂3 ♀, 4 Oct 1968; Botanical Hill, 5 ♂2 ♀, 10 & 26 Sep 1964; Brook Res., 1 ♀, 23 Jul 1964; J.T. Whangamoa Saddle, 360 m, 4 ♂1 ♀, 26 Aug 1965, A.W. & J.T. Tadmor R., Kiwi, 427 m, 1 ♂, 5 Aug 1969, J.T. **MB.** Pelorus Bridge: 2 ♂2 ♀, 10 Oct 1964, G.K.; 30 m, 1 ♂, 15 Oct 1965, L.P. Marchant; ——Reserve, 1 ♂, 2 Oct 1963, J.T. **BR.** L. Rotoroa, 1 ♀, 2 Apr 1965, N.W.

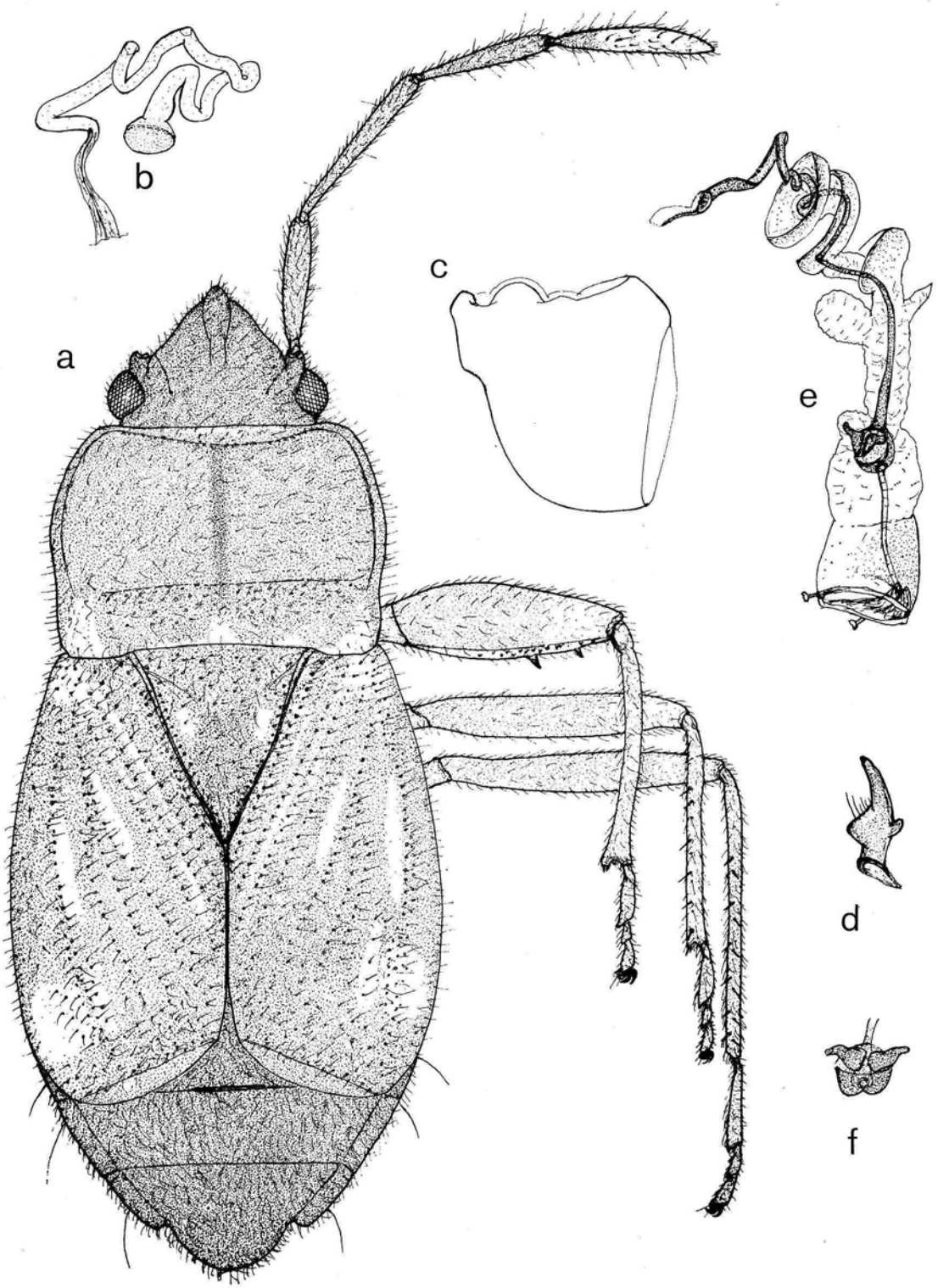
REMARKS. Recorded from altitudes of 15–852 m.

Truncala insularis n.sp. (Fig. 7)

Total length 3.8(3.4–4.3), maximum width 1.6(1.5–1.8). Generally fuscous brown. Abdominal venter shiny black. Most of antennal segment IV, spots along posterior margin of pronotum, 2 spots on disc of scutellum, and somewhat regular stripes and subcostal region near distal third of corium (not stippled in Fig. 7a) yellowish. Eyes reddish fuscous. Middle line on pronotum and most of apical half of scutellum fuscous. Coxae, about distal third of femora, tibiae, and tarsi brown. Membrane paler than corium. Body and appendages with thick, brushy covering of pale, shiny hairs. Trichobothrial hairs prominent. Particularly segments III and IV of antennae in addition with sparse erect hairs. Punctures hirsute.

Head length 0.60(0.50–0.60), width across eyes 0.81(0.76–0.85), interocular distance 0.53(0.53–0.58). Antennae: length of segments – I 0.50(0.47–0.56), II 0.70(0.66–0.79), III 0.53(0.51–0.55), IV 0.60(0.56–0.62). Labium: reaching or slightly exceeding middle coxae; length of segments – I 0.63(0.60–0.66), II 0.60(0.56–0.63), III 0.46(0.43–0.50), IV 0.32(0.28–0.33).

Fig. 7 *(opposite page). Truncala insularis*, a, holotype ♂, dorsal view (body length 3.8 mm); **b–f,** paratypes: (b) spermatheca; (c) pygophore, lateral view; (d) left paramere, dorsal or inner view; (e) aedeagus; (f) ejaculatory reservoir.



Pronotum: collar demarcated by 1 row of fine punctures; constriction between lobes indistinct; posterior lobe region nearly flat and more depressed than anterior lobe region; length 1.00(0.84–1.06), width at posterior margin 1.20(1.15–1.31). Scutellum with sparse faint punctures, those along margins distinct; length 0.85(0.76–0.96), width 0.70(0.60–0.80). Hemelytra: length 1.8(1.8–2.1); corium except broad outer margin finely punctate, usually in rows (see Fig. 7a), punctures becoming obsolete towards distal end; membrane narrow flap-like, devoid of hairs or punctures. Fore femora armed with 2 small spines in distal third or half; fore tibiae unarmed in male. Metathoracic scent-gland auricle as in *hirta*.

Genitalia. Female. Spermatheca (Fig. 7b) short; distal part with 6–11 irregular loose turns, slightly distended before joining the subspherical distal bulb. Male. Pygophore as in Fig. 7c. Paramere as in Fig. 7d. Aedeagus (Fig. 7e): ejaculatory reservoir prominent (Fig. 7f); gonoporal process distal to helicoid process gradually widened, slightly twisted and weakly pigmented towards distal end, and without an inflatable sheath.

INTRASPECIFIC VARIATION. There is considerable variation in the intensity of the colour markings, but the pattern is commonly close to that in Fig. 7a. In the allotype the distal third of the corium is darker. The number and size of spines on the fore femora is variable even within the type series; the distal spine may be reduced or absent on either leg.

TYPE DATA. Holotype ♂, allotype: New Zealand, Mercury Islands, Red Mercury Island, 24 November 1972, G.W. Ramsay (Entomology Division Coll., DSIR, Auckland). Paratypes (10♂4♀; 1 pair dissected): same data as holotype (BM, CM, DSIR, NM, OM, UQ). Also 20 non-type specimens, as follows. **CL.** Little Barrier I., 1♂1♀, 25 Aug–4 Sep 1958, J.W. (AIM). Mercury Is, Stanley I., 1♂, 23 Nov 1972, G.R. Ohena Is, Koruenga I., 2♂1♀, 27 Nov 1972, G.R. The Aldermen, Ruamahua-iti I., 9♂5♀, 8–12 Nov 1972, G.R.

REMARKS. Resembles *T. hirsuta* in general facies, yet differs from it and from other *Truncala* spp. in having the fore tibiae unarmed in the male, the membrane distinctly demarcated, and characteristic insular distribution.

Genus *Regatarma* Woodward

Woodward, 1953. Rec. Canterbury Mus. 6: 196–7. –Slater, 1964, Catalogue Lygaeidae World 2: 865. –Ashlock, 1964, Ann. ent. Soc. Am. 57: 421 (in Targaremini).

TYPE-SPECIES: *Regatarma forsteri* Woodward, by original designation.

General form of pronotum, scutellum, and hemelytra as in Fig. 8a. Labium: segment III 1¼–1½× as long as IV. Labrum about one-third as long as basal labial segment. Pronotum about as wide posteriorly as medially; posterior width up to 1½× median length; lateral margins narrowly carinate, rather abruptly rounded anteriorly; constriction between lobes indistinct; dorsally more convex in male. Scutellum equilateral or slightly longer than wide. Hemelytra moderately convex, extending to anterior margin or middle of tergum VI, broadly rounded posteriorly; membrane vestigial, represented only by pale spot. Dorsal abdominal scent-gland scars subequal or widening slightly cephalad. Trichobothria on abdominal sterna III and IV reduced.

Genitalia. Female. Ramus I traversing to half to three-quarters length of gonapophysis I. Spermatheca (e.g., Fig. 8b): proximal part short, as wide as distal part; distal bulb spherical or subspherical. Male. Paramere (Fig. 8d): dorsal lobe moderately developed. Ejaculatory reservoir (e.g., Fig. 8f) with well developed body and wings; gonoporal process distal to helicoid process gradually thickened distad, either naked or encased in thin inflatable sheath.

Regatarma forsteri Woodward (Fig. 8)

Woodward, 1953, Rec. Canterbury Mus. 6: 194, 197–9, 204, fig. 2, 18, 30, 32.
obsolescens Woodward, 1953, Rec. Canterbury Mus. 6: 200 (as ssp. of *forsteri*). **New synonymy.**
stephensis Woodward, 1953, Rec. Canterbury Mus. 6: 198, 200–1, fig. 19 (as ssp. of *forsteri*). **New synonymy.**

An attempt has been made in this study to analyse important genitalic characters, to test the validity of the several subspecies of *forsteri* recognised by Woodward (1953). Subspecies *obsolescens* and *stephensis* have been found to be only localised geographic variants of the nominate subspecies. However, they do exhibit some minor variations in both genitalic features (see below) and external morphology (indicated in original diagnoses).

Intensity and pattern of colour markings variable. Pale yellow or white spots or patches usually distinct on both pronotum and hemelytra, pattern generally as in Fig. 8a, but those on pronotum sometimes indistinct or merging into each other. In most Stephens Island specimens, hemelytra yellow, punctures brown to black, apical end black except for pale marginal spot, and disc more or less infuscated with brown or black spots or streaks.

Pilosity of scutellum and hemelytra variable. Hairs longer and erect or semi-erect in some Marlborough Sounds specimens; on corium longer and silky, forming a close down in most south Wellington specimens. Punctation on hemelytra variable. Punctures finer, on at least apical third obsolete in most south Wellington specimens; generally coarse and conspicuous in some north-east Nelson specimens.

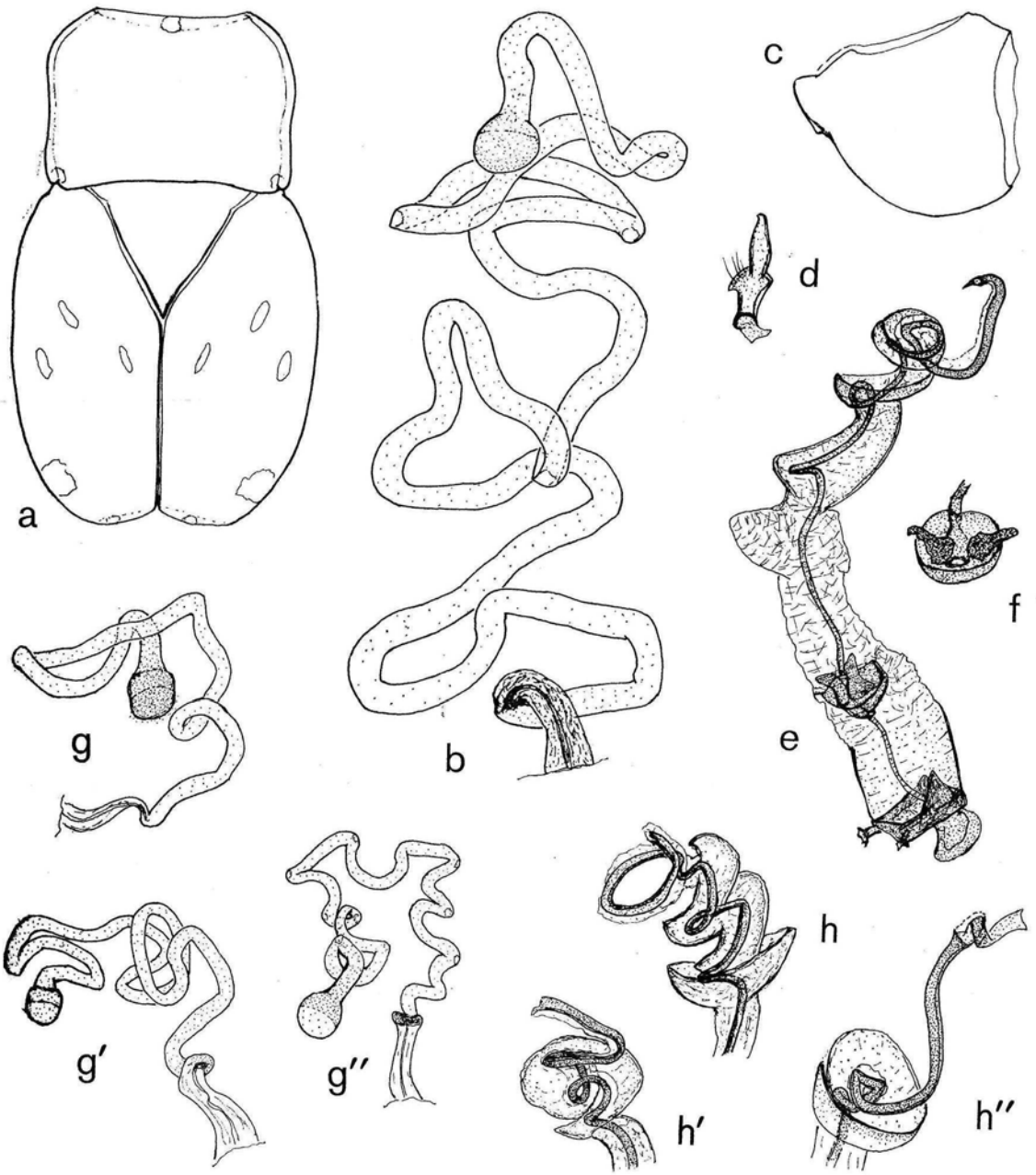


Fig. 8. *Regatarma forsteri.* **a–f,** paratypes (a) dorsal outline of pronotum and hemelytra, showing pattern of pale areas; (b) spermatheca; (c) pygophore, lateral view; (d) left paramere, dorsal or inner view; (e) aedeagus; (f) ejaculatory reservoir. **g–h″,** geographical variation in spermatheca and distal part of aedeagus (g,g′,h′, Tararua Range; g″,h″, Stephens Island; h, Ohakune).

Number, size, and spacing of spines on fore femora, and tubercles on fore tibiae of male considerably variable, even within one series of specimens. Distalmost spine on tibiae usually more prominent in Marlborough Sounds and north-east Nelson specimens.

Total length 3.2(2.7–4.0), width 1.3(1.1–1.8).

Head length 0.50(0.43–0.56), width across eyes 0.63(0.56–0.75), interocular distance 0.45(0.41–0.54). Antennae: length of segments – I 0.40(0.33–0.50), II 0.47(0.44–0.66), III (distal 2 segments missing in holotype) (0.35–0.50), IV (0.47–0.60). Labium: length of segments – I 0.46(0.43–0.58), II 0.46(0.43–0.63), III 0.36(0.30–0.53), IV 0.26(0.23–0.33). Pronotum: length 0.80(0.63–1.00), width at posterior margin 1.06 (0.87–1.36). Scutellum: length 0.60 (0.54–0.76), width 0.66(0.53–0.80). Hemelytra: length 1.4(1.3–1.9).

Genitalia. Female. Spermatheca (Fig. 8b,g–g″): distal part variable in length even within one series of specimens, as seen in Fig. 8g,g′; constriction on distal bulb more distinct in some Wellington specimens (Fig. 8g). Male. Pygophore as in Fig. 8c. Paramere as in Fig. 8d. Aedeagus (Fig. 8e): ejaculatory reservoir as in Fig. 8f; gonoporal process distal to helicoid process variable, as in Fig. 8e,h–h″.

MATERIAL EXAMINED. Holotype ♂, allotype of subspecies *forsteri, obsolescens,* and *stephensis* (data in original description). **ND.** North Cape, 1♂. Spirits Bay, Unuwhao, 547 m, 2♂. **AK.** Wellsford, Windy Ridge, 1♂. Waitakere Ra., Nihotupu, 182 m, 2♂5♀. Hunua Ra., Kohukohunui, 600 m, 1♀. **CL.** Little Barrier I., 1♂1♀. Coromandel Pen.: nr Tairua Forest, 122 m, 1♂; Kopu Rd, 6♂4♀; ——Ra., 8♂8♀. **WO.** Kawhia, 1♂ (NM). E side Hauhungaroa Ra., 685 m, 2♂2♀. Awakino Gorge, 3♂. **TK.** Mt. Messenger, 182 m, 3♂2♀. Tangarakau Gorge, 152 m, 1♂. Whangamomona Saddle, 311 m, 4♂1♀. Mt. Egmont: 823 m, 11♂6♀; Stratford Mt. Rd, 843 m, 5♂4♀; Dawson Falls, 853 m, 2♂6♀; Wilkies Pools, 914 m, 1♂3♀. **TO.** National Park, 3♀. Erua, 4♂4♀. Ohakune Mt. Rd: 1♂2♀ (NM); 730 m, 1♂2♀; 1157 m, 1♂. Ohakune: 2♂1♀: Blyth Track, 791 m, 1♀. **WI.** Bushy Park, nr Wanganui, 1♂. Wanganui, Waitora, 1♂ (NM). **WN.** S end Kapiti I., 500 m, 1♂ (NM). Tararua Ra: 609 m, 1♀; Judd Ridge nr Waterhole, 1♂3♀ (UQ); Mt. Holdsworth, 1♂3♀ (NM); Waiohine Gorge, 200 m, 1♀; Mt. Holdsworth Track, 305 m, 2♀; Forest Park nr Featherston, 4♂ (NM). Silverstream, 1♀. York Bay, 2♂ (NM). Day's Bay, 1♀ (NM). Wellington, Vogeltown, 1♀ (NM). Orongorongo Vly, 3♀. **WA.** NW side L. Wairarapa, 1♂1♀. Haurangi, Aorangi Mts, 670 m, 1♀. Mt. Ross, 1♂1♀ (NM). **SD.** Stephens I., 3♂2♀. French Pass: Orr Hill, 1♂; Okiwi Bay, Moncrieff Reserve, 37 m, 1♂. Kenepuru Sounds, Mt. Stokes, 1154 m, 4♂2♀. Opouri Saddle, 2♂7♀. **MB.** Pelorus Vly: 1♂1♀; ——Reserve, 1♂3♀; —— Bridge, 30 m, 2♀; Upper ——Vly, 2♂1♀; Tunakino Vly, 5♂3♀. **NN.** Mt. Duppa, 1♂. Whangamoa: 456 m, 1♂1♀; ——Saddle, 355 m, 2♂2♀. Cawthron Park, 4♂2♀. Upper Maitai, 5♂7♀. Richmond, Fell Peak, 1270 m, 2♂1♀. Roding R., 152 m, 1♂4♀. Dun Mt: Track, 1♂; Third House, 564 m, 2♂6♀; Saddle, Wooded Peak, 2♂4♀; summit, 6♂11♀. Glenhope, Lamb Valley, 425 m, 1♂.

REMARKS. Recorded from altitudes from near sea level to *c.*600 m, occasionally up to 1157 m in the North Island and 1280 m in the South Island.

Genus *Targarema* White

White, 1878, Entomologist's mon. Mag. 15: 73. –Slater, 1964, Catalogue Lygaeidae World 2: 867 (bibliography). –Ashlock, 1964, Ann. ent. Soc. Am. 57: 421 (in Targaremini). –Eyles, 1967, N.Z. Jl Sci. 10: 422 (keyed).

TYPE-SPECIES: *Targarema stali* White, by original designation.

Generally castaneous or dull castaneous. Body covered with fine pubescence; appendages in addition with short, bristle-like hairs. Head up to 1½× as wide across eyes as long. Eyes large, set near or well away from pronotum, surface finely granulate. Ocelli well developed in macropters, slightly reduced in submacropters, and obsolete in coleopters. Antennae slender, segment I exceeding tylus by about one-third. Labium: segment I nearing or exceeding base of head. Labrum about half as long as basal labial segment. Pronotum roughly trapezoidal (e.g., Fig. 9a); collar indistinct, collar region demarcated by 1 or 2 rows of punctures; anterior and posterior margins shallowly concave; constriction between lobes indistinct; anterior lobe region slightly bulbous, raised above posterior lobe region, which is almost flat, slightly depressed, and finely sparsely punctate. Metathoracic scent-gland auricle narrow. Clavus free or slightly fused with corium, claval suture distinct in macropters and submacropters (e.g., Fig. 10a), indistinct in coleopters (Fig. 10a′), claval region punctate in 3 regular rows, inner 2 rows often closer in distal two-thirds. Hemelytra macropterous, submacropterous, or coleopteroid, exposing up to 3 terminal abdominal tergites; membrane, if well developed, with 4 distinct veins. Hind wing, if well developed, with distinct venation (e.g., Fig. 10b); R nearing anterior margin. Fore femora armed with 1–3 spur-like, small or minute spines; fore tibiae in male nearly straight, unarmed; hind basitarsi over 1½× as long as distal 2 segments. Trichobothrial hairs conspicuously projecting; median and submedian trichobothria on abdominal sterna III and IV arranged in triangle.

Genitalia. Female. Ramus I extending to over three-quarters length of gonapophysis I. Spermatheca (e.g., Fig. 9b) with distinct proximal and distal parts, latter ending in nearly spherical distal bulb. Male. Paramere (e.g., Fig. 10e) with dorsal and smaller ventral lobes, shallowly curved blade. Aedeagus (e.g., Fig. 9f): phallotheca moderately pigmented ventrally; ejaculatory reservoir complete, moderately developed; vesica with 1–3 inflatable lobes along margins; helicoid process with 2–3 coils; gonoporal process gradually thickened within helicoid process, distally encased in narrow inflatable sheath.

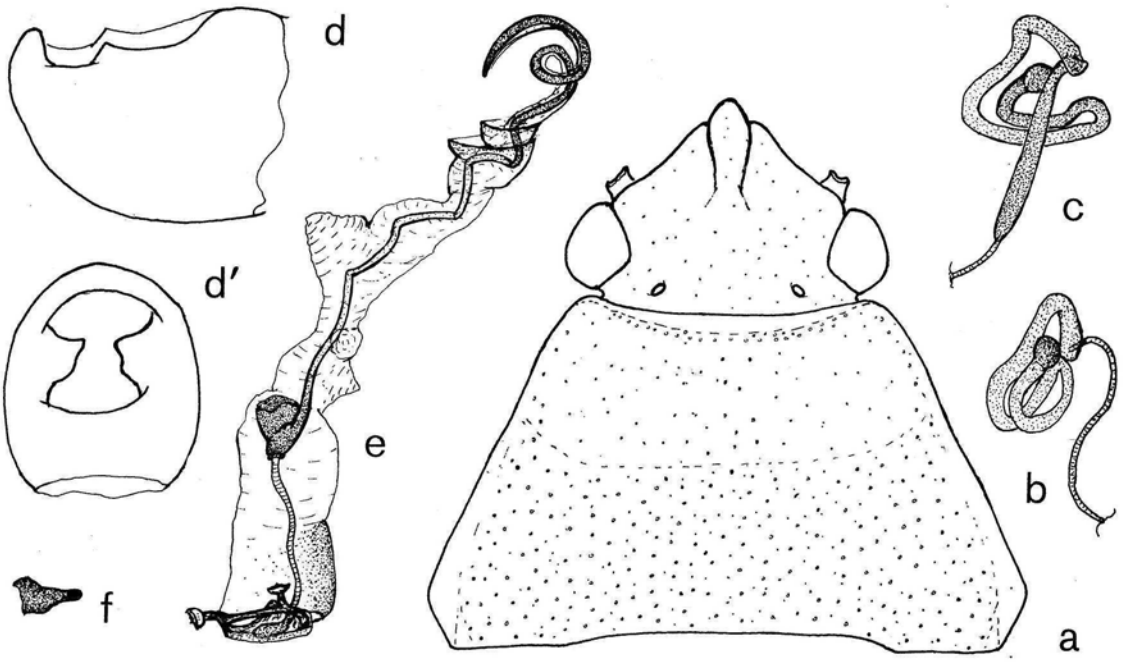


Fig. 9. *Targarema stali:* **a,** ♂, head and pronotum; **b,c,** spermatheca (c, Kerr Point, North Cape); **d,d′,** pygophore, lateral and dorsal views; **e,** aedeagus; **f,** left wing of ejaculatory reservoir.

Key to species of *Targarema*

Smaller species (2.5–3.5); fore femora armed commonly with 1 spine, less commonly with 2; pronotal lobes less distinct; apical third to half of ventral surface of pygophore in lateral view uniformly convex (Fig. 9d); abdominal venter in ♂ with 2 shallow depressed regions covering sterna IV–VI on either side of midline ..... *stali*

Larger species (3.6–5.4); fore femora armed commonly with 2 spines, less commonly with 3; pronotal lobes more distinct; apical third to half of ventral surface of pygophore in lateral view constricted (Fig. 10d); abdominal venter in ♂ without depressed regions ..... *electa*

Targarema stali White (Fig. 9)

White, 1878, Entomologist's mon. Mag. 15: 73–4. –Slater, 1964, Catalogue Lygaeidae World 2: 867 (bibliography). –Ashlock, 1964, Ann. ent. Soc. Am. 57: 415–19, fig. 1g–i, 2g, 3k,l (external morphology, ♂ genitalia).

Total length 3.1(2.5–3.5), width 1.3(1.0–1.3). Segment IV of antennae and apex of labium fuscous; segments I–III of antennae, labium, and legs paler. The following whitish brown or bright brown: pronotum – a spot in middle of anterior margin, lateral margins of posterior region, a spot in middle of hind margin and a small spot on each side, and posterior angles; scutellum – apical region, and a spot on each side apicad of disc; corium – a streak along proximal half of claval suture, 3 short streaks following each other on disc, and a fourth, obscure, between third streak and outer margin. Corium with a fuscous streak from middle of claval suture to inner angle. Membrane pale fuscous with darker streaks.

Head length 0.43(0.36–0.46), width across eyes 0.63(0.60–0.66), interocular distance 0.40(0.34–0.40), interocellar distance 0.24(0.24–0.26), eye–ocellus 0.05(0.05–0.06). Antennae: segment I dumb-bell-shaped, II and III slender, IV more incrassate than I–III, ends gradually narrowed; length of segments – I 0.34(0.29–0.36), II 0.50(0.42–0.50), III 0.36(0.33–0.36), IV 0.45(0.36–0.46). Labium reaching or passing middle coxae; length of segments – I 0.40(0.36–0.43), II 0.43(0.38–0.46), III 0.34(0.30–0.36), IV 0.24(0.20–0.27).

Pronotum: lateral margins (Fig. 9a) slightly carinate, nearly straight, rounded anteriorly; shoulders moderately raised; length 0.63(0.53–0.66), width at posterior margin 1.20(1.00–1.25). Scutellum uniformly punctate, punctures coarser on apical half; length 0.80(0.60–0.77), width 0.73(0.50–0.70). Commissure 0.30(0.23–0.29). Hemelytra fully covering abdomen in macropters, exposing last abdominal tergum in submacropters; corium finely punctate in 2 parallel rows along inner margin (outer row indistinctly extending to posterior margin), a short row exterior to inner angle region, and a row along outer margin in proximal half, remainder sparsely and irregularly

punctate; membrane with 4 distinct veins; length 2.3(1.8–2.5); length of corium 1.75(1.30–1.80); width of membrane 0.80(0.60–0.85). Hind wing with Cu, SV, and Pcu indistinct. Fore femora moderately incrassate, armed in distal third.

Genitalia. Female. Spermatheca (Fig. 9b) short, moderately pigmented except on proximal part; distal part with 2–3 loose turns. Male. Pygophore as in Fig. 9d,d'. Paramere blade long and pointed. Aedeagus (Fig. 9e): phallotheca subequal to conjunctiva; body and wings moderately developed, wings as in Fig. 9f.

INTRASPECIFIC VARIATION. The colour markings vary considerably, even within a single series: generally darker (Hokitika); antennae unicolorous, brownish spot on middle of posterior margin of pronotum extending to whole length of posterior lobe region (several specimens from both main islands).

The following variations occur in the spermatheca: proximal part short, as in Fig. 9c (Kerr Point); only distal part pigmented, distended towards distal bulb (Pine Reserve, Tangoio).

A male from Kapiti Island which differs from the above description as follows is here treated as an anomalous specimen of *stali*: head elongately conical in front of eyes; head length and width across eyes subequal; labium slender, exceeding hind coxae; antennae, labium, and legs longer, but proportions as for 'normal' *stali*.

MATERIAL EXAMINED. Lectotype ♀ (designated by Scudder 1967): *"Targarema stali* White 1878"; "N.Zealand"; "Brown"; "Pres. by Perth Museum. B.M. 1953–629."; carded along with 1♂; (BM). **Three Kings Is.** Great I., 69♂70♀; NE Castaway Camp, 80 m, 29♂26♀. South West I., 3♂4♀. **ND.** Spirits Bay: 1♀; Unuwhao, 5♂2♀; Pandora, 1♀; Waitanoni Stm, 1♂; rd to Tom Bowling Bay, 1♂. North Cape, Kerr Pt, cliff tops, 2♂2♀ (2♂, AIM). Mt. Whakaangi, E side, 244 m, 1♂. Omahuta Kauri Res., 1♀. Bay of Islands: forest S of Paihia, 2♂ (AIM): Waikare, 1♀. Waipoua Forest area, 5♂10♀ (2♂7♀, AIM). Wakapara-Russel Rd 3 km S of Helena Bay, 2♂. Puketona, nr Kerikeri, Bulls Rd Scenic Reserve, 2♀. Hen and Chickens Is: Whatapuke I., 5♂8♀; Hen I., 1♂; Coppermine I., 13♂26♀. Kamo, 2♂3♀. Whangarei, 1♀. Forest remnant 5 km N of Kaiwaka, 1♀ (AIM). **AK.** Wellsford, Windy Ridge, 1♀. Swanson, 1♀. Waitakere Ra: 182–213 m, 1♂2♀; Goldies Bush, 1♂ (AIM). Hunua Ra., Kohukohunui, 600 m, 1♂. **CL.** Little Barrier I., 1♂ (NM). Gt. Barrier I: Mt. Hobson, 304 m, 1♀; Katherine Bay, Motairehe, 3♂3♀ (1♂, NM). Mercury Is, Stanley I., 1♀. Coromandel Ra., nr summit, Kopu-Hikuai Rd, 1♂2♀. Thames, Kauaeranga Vly, 1♀. Mayor I: 2♀; Opo Bay, 3♀; Aroarotamahina, 1♀. **WO.** Mt. Pirongia, 609–852 m, 1♀. Oparau, McKenzies Bush, 1♀, Kawhia, 1♀ (NM). **BP.** Rotorua: 1♂; Blue L., 1♂; Mamaku Ra., 1♂2♀. Rerewhakaaitu, bush at N Boundary Rd, 1♀. Galatea end Urewera National Park, 1♂2♀. Te Whaiti, 334 m, 1♂. Mt. Maungapohatu, 762 m, 1♀. **GB.** Huiarau Ra., Urewera National Park, Putaihinu Ridge, 1169 m, 1♀. Waikaremoana: Sacred I., 1♂ (NM); Lake House, 13♂21♀. **TO.** Taupo, Two Mile Bay, 1♀. Opepe Res., E of Taupo, 13♂8♀. Kuratau, Waituhi, 456 m, 1♂1♀. 16 km S of Turangi, 1♀ (NM). Pihanga Scenic Reserve, nr summit, 11♂10♀. Raurimu, 1♂. Mt. Ruapehu: Whakapapaiti Stm, 1157 m, 1♀ (AIM); Iwikau, 1370 m, 1♀; Ahimanawa Ra., Ohinekuku, 1♂8♀: **TK.** Mt. Messenger, 182–547 m, 1♂2♀. Whangamomona Saddle, 311 m, 1♂. **HB.** Mohaka R. S of Wairoa, 2♂1♀. Kaweka Ra., Makahu Hut, 968 m, 2♂1♀. Tangoio, Pine Reserve, 1♀ (NM). **WA.** Waewaepa Ra., 395 m, 1♂2♀. W Pori turnoff, Pongaroa-Pahiatua Rd, 136 m, 1♂1♀. NW L. Wairarapa, 4♂1♀. Aorangi Mts, Haurangi, 670 m, 1♂. **WN.** Otaki Forks, 609 m, 1♂. E Tararuas, Mt. Holdsworth track, 304 m, 6♂4♀. Kapiti I: 1♂; S end, 500 m, 1♀; (NM). Wakatikei R., 1♀ (NM). Tararua Forest Park nr Featherston, 5♂5♀ (NM). Rimutakas, Tauhinu, 548 m, 2♂1♀. Horokiri Vly, 1♂2♀ (NM). Terawhiti, 1♂1♀. Wellington, 1♂. York Bay, 1♂1♀. **SD.** D'Urville I., Kopowai, 4♂3♀. French Pass, 3♂1♀. Ship Cove, 5♂3♀. Okiwi Bay, Moncrieff Reservoir, 39 m, 2♀. N side Ronga Saddle, 267 m, 8♂3♀. Kenepuru Sd, Mt. Stokes, 1♂. Picton: 5♂3♀; Shakespeare Bay, 3♂5♀. Port Underwood Saddle, 1♂1♀. **MB.** Wakamarina Vly, 1♀. Pelorus Vly, 1♂1♀; ——Bridge, 30 m, 1♂. Tunakino Vly, 20♂12♀. Tuamarina, Pukaka Stm, 1♀. Avon Vly, 2♀. **KA.** Mt. Gladston Stn, Awatere R. W bank. 456 m, 16♂7♀. Kekerengu, 1♀ (NM). Rakautara Vly, 7♂3♀. Hapuku R., 1♂. Kaikoura: Mt. Alexander, 730 m, 1♀; Puhipuhi Res., 182–547 m, 3♂. Hundalee, 1♀. **NN.** Farewell Spit, 2♂. Cape Farewell, 1♂. Pakawau State Forest, 20♂22♀. Paturau, Sandhills Ck, 1♀. Collingwood: 1♀; rd to The Castle. 380 m, 1♂1♀. Kaihoka L., 2♂1♀. West Haven [Whanganui] Inlet: 1♂; Knuckle Hill, 500 m, 2♀. Mangarakau, West Haven Rd, 8♂21♀. Puramahoi, 2♂1♀. Totaranui, Awaroa Inlet, 137 m, 3♀. Takaka Hill: 4♂5♀; 456 m, 1♂. Boundary Bay, 1♂. Torrent Bay, 2♂1♀. Marahau, 4♂4♀. Sandy Bay, 8♂6♀. Rough I., 5♂4♀. Aorere Vly: 1♂; Heaphy Track, 2♂2♀; Brown R., 1♀. Spooners Ra., 547 m, 2♀. Waimea, Eves Vly, Palmer's Bush, 34♂35♀. Dun Mt., 9♂5♀. Nelson, Cawthron Park, 1♂. Upper Maitai, 3♂1♀. Maitai Vly, 1♂. Mt. Chrome plateau, 1127 m, 1♂. Whangamoa, 22♂18♀. Jenkins Hill, 770 m, 11♂2♀. Wairoa Gorge, 3♀. Clarke R., 1♀. Teal Vly, 152 m, 1♀. 6 km up Lee Vly, 3♂1♀. Roding R., 152 m, 1♀. Maori Pa Rd 19♂12♀. Cable Bay: 1♂3♀; Peninsula off Maori Pa Rd, 21♂11♀. Wangapeka: Prospect Ck, 2♀; Dart Vly, 3♂. Seddonville, 1♀. Stockton, 228 m, 3♂1♀. Glenhope, 2♀. Buller Gorge, Kawatiri, 1♂1♀. **BR.** L. Rotoiti, 1♀. Buller R. outlet, Duck Bay, 1♂. Ahaura, Callaghans Ridge, 1♂. Rapahoe, 1♀. Lewis Pass summit, 1♀. **MC.** Kaituna Vly, 2♂ (CM). Akaroa, 1♂ (CM). **WD.** Taramakau, 1♀. Hokitika, 5♂5♀. L. Ianthe, 1♀. Gillespies Beach, 1♀. Haast R., 2♀. Haast Pass, 1♂ (abdomen mutilated). S end L. Wilmot, 1♂. **OL.** Makarora, 2♂2♀ (2♂1♀, OM). **DN.** Waikouaiti, Mt. Watkins, 457 m, 1♂. Opoho Bush, 1♂ (OM). **FD.** Milford, Cleddau R., 1♀. **SL.** Te Anau-Manapouri Rd, 1♂1♀. Longwood Ra., Ermedale, 1♂4♀. Bluff, 5♂ (NM). Bluff Harbour, Awarua Bay, 1♂. Waikawa: 1♂; 60 m, 1♂. **SI.** Halfmoon Bay, 1♀. Codfish I., sand dunes behind

Sealers Bay, 1♀. **Loc. indet.** "Opouri, 1♀." "Mt. Arawhata, 1219 m, 7♂6♀." "Ridge beyond Cause Bay turnoff, 325 m, 1♀."

REMARKS. Most records are from sea level to moderate altitudes (*c.*600 m). Never recorded above the timber line, the species reaches its apparent altitude limit (*c.*1370 m) in the North Island, and is usually not found above 900 m in the South Island.

Targarema electa White (Fig. 10)

White, 1878, Entomologist's mon. Mag. 15: 74.

This wing polymorphic species is here categorised into macropterous and (less common) coleopteroid forms.

MACROPTEROUS FORM (Fig. 10a,b,c,d–g)

Total length 4.7(3.6–5.4), width 2.0(1.6–2.1). Generally dull castaneous, labium, antennae, and legs paler. The following pale brown: lateral margins (interrupted in middle), humeral angles, and 3 spots on posterior margin of pronotum; 2 spots near middle and margins of apical half of scutellum; claval commissural area; a proximal streak between middle and outer rows on clavus; and on corium, proximal region of outer margin, a short streak between inner 2 rows of punctures before middle, 3 streaks following each other on disc but nearer to outer margin, and a 4th streak exterior to the 3rd. Membrane yellowish fuscous, veins paler. The following more or less fuscous black: a median streak on anterior lobe of pronotum; apical half of disc of scutellum; and on corium, a streak from proximad to near middle of claval suture, another from beyond middle to inner distal margin, and a large irregular patch near outer angle.

Head finely punctate dorsally and ventrally; ocelli prominent in macropters, slightly reduced in submacropters; length 0.60(0.62–0.70), width across eyes 0.86(0.80–0.95), interocular distance 0.56(0.50–0.60), interocellar distance 0.35(0.30–0.35), eye–ocellus 0.05(0.04–0.06). Antennae: segment I incrassate in distal half, segment IV narrower near proximal end, gradually incrassate towards apex; length of segments – I 0.55(0.53–0.65), II 0.84(0.75–0.95), III (distal 2 segments missing in lectotype) (0.60–0.75), IV (0.60–0.74). Labium nearing or reaching hind coxae; length of segments – I 0.67(0.68–0.80), II 0.66(0.60–0.80), III 0.53(0.50–0.60), IV 0.33(0.30–0.36). Pronotum: lateral margins narrowly explanate for most of length, gradually rounded near humeral angles; anterior lobe region impunctate; pleural and ventral aspects coarsely and irregularly punctate; length 0.90(0.81–1.05) (posterior lobe region 0.40(0.35–0.50)), width at posterior margin 1.60(1.48–1.65). Scutellum finely punctate, more densely along margins; length 1.12(1.00–1.25), width 0.90(0.82–1.00). Commissure 0.45(0.37–0.50). Hemelytra almost fully covering abdomen in macropters, exposing tergum VII or even part of VI in submacropters; corium finely punctate as follows: 2 nearly parallel complete rows along inner margin, rest of corium except broad impunctate outer margins sparsely and irregularly punctate; membrane slightly reduced in submacropters, with 4 distinct veins; length 3.5(2.4–3.8), length of corium 2.50(2.20–3.00), width of membrane 1.15 (0.90–1.30). Hind wing well developed in macropters (Fig. 10b), slightly reduced in submacropters; with distinct venation, Cu and SV more distinct than in *stali*. Fore femora highly incrassate, more so in proximal two-thirds, gradually narrowed towards distal end, armed with 2 or 3 small spines on distal third (if 3, proximalmost reduced) and numerous minute tubercles ventrally.

Genitalia. Female. Spermatheca (Fig. 10c) with narrow proximal part; distal part long, with 8–20 irregular turns, slightly distended towards distal bulb. Male. Pygophore as in Fig. 10d. Paramere as in Fig. 10e. Aedeagus (Fig. 10f): body and wings well developed (Fig. 10g); gonoporal process distal to helicoid process acutely pointed.

INTRASPECIFIC VARIATION. Some macropters exhibit the following variations in coloration: generally pale brown, basal region of posterior lobe of pronotum fuscous, distal half of antennal segment III and apical four-fifths (excluding apex) of IV stramineous; antennal segment I, proximal half of II and III, and proximal area of IV darker; only proximal areas of antennal segments III and IV darker; pale brown spot on anterior collar region of pronotum conspicuous; spots on posterior margin of pronotum merging into each other; inner margins of clavus pale brown on at least distal half; clavus and corium generally paler; fuscous streak from proximad to near middle of corium along inner margin indistinct. In some submacropters, most of basal two-thirds of hemelytra stramineous.

MATERIAL EXAMINED. Lectotype ♀ (macropter; designated by Scudder 1967): *"Targarema electa* White 18/8"; "New Zealand Brown"; "Pres. by Perth Museum, B.M. 1953–629"; portion of membrane, distal 2 segments of both antennae, right fore tarsi, and left hind tibia and tarsi missing; (BM). **ND.** Bush nr Cape Reinga, 1♀ (NM). Spirits Bay, Pandora, 1♂ (AIM). North Cape area, Whareana, 4♀ (AIM). Paihia, 2♂. Puketona, nr Kerikeri, 2♂3♀. Waikare, 2♂1♀. Waipoua Forest, 1♀ (AIM). Kamo, nr Whangarei, 5♂5♀. Brynderwyn, 1♀. **AK.** Wade Heads, 2♂. Titirangi, 1♀. **CL.** Coromandel, 2♂ (NM). Topatai Reserve, nr Tairua, 4♂1♀. **BP.** L. Rotorua, 1♀. L. Okataina, 1♂. Mt. Maungapohatu, 762 m, 1♀. **GB.** Huiarau Ra., Taupepe Saddle, 914 m, 3♂3♀. L. Waikaremoana, Urewera Nat. Park H.Q., 3♂7♀. **WO.** Waitomo, limestone quarry area, 1♀. **TO.** Taupo, Wauperi Stm,

1♂. Opepe Reserve, E Taupo, 1♂. Turangi, Pihanga Scenic Reserve, 6♂2♀. Ahimanawa Ra: Ohinekuku, 2♂; Waipunga Falls, 1♂5♀. Raurimu, 3♂1♀. Tongariro, start of Ketetahi Track, 730 m, 1♂. Turangi, Desert Rd, 1♀. **RI.** Taihape, 1♀. **WN.** Kaitoke Reserve, 1♂1♀ (NM). **NN.** Paturau R., 1♀. Mangarakau, 1♀. Takaka Vly, 2♂3♀. Sandy Bay, Marahau, 1♂. Eves Vly: 1♀; Palmer's Bush, 3♂. *Wairoa Gorge*, 2♂1♀. *Cawthron Park*, 2♀. Maitai Vly, 1♂. **KA.** Hundalee, 1♂.

COLEOPTEROID FORM (Fig. 10a′,b′,c′,h)
Differs from the macropterous form as follows. In some specimens hemelytra uniformly brown, markings not distinct; membrane with pale blotches. Body generally shorter, gradually narrowed anteriorly and posteriorly (Fig. 10a′).

[Dimensions: mean first, range in parentheses.] Total length 4.1(3.6–4.5), width 1.7(1.4–1.9).

Head length 0.63(0.60–0.65), width across eyes 0.80(0.75–0.85), interocular distance 0.53(0.51–0.55), interocellar distance 0.34(0.33–0.36), eye–ocellus 0.05; ocelli greatly reduced. Antennae: length of segments – I 0.60(0.55–0.65), II 0.80(0.70–0.85), III 0.65(0.55–0.70), IV 0.69(0.62–0.76). Labium: length of segments – I 0.70(0.65–0.75), II 0.68(0.60–0.75), III 0.53(0.47–0.58), IV 0.32(0.30–0.36).

Pronotum: punctures on posterior lobe less distinct, length 0.95(0.80–1.05) (posterior lobe region 0.32(0.25–0.37)), width at posterior margin 1.30 (1.20–1.35). Scutellum: punctures less distinct; length 0.93(0.80–1.00), width 0.74(0.60–0.85). Hemelytra abbreviated (Fig. 10a′), exposing part of abdominal tergum V and all of VI and VII; clavus fused with corium; claval region with 3 rows of punctures; corial surface almost flat, margins explanate, disc more coarsely punctate; membrane greatly abbreviated, without distinct veins; length 2.1(1.9–2.2); length of corium 2.00(1.86–2.15); width of membrane 0.60(0.60–0.75). Hind wing greatly reduced to small flap-like structure, without distinct venation (Fig. 10b′).

Genitalia. Female. Spermatheca (Fig. 10c′) shorter and wider; proximal part short; distal part with 4–6 irregular turns. Male. Aedeagus generally shorter; gonoporal process distal to helicoid process shortened at distal end (Fig. 10h).

INTRASPECIFIC VARIATION. A female from Waipoua State Forest shows the following variations: generally darker; pronotum and hemelytra uniformly fuscous brown, without distinct pale markings; legs and antennae brown; ventral aspect of fore femora lacking protuberances.

MATERIAL EXAMINED. **ND.** Mangamuka summit, 380 m, 1♀, 17 Feb 1967, B.M. May. Waipoua Kauri Forest, 2♂2♀, 7–16 Jun 1966, J.W. & J.T.; 1♀, 20 Oct 1967, J.W.; 2♀, 19 Jan 1972, G.R. **AK.** Blockhouse Bay, Duck Reserve, 2♀, 25 Apr 1968, Jessica Young. **WO.** Waitomo, 1♀ (mutilated), 16 Nov 1941, E. Clarke. Te Kuiti, above Waipuna Cave, 1♂, 11 Jan 1958, R.W. Taylor. Piopio, flooded in small cave, 1♂, 8 Jul 1961, B.M. May. **BP.** Urewera Nat. Park, Mt. Maungapohatu, 1035 m, 1♂4♀, 3 Mar 1971, A.E. **HB.** Mohaka R. 10 km S of Wairoa, 1♂4♀, 16 Jan 1972, G.R. Kaweka Ra., Mahaku Spur, 1219 m, 1♂, 29 Feb 1971, A.E. **TK.** Mt. Messenger, 548 m, 1♀, 21 Jun 1966, A.W. **RI.** Taihape, 1♂1♀, 2 Dec 1965, L.P. Marchant. Hunterville, Bruce Park, 3♂4♀, 2 Dec 1965, L.P. Marchant.

REMARKS. The following changes are apparent in transition from the macropterous to the coleopteroid condition: body and appendages generally shorter, body narrower anteriorly and posteriorly; ocelli smaller; pronotum narrower, margins less carinate, constriction between lobes less distinct; clavus more fused with corium; corium flatter on disc, hind wings shorter and veins indistinct; spermatheca shorter but wider, distal bulb larger; aedeagus generally shorter, gonoporal process thicker, distal to helicoid process shorter, and distal end less acute.

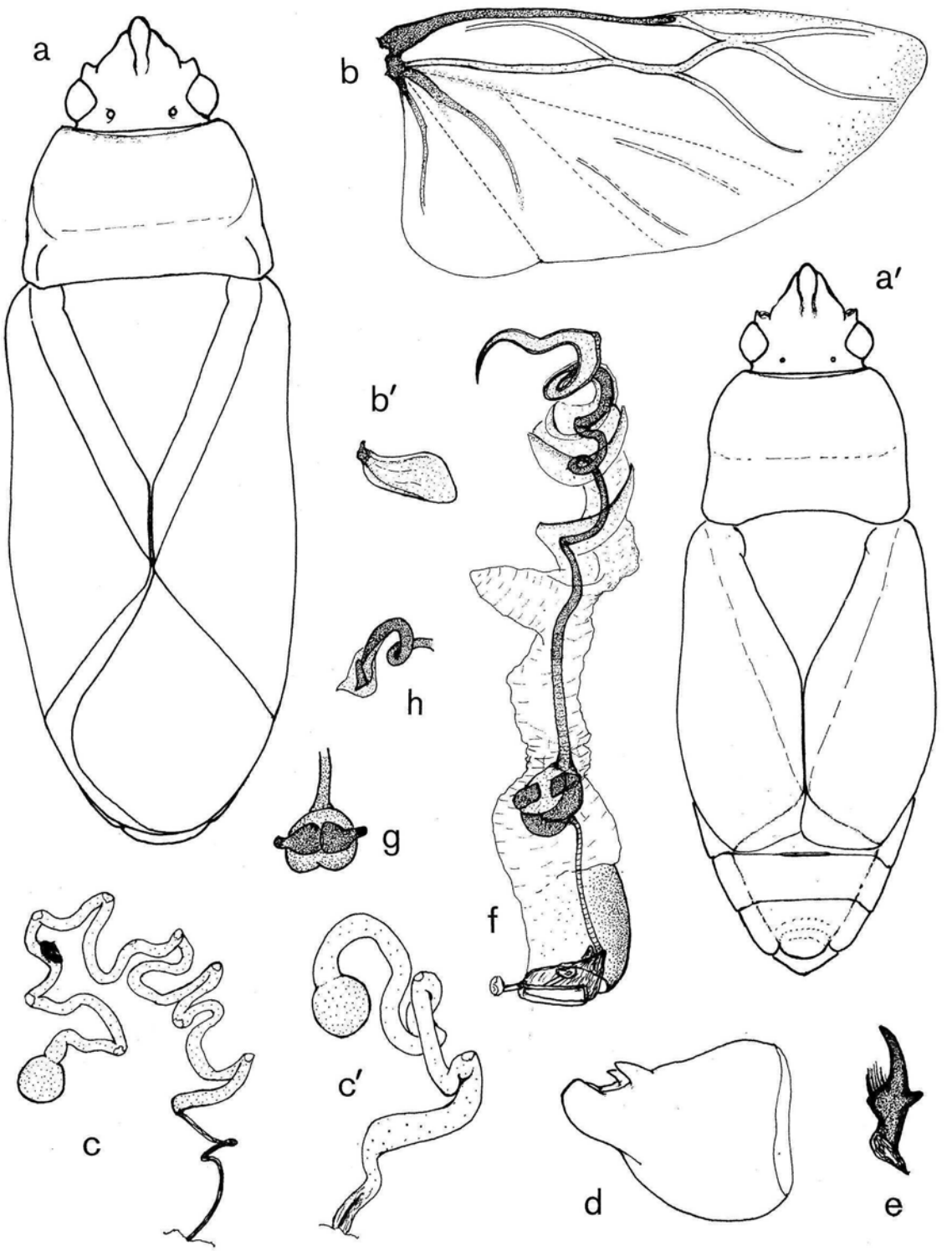
Genus *Millerocoris* Eyles

Eyles, 1967, N.Z. Jl Sci. 10: 407–8, 422 (keyed).
Eminocoris Eyles, 1967, N.Z. Jl Sci. 10: 410–11, 422 (keyed) (as *Eminocorus;* type-species *E. conus* Eyles). **New synonymy.**

TYPE-SPECIES: *Millerocoris ductus* Eyles, by original designation.

Eyles (1967) erected the monobasic genera *Millerocoris* and *Eminocoris* to accommodate his new species *M. ductus* (based on a single incomplete female) and *E. conus* (a single male specimen), indicating that *Eminocoris* differs from *Millerocoris* in having a blunt mid-ventral keel on the prosternum anterior to the coxae, the body not flat, and the pronotum of different shape. Material of both sexes of these species has since become available for the present study, which has emphasised genitalic characters (see below). As regards Eyles's criteria, it has been found that the keel is present in *Millerocoris* also, but is inconspicuous owing to the relatively more swollen condition of the prosternum. The males of both *Eminocoris* and *Millerocoris* have the anterior lobe region of the pronotum more swollen than in the female, and therefore appear less flat. Finally, as found in the present study for other New Zealand Targaremini (e.g., *Targarema*), the shape of the

Fig. 10 *(opposite page). Targarema electa:* **a,a′,** dorsal outline of body, excluding appendages (length 4.6 mm and 4.0 mm), **b,b′,** hind wing, and **c,c′,** spermatheca, macropterous and coleopteroid forms respectively; **d,** pygophore, lateral view; **e,** left paramere, dorsal or inner view; **f,** aedeagus; **g,** ejaculatory reservoir; **h,** distal part of gonopore, coleopteroid form.



pronotum varies to some extent, even at the specific level, with the degree of wing development. I therefore have no hesitation in synonymising *Eminocoris* with *Millerocoris*.

REDESCRIPTION. Head triangular, porrect, width about 1.2× length. Eyes small, surface slightly granulate. Ocelli absent. Relative lengths of antennal segments – II>IV>III≥I; segments covered with moderately long, pale, suberect hairs interspersed with several long, bristle-like hairs, particularly on segments II–IV. Labium reaching or passing middle coxae; basal segment nearing or exceeding base of head. Labrum less than half as long as basal segment of labium. Pronotum (e.g., Fig. 11c) more than 1½× as wide posteriorly as long; anterior and posterior margins gradually concave; lateral margins broadly and explanately carinate; constriction between lobes indistinct; anterior lobe region more swollen dorsally in male, impunctate except on margins; posterior lobe region short, distinctly punctate. Scutellum subequal in length to width. Hemelytra with or without membrane; clavus fused with corium, without claval suture; lateral margins broadly lamellate, sparsely and finely punctate, punctures usually in rows. Hind wing reduced to minute flap-like structure. Fore femora moderately incrassate, armed in distal third; fore tibiae in male (e.g., Fig. 11a) armed on distal half with tuberculate spines, in female unarmed; hind basitarsi up to 1½× as long as distal 2 segments. Dorsal abdominal scent-gland scars subequal in width. Middle trichobothrium on sternum V closer to posterior than to anterior trichobothrium (e.g., Fig. 11b).

Genitalia. Female. Ramus I extending to more than three-quarters length of gonapophysis I. Spermatheca (e.g., Fig. 11d) simple; proximal part short; distal part tubular, irregularly turned, distal bulb distinct. Male. Paramere (e.g., Fig. 11e) with distinct lobes. Aedeagus (e.g., Fig. 11f): ejaculatory reservoir moderately developed; vesica with inflatable lobes or processes; helicoid process with about 2 coils; gonoporal process more pigmented within helicoid process, distal to helicoid process gradually thickened and encased in membranous sheath.

Key to species of *Millerocoris*

Larger species (5.7–6.3); hemelytra without membrane; mid-ventral keel anterior to fore coxae inconspicuous; lateral margins of pronotum in ♂ sinuate near basal third; phallotheca moderately pigmented in 2 plate-like areas (Fig. 11f); paramere with long, falcate blade (Fig. 11e); distal bulb of spermatheca (Fig. 11d) without constriction ..... *ductus*

Smaller species (3.5–4.6); hemelytra with membrane; mid-ventral keel anterior to fore coxae conspicuous; lateral margins of pronotum in ♂ parallel; phallotheca at most lightly pigmented (Fig. 11k); paramere with short, blunt blade (Fig. 11j); distal bulb of spermatheca (Fig. 11i) with constriction near middle ..... *conus*

Millerocoris ductus Eyles (Fig. 11a–h)

Eyles, 1967, N.Z. Jl Sci. 10: 408–10, fig. 1–4.

Total length 6.0(5.7–6.3), width 2.8(2.7–2.9). Antennae brown, segment IV (except proximal end) pale or grey.

Head length 0.71(0.65–0.74), width across eyes 0.96(0.95–1.00), interocular distance 0.67(0.65–0.70). Antennae: length of segments (antennae missing in holotype) – I (0.70–0.85), II (1.05–1.30), III (0.85–0.90), IV (0.80–0.84) Labium passing middle coxae (in some specimens nearing hind coxae); basal segment reaching or exceeding base of head; length of segments – I 0.80(0.77–0.85), II 0.94(0.82–0.90), III 0.76(0.70–0.80), IV missing in holotype (0.35–0.45).

Pronotum (Fig. 11c,c′) slightly longer in male; lateral margins anterior to sinuation near basal one-third distinctly convex, gradually narrowed anteriorly in female (Fig. 11c′); length 1.45(1.55–1.70 ♂, 1.25–1.31 ♀), width at posterior margin 2.15(2.20–2.23 ♂, 2.00 ♀). Scutellum: length 1.20(1.10–1.20), width 1.30(1.25–1.35). Length of corium 3.5(3.4–3.6). Fore femora (Fig. 11a) with 2 stout and 1 small or reduced distalmost spine, also several minute tubercles between spines; fore tibiae in male (Fig. 11a) strongly curved, armed with 2–4 small tuberculate spines and several minute tubercles, in female slightly curved. Trichobothria on abdominal sternum V as in Fig. 11b.

Genitalia. Female. Spermatheca as in Fig. 11d; distal part with 4–6 shallow turns, distal bulb subspherical. Male. Paramere (Fig. 11e) well developed, blade long, falcate. Aedeagus (Fig. 11f): basal apparatus as in Fig. 11g; phallotheca subequal to coniunctiva, heavily pigmented on ventral surface in pattern shown in Fig. 11f; ejaculatory reservoir (Fig. 11h) well developed, body cup-shaped, without emarginate margins, neck of body not distinctly swollen near proximal end, wings large, ends curved.

INTRASPECIFIC VARIATION. The following departures from the original description are noted in coloration: yellow spots on anterior and posterior margins of pronotum not distinct; scutellum without n-shaped black mark on basal half; labium uniformly brown; yellow spots on corium.

MATERIAL EXAMINED. Holotype ♀ (data in original description). **ND.** Spirits Bay, Pandora, 1♀, 11 Nov 1967, J.T. & J.M. North Cape, 1♂. 18 Feb 1967, R.C. North Cape area, Whareana, forest remnant, 1♂, 6 Dec 1967. K.W. (AIM). Pekerau, Kaingaroa area, 91 m, 1♂2♀, 8 Jul 1967, K.W. (AIM).

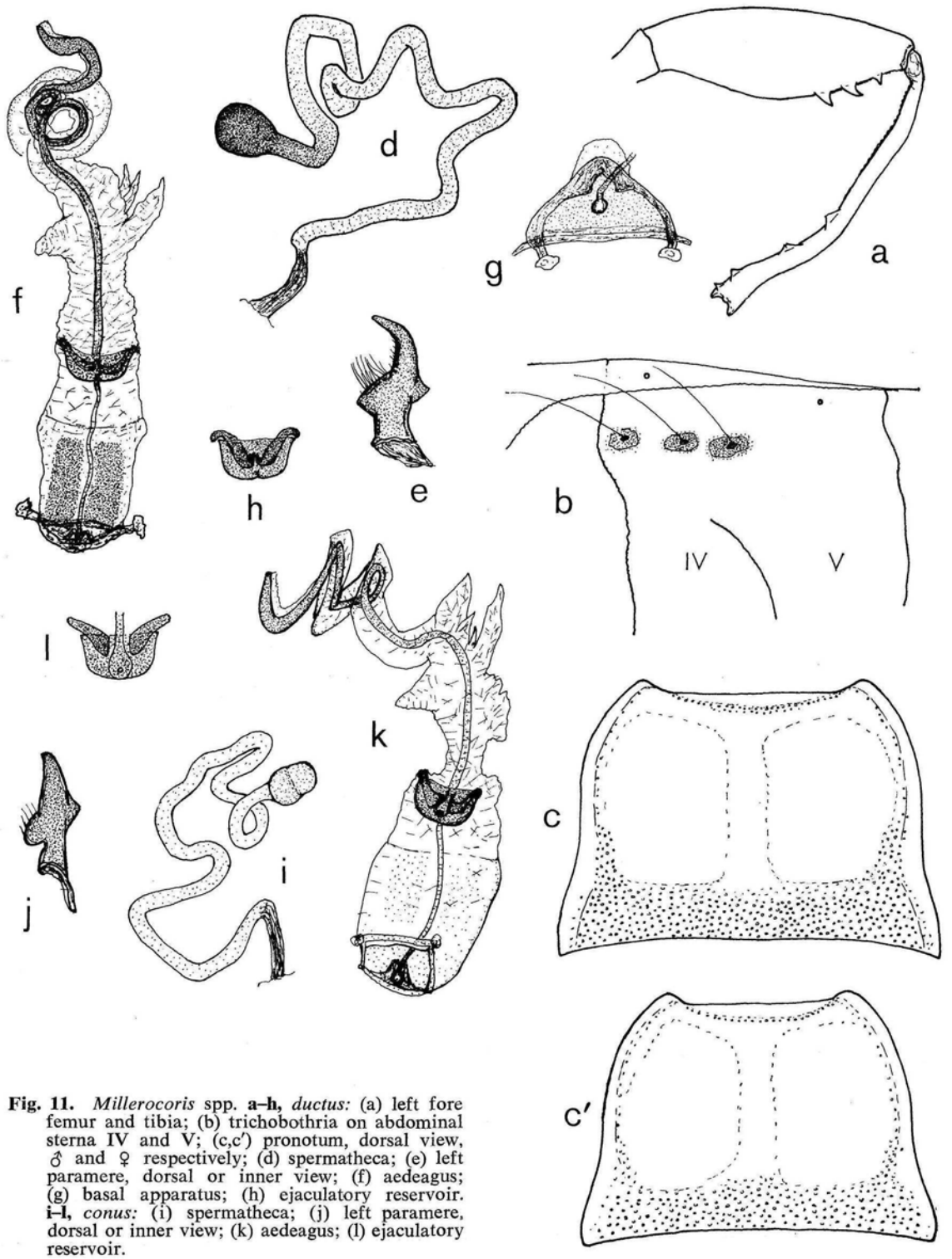


Fig. 11. *Millerocoris* spp. **a–h,** *ductus:* (a) left fore femur and tibia; (b) trichobothria on abdominal sterna IV and V; (c,c′) pronotum, dorsal view, ♂ and ♀ respectively; (d) spermatheca; (e) left paramere, dorsal or inner view; (f) aedeagus; (g) basal apparatus; (h) ejaculatory reservoir. **i–l,** *conus:* (i) spermatheca; (j) left paramere, dorsal or inner view; (k) aedeagus; (l) ejaculatory reservoir.

Maungataniwha Ra., Fern Flat Rd, 61 m, 1 ♀, 20 Feb 1967, B.M. May. Waipoua Forest, 1 ♂ (abdomen missing), 1930, A.C. Forbes (NM).

Millerocoris conus (Eyles) (Fig. 11i–l)

Eyles, 1967, N.Z. Jl Sci. 10: 411–13, fig. 5–9 (*Eminocoris*).

Total length 4.3(3.5–3.9), width 2.0(1.7).

Head length 0.62(0.60–0.65), width across eyes 0.83(0.80–0.86), interocular distance 0.56(0.53–0.60). Antennae slender; length of segments – I 0.50(0.48–0.54), II 0.70(0.69–0.70), III 0.54(0.48–0.56), IV 0.57(0.53–0.62). Labium passing middle coxae; segment I nearing or reaching base of head; length of segments – I 0.60(0.60–0.62), II 0.56(0.55–0.62), III 0.47(0.45–0.50), IV 0.39(0.35–0.40).

Pronotum: length 1.15(0.93–1.10), width at posterior margin 1.50(1.26–1.45). Scutellum: length 1.01(0.80–0.83), width 0.90(0.72–0.90). Hemelytra with distinct membrane, latter with indistinct veins: length 2.6(2.2–2.4); length of corium 2.42(2.00–2.20); width of membrane 0.55(0.40–0.45). Fore femora with 2 or 3 spines, proximalmost blunt, reduced, or even absent; fore tibiae in male slightly curved towards base and armed with 2 or 3 tuberculate spines, in female straight and spines indistinct.

Genitalia. Female. Spermatheca as in Fig. 11i; distal part with 3–5 shallow turns; distal bulb slightly constricted in middle. Male. Pygophore abruptly narrowed posteroventrally in apical half. Paramere (Fig. 11j) slightly reduced. Aedeagus (Fig. 11k): neck of body distinctly swollen near proximal end (Fig. 11l).

INTRASPECIFIC VARIATION. Coloration varies considerably among the specimens examined. Examples from Mangamuka, Puketi Forest, and Waimatenui differ from the above description in the following respects. Generally darker. Legs dark brown, coxae and most of femora darker. Head and pronotum more or less uniformly dark brown or black. Pale spots on corium less distinct, sometimes variable. Distal margin of corium uniformly coloured. Membrane generally pale brown with darker patches. Generally larger (4.5–4.6). Hemelytra slightly shorter than abdomen, exposing distal third to half of tergum VII. Fore femora in male slightly less incrassate, some females with a 4th spine proximad. Spermatheca longer, distal part with about 10 loose, irregular turns; constriction on distal bulb less distinct.

The specimen from Ngaiotonga Scenic Reserve has the pale yellow spots on the corium distinct; the hemelytra exposing most of tergum VII, and the corium more abbreviated; and the fore femora less incrassate.

MATERIAL EXAMINED. Holotype ♂ (data in original description). **ND.** North Cape area, Unuwhao, forest remnant, 610 m, 3 ♂ 4 ♀, 22 Feb 1957, K.W. (AIM). Mangamuka summit, 380 m, 1 ♂ 2 ♀, 17 Feb 1967, B.M. May. Puketi State Forest, 1 ♀, 21 Jan 1972, G.R. Ngaiotonga Scenic Reserve, 1 ♂, 20 Jan 1972, G.R. Waimatenui, 1 ♀, 15 Feb 1939, C.E. Clarke Coll. (AIM).

REMARKS. Differs from *M. ductus* in the characters keyed. Recorded usually from higher altitudes (up to 610 m) than *ductus*.

Woodwardiana n.gen.

TYPE-SPECIES: *Regatarma evagorata* Woodward, 1953, designated here.

General pattern of pale areas on pronotum and hemelytra as in Fig. 12a. Body hairs generally shorter than in *Regatarma*. Antennal segment II usually equal to or longer than IV. Labial segment III usually about 1¼× as long as IV. Pronotum at least 1½× as wide posteriorly as long; posterior width greater than width at midlength; lateral margins usually broadly carinate and explanate, gradually rounded anteriorly, with a shallow sub-basal sulcus; anterior lobe region in male not considerably swollen, posterior margin deeply concave. Scutellum equilateral or longer than wide. Hemelytra normally long, extending to between posterior margin of tergum V and part of tergum VII; weakly and regularly punctate, particularly on claval region; lateral margins usually broadly carinate and explanate; posterior margin usually broadly rounded; membrane distinct though reduced. Fore tibiae in male nearly straight, armed or unarmed. Dorsal abdominal scent-gland scars subequal or slightly widening cephalad.

Genitalia. Female. Proximal part of spermatheca usually narrower than distal part (e.g., Fig. 12b); distal bulb subspherical, with weak partition. Male. Gonoporal process distal to helicoid process gradually thickened, usually rather abruptly widened distad and encased in inflatable lobe (e.g., Fig. 12d).

REMARKS. Differs from *Regatarma* in having the body broad and flat; the pilosity weak; the pronotum at least 1½× as wide posteriorly as long, its lateral margins broadly carinate and explanate; the membrane distinct though reduced; and the gonoporal process distal to the helicoid process usually with an inflatable lobe.

The genus is named after Dr T.E. Woodward, who described (as subspecies of *Regatarma forsteri*) the taxa *evagorata, notialis,* and *nelsonensis* here elevated to species status under *Woodwardiana.*

Key to species of *Woodwardiana*

1. Segment III of labium about 1½× as long as IV; proximal part of spermatheca as wide as distal part (Fig. 12k); inflatable lobe on gonoporal process distal to helicoid process absent (Fig. 12l); body flat, explanate; (hemelytra with sparse, fine, silken hairs) ..... *paparia*

—Segment III of labium usually less than $1\frac{1}{2}\times$ as long as IV; proximal part of spermatheca narrower than distal part (e.g., Fig. 12b); inflatable lobe on gonoporal process distal to helicoid process prominent (e.g., Fig. 12d); body slightly convex 2

2. Corium distinctly narrowed distad; membrane minute, not extending across most of distal margin of corium ..... *evagorata*

—Corium not distinctly narrowed distad; membrane large, extending across most of distal margin of corium 3

3. Membrane pale, with a fuscous or black patch which may obscure pale areas or may divide it into right and left halves; segment III of labium $1\frac{1}{4}$–$1\frac{1}{2}\times$ as long as IV; pronotum about or less than $1\frac{1}{2}\times$ as wide posteriorly as long ..... *nelsonensis*

—Membrane completely pale or yellow, without fuscous or black patch; segment III of labium less than $1\frac{1}{4}\times$ as long as IV; pronotum more than $1\frac{1}{2}\times$ as wide posteriorly as long ..... *notialis*

Woodwardiana evagorata (Woodward) (Fig. 12a–d)

Woodward, 1953, Rec. Canterbury Mus. 6: 194, 198, 201–2, fig. 3, 15 (as ssp. of *Regatarma forsteri*).

Total length 3.8(3.5–4.8), width 1.7(1.5–2.0). Pale areas on pronotum and hemelytra, when distinct, in pattern much as in Fig. 12a.

Head length 0.50(0.51–0.63), width across eyes 0.70(0.71–0.77), interocular distance 0.53(0.52–0.60). Antennae: length of segments – I 0.46(0.46–0.51), II 0.60(0.60–0.70), III 0.46(0.46–0.56), IV 0.62(0.53–0.70). Labium: length of segments – I 0.53(0.53–0.63), II 0.54(0.56–0.64), III 0.40(0.40–0.48), IV 0.33(0.32–0.37).

Pronotum: length 0.90(0.82–1.00), width at posterior margin 1.32(1.20–1.50). Scutellum: length 0.73(0.70–0.91), width 0.70(0.70–0.86). Hemelytra long, extending to posterior margin of tergum VI or on to tergum VII; length 2.2(2.0–2.6). Fore tibiae of male variably armed, almost unarmed in some specimens (but tubercles never absent from both forelegs).

Genitalia. Female. Spermatheca as in Fig. 12b. Male. Paramere as in Fig. 12c. Distal part of aedeagus as in Fig. 12d.

INTRASPECIFIC VARIATION. General coloration variable even within one series of specimens (e.g., Pyke Valley). Body more or less uniformly fuscous dorsally and ventrally (e.g., some Otira specimens). Body entirely uniformly ochraceous (e.g., Manapouri, West Arm). Paramere with an additional minute lobe proximal to dorsal lobe (some Franz Josef specimens).

MATERIAL EXAMINED. Holotype ♂, ♂ and ♀ paratypes (Upper Stillwater) (data in original description). **BR.** Mt. Dewar, 1100 m, 2♂. Punakaiki, Bullock Ck, 1♂. Rapahoe, 1♀. Lewis Pass, 850 m, 1♀. Greymouth, 1♂. **NC.** Arthur's Pass: 1♂; Alpine Club Hut, 735 m, 1♀; Dobsons Track, 974–1005 m, 1♂1♀. Bealey, 700 m, 1♂1♀. Bealey R., 3♂2♀. **WD.** Turiwhate (Kumara-Otira Rd), 122 m, 1♀. Taramakau, 1♂. Otira, 5♂4♀. Otira R., 4♂3♀ (CM). Otira Gorge, 457 m, 1♀. L. Ianthe, 61 m, 1♂. Mt. Hercules, 188 m, 1♂. Okarito, 1♀. Waiho, 3♂. Waiho Gorge, 1♀ (NM). L. Mapourika, 3♂2♀. Franz Josef: 5♂15♀; Callery Gorge, 6♂12♀; Upper Callery Gorge Track, 5♂2♀; Toi Toi, 1♂2♀; Fritz Ra., 761 m, 1♀. Alex Knob: 914 m, 2♂3♀; ——Track, 822 m, 1♂. Fox Glacier: 3♂3♀; 914 m, 1♀; 2 km S, 1♂; 10 km N, 1♂. Gillespies Beach, 1♀. Bruce Bay, 1♂ (UQ). Haast R: 274 m, 1♀; Pleasant Flat Bridge, 106 m, 1♂1♀; Haast Bridge, 3♂2♀. Haast Pass, 1♂4♀. Jackson Bay, 1♀. S end L. Wilmot, Pyke R., 1♂1♀. Head of L. Alabaster, Pyke Vly, 12♂16♀. **MK.** Mt. Cook: Governor's Bush, 761 m, 1♀; Sealy L. Track, 1♂3♀. **CO.** Piano Flat, 1♀. **FD.** Martins Bay, 1♂3♀ (1♂2♀, CM). Milford Sound, 1♀ (NM). Cleddau, 1♂ (NM). Hollyford Vly: 1♀; Key Summit, 548 m, 2♀. Highfalls Ck, end Hollyford Rd, 1♀. Eglinton Vly, 1♀. L. Manapouri: Peninsula, 1♂ (NM); West Arm, 18♂13♀. Wilmot Pass-Deep Cove, 1♂2♀. Spey R., 4♂4♀. Mica Burn, 4♂5♀. Turret Ra., Wolfe Flat, 600–680 m, 1♀.

REMARKS. Recorded from altitudes from near sea level to 1100 m.

Woodwardiana notialis (Woodward) (Fig. 12e,f)

Woodward, 1953, Rec. Canterbury Mus. 6: 202 (as ssp. of *Regatarma forsteri*).

Total length 3.9(3.5–4.5), width 1.8(1.6–2.0). Pale areas on pronotum and hemelytra rather similar to those in *evagorata* (see Fig. 12a); an additional minute 3rd spot on middle of pronotal posterior margin.

Head length 0.54(0.55–0.66), width across eyes 0.76(0.73–0.83), interocular distance 0.56(0.52–0.63). Antennae: length of segments – I 0.41(0.42–0.43), II (distal 3 segments missing in holotype) (0.56–0.60), III (0.44–0.45), IV (0.56). Labium: length of segments – I 0.50(0.46–0.55), II 0.46(0.41–0.53), III 0.36(0.34–0.37), IV 0.32(0.32–0.36).

Pronotum: length 0.90(0.80–0.90), width at posterior margin 1.40(1.30–1.63). Scutellum: length 0.76(0.76–1.00), width 0.73(0.73–0.93). Hemelytra extending to beyond anterior margin of tergum VI; length 2.1(1.9–2.5).

Genitalia. Female. Spermatheca as in Fig. 12e. Male. Pygophore and paramere similar to those of *evagorata*. Gonoporal process distal to helicoid process with an inflatable lobe or sheath (Fig. 12f).

INTRASPECIFIC VARIATION. Fore tibiae of male indistinctly armed (Opoho Bush).

MATERIAL EXAMINED. Holotype ♂, 1♀ paratype (data in original description). **DN.** Opoho Bush, 2♂, 13 May 1970, R.F. & C.L. Wilton (OM). Wangaloa,

E of Kaitangata, 1 ♀, 3 Oct 1966, F.A.

REMARKS. Recorded from near sea level to below 700 m (interior and coastline).

Woodwardiana nelsonensis (Woodward) (Fig. 12g–j)

Woodward, 1953, Rec. Canterbury Mus. 6: 194, 201, fig. 14 (as ssp. of *Regatarma forsteri*).

Total length 3.7(3.2–4.6), width 1.5(1.4–1.9).

Head length 0.51(0.44–0.63), width across eyes 0.71(0.66–0.83), interocular distance 0.50(0.45–0.63). Antennae: length of segments – I 0.44(0.40–0.56), II 0.63(0.50–0.75), III 0.50(0.42–0.60), IV 0.60(0.53–0.62). Labium: length of segments – I 0.54(0.45–0.70), II 0.54(0.46–0.73), III 0.44(0.36–0.56), IV 0.30(0.28–0.36).

Pronotum: length 0.86(0.73–1.00), width at posterior margin 1.20(1.10–1.50). Scutellum: length 0.67(0.61–0.93), width 0.67(0.62–0.93). Hemelytra extending to anterior margin or middle of tergum VI; length 1.7(1.5–2.2).

Genitalia. Female. Spermatheca generally as in Fig. 12g. Male. Pygophore constricted posteroventrally (Fig. 12h). Paramere with prominent lobes (Fig. 12i). Gonoporal process generally thick and heavily pigmented, distal to helicoid process gradually widened, slightly wavy distad, encased in inflatable lobe (Fig. 12j).

INTRASPECIFIC VARIATION. Coloration varies considerably. Distal part of spermatheca long, with up to 20 irregular turns; distal bulb with a distinct constriction (Pelorus Bridge; Karamea Saddle). Gonoporal process distal to helicoid process gradually thickened before narrowing to an acute point (Pelorus Bridge). Hairs on pronotum, scutellum, and hemelytra long and bristle-like, similar to those of *Truncala* (female, Dart Valley, Wangapeka).

The species is somewhat intermediate between *Regatarma* and *Woodwardiana* in such characters as body shape, the pilosity and coarser punctation of the hemelytra, the rather less broadly carinate and explanate pronotum, and the more pronounced armature on the fore tibiae of the male. However, it differs from *Regatarma* in, for example, the presence of a distinct though very short membrane, the proximal part of the spermatheca being narrower than the distal part, and the prominent inflatable lobe on the gonoporal process distal to the helicoid process.

MATERIAL EXAMINED. Holotype ♂, ♂ and ♀ paratypes (data in original description). **SD.** D'Urville I., Kopowai, 1 ♂, Apr 1971, F.A. Kenepuru Sound, Mt. Robinson Ridge, 500 m, 1 ♂ 1 ♀, 13 Mar 1970, J.T. **NN.** West Haven [Whanganui] Inlet, 1 ♀, 1 Apr 1965, G.R. Homestead, Kahurangi, 1 ♂, 21 Aug 1970, F.A. Totaranui: Awaroa Inlet, 136 m, 5 ♂ 6 ♀, 7 Oct 1965, J.T. & A.W.; ——Saddle, 27 Sep 1951, E.G. Torrent Bay, 1 ♂, 9 Apr 1965, A.W. Mt. Domett, 1250 m, 3 ♂ 2 ♀, Nov-Dec 1971. Riwaka, 1 ♂, 7 Jan 1942, No. 610. Karamea: 14 km NW, 1 ♀, 19 Jun 1967, F.A.; Glasseye Ck, 1 ♂, 28 Apr 1963, J.T.; ——Vly, 1 ♂, 21 Jun 1967, F.A.; ——Saddle, 418 m, 1 ♂ 1 ♀, 13 Oct 1970, J.T.; ——R. Gorge, 1 ♂, 27 Jun 1967, F.A.; ——Bluffs, 1 ♀, 11 Mar 1971, S. Hunter. Wangapeka, Dart Vly, 1 ♀, 20 Apr 1967, F.A. **MB.** Pelorus Bridge, 6 ♂ 3 ♀, 10 Oct 1964, G.K. Upper Wakamarina Vly Track, 304 m, 2 ♀, 12 Aug 1966, A.W.

REMARKS. Differs from *evagorata* and *notialis* in the characters keyed. Recorded usually from altitudes of 300–900 m, but occasionally up to 1250 m.

Woodwardiana paparia n.sp. (Fig. 12k,l)

Total length 3.4(3.4–4.6), width 1.4(1.4–2.0). Body generally flat, explanate, and not conspicuously pilose.

Head length 0.53(0.50–0.62), width across eyes 0.66(0.66–0.76), interocular distance 0.47(0.46–0.54). Antennae: length of segments – I 0.42(0.42–0.54), II 0.56(0.54–0.73), III 0.44(0.43–0.51), IV 0.52(0.52–0.62). Labium: length of segments – I 0.53(0.52–0.66), II 0.53(0.52–0.70), III 0.46(0.43–0.56), IV 0.32(0.32–0.39).

Pronotum dorsally flat; lateral margins broadly carinate and explanate; length 0.73(0.74–1.00), width at posterior margin 1.16(1.16–1.50). Scutellum obsoletely punctate; length 0.63(0.61–1.00), width 0.60(0.54–0.80). Hemelytra extending to between posterior margin of tergum V and middle of VI; generally weakly punctate; lateral margins rather broadly explanate and carinate; membrane as in *nelsonensis;* length 1.6(1.6–2.5). Fore femora relatively long and slender; fore tibiae in male almost straight, unarmed (as in type series) or weakly or strongly armed.

Genitalia. Female. Proximal part of spermatheca as wide as distal part (Fig. 12k). Male. Dorsal lobe of paramere slightly reduced. Gonoporal process distal to helicoid process gradually thickened, ending abruptly, not encased in inflatable lobe (Fig. 12l).

INTRASPECIFIC VARIATION. There is considerable variation in general coloration, the length of the proximal part of the spermatheca, and the armature of the fore tibiae in the male.

The specimen from Johnson Peak differs from the above description as follows: dorsum of body more or less uniformly fuscous brown, without distinct pale areas on pronotum and hemelytra; hemelytra longer, extending on to tergum VII, distal end more rounded, membrane more narrowed and indistinct, punctures obsolete, proximal part of spermatheca short, wider than distal part.

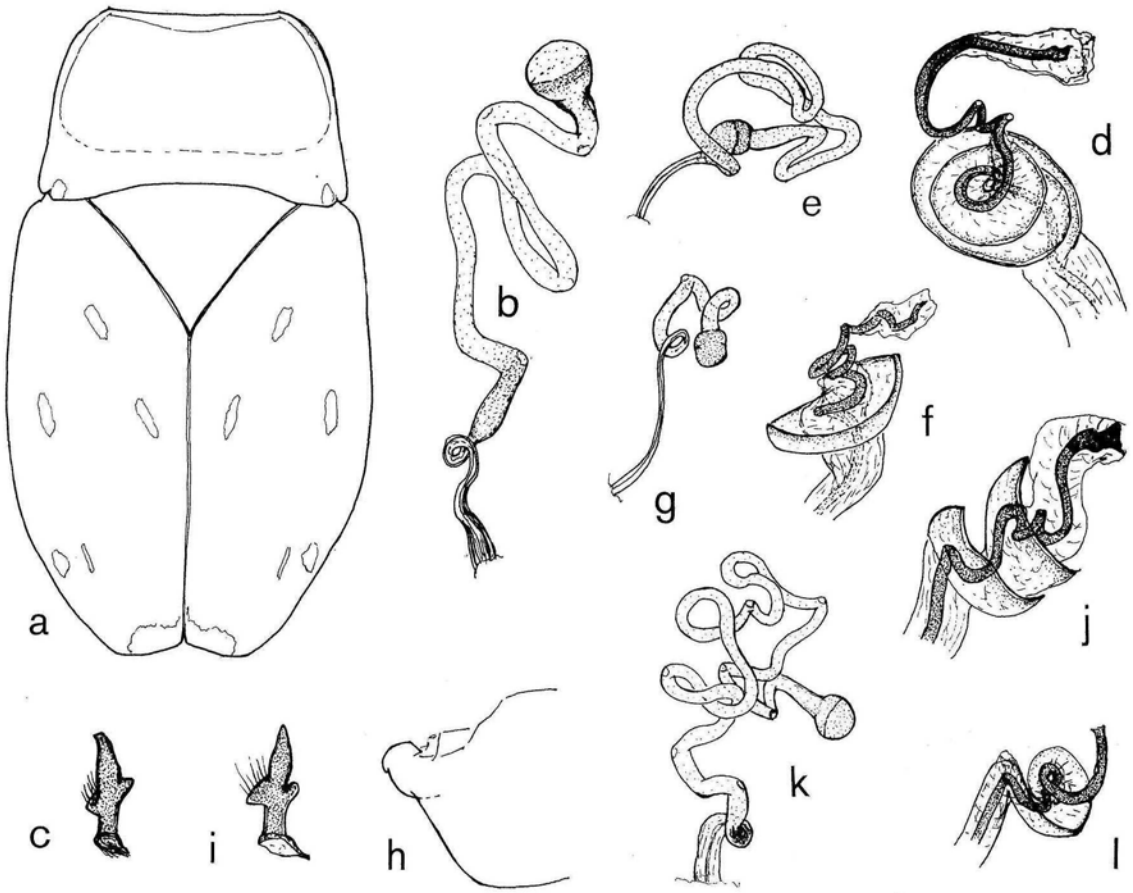


Fig. 12. *Woodwardiana* spp. **a–d,** *evagorata*: (a) paratype ♂, dorsal outline of pronotum and hemelytra, showing pattern of pale areas; (b) spermatheca; (c) left paramere, dorsal or inner view; (d) distal part of aedeagus. **e,f,** *notialis:* (e) paratype, spermatheca; (f) distal part of aedeagus, **g–j,** *nelsonensis,* paratypes: (g) spermatheca; (h) distal part of pygophore, lateral view; (i) left paramere, dorsal or inner view; (j) distal part of aedeagus. **k,l,** *paparia,* paratypes: (k) spermatheca; (l) distal part of aedeagus.

TYPE DATA. Holotype ♂, allotype, 3♂ and 8♀ paratypes: New Zealand, Nelson, Takaka Hill, beech forest litter, 18 April 1963, G. Kuschel (holotype and allotype, Entomology Division Coll., DSIR, Auckland; paratypes, AIM, BM, CM, DSIR, NM, OM, UQ). Also the following non-type material. **NN.** Mangarakau, 1♂2♀, 1 Apr 1965, G.R. Aorere Vly, 1♂, 14 Apr 1963, J.T. S Paturau, Fraser Stm, above 304 m, 3♂1♀, 22 Aug 1967, F.A. Puramahoi, 3♂1♀, 26 Oct 1965, L.P. Marchant. Takaka: Upper——, Waingara R., ridge on W side, 914 m, 1♂2♀, 29 Aug 1965, A.W. ——Vly, 3♂7♀, 26 Nov 1963; ——Hill, 791 m, 1♂1♀, 2 Apr 1965, J.T. & A.W.; E—— Hill, 551 m, 1♂, 31 Mar 1965, N.W.; Canaan, Wainui R., 1♀, 8 Dec 1965, J.T.; Canaan, 760 m, 1♀, 28 Nov 1964, G.K.; Canaan Saddle, 852 m, 1♀, 27 Feb 1967, J.T. Haupiri Ra., The Castles, 546 m, 1♂2♀, 23 Apr 1962, R.G. Ordish (NM). Cobb Vly: L. Sylvester, 1300 m, 1♂1♀, 15 Dec 1967, S. Edridge, 1310 m, 1♀, 29 Oct 1969, J.D.; bush behind Mytton Hut, 1200 m, 1♂2♀, 13 Dec 1967, S. Edridge. Mt. Arthur: 1140 m, 1♂, 13–19 Nov 1969, J.T.; Flora Camp, 1♂, 20 Jan 1948, R.F. (NM); Six Mile Ck, Flora Track, 900 m, 1♂, 17 Nov 1969, J.T. **MB.** Richmond Ra., Johnson Peak, 1591 m, 1♀ (anomalous), 13 Mar 1969, J.D. **BR.** Tutaki Vly, Braeburn Track, saddle nr Rotoroa, 1♂, 9 Mar 1965, J.T. & G.K. L. Rotoroa, 1♂3♀, 9 Mar 1965, J.T. Maruia Saddle, 456 m, 2♂, 2 Jun 1965, J.T.

REMARKS. Differs from other species of *Woodwardiana* in the characters keyed and detailed above. The species name, based on 'papa', a modern Maori word, alludes to its relatively flat and explanate body. Recorded usually from higher altitudes than *nelsonensis* (up to 1591 m).

Genus *Tomocoris* Woodward

Woodward, 1953, Rec. Canterbury Mus. 6: 212; –1955, U. Queensland Pap. Ent. 1: 3–5. –Slater, 1964, Catalogue Lygaeidae World 2: 868 (bibliography). –Ashlock, 1964, Ann. ent. Soc. Am. 57: 421 (in Targaremini). –Eyles, 1967, N.Z. Jl Sci. 10: 421 (keyed).

Longihaustrum Woodward, 1953, Rec. Canterbury Mus. 6: 214–15 (synonymised by Woodward 1963).

TYPE-SPECIES: *Tomocoris truncatus* Woodward, by original designation.

Woodward (1955) gave a detailed redescription of the genus so as to accommodate 3 new species from eastern Australia. Ashlock (1964) analysed several internal and external characters of *T. ornatus* (Woodward), as being representative of this genus. In the present study, the genitalia of the type-species also have been examined. *T. insularis* Woodward, recorded from the Three Kings Islands, is transferred to the new genus *Paratruncala* (see above).

Basal segment of labium nearing or reaching base of head. Macropterous form (known at present only in *T. ornatus* and *T. cookensis* n.sp.) with posterior margin of corium emarginate medially. Fore femora slightly incrassate, unarmed. Inner laterotergites well developed, reduced, or absent, connexiva closely placed with terga. Scent-gland scars subequal or anterior scar slightly wider. Sutures between terga III–VI shallowly curved cephalad. Middle trichobothrium on sternum V slightly closer to posterior than to anterior trichobothrium; posterior 2 trichobothria on sternum VI separate; submedian trichobothria on sterna III and IV reduced, arranged in a close triangle.

Genitalia. Female. Spermatheca (e.g., Fig. 13b) long, slender; proximal part short; distal part tubular, loosely and irregularly coiled, distended towards distal bulb, which is prominently developed. Male. Paramere (e.g., Fig. 13d) short, flat. Aedeagus (e.g., Fig. 13e): phallotheca large, heavily sclerotised ventrally in a regular (usually 'V') pattern, distal sclerotised region usually produced into 2 arms on sides of phallotheca; conjunctiva usually short; ejaculatory reservoir moderately developed, complete (e.g., Fig. 13f), or greatly reduced and incomplete (Fig. 13p); vesica with or without inflatable lobes or processes; helicoid process with 1–2 coils, pigmented along margins; gonoporal process slender, distal to helicoid process long, regularly coiled, not encased in inflatable lobe or sheath.

Key to New Zealand and Cook Island species of *Tomocoris*

1. Ejaculatory reservoir greatly reduced, wings absent; gonoporal process distal to helicoid process short, with 2–3 coils (Fig. 13p); macropterous only; Cook Is ..... *cookensis*
—Ejaculatory reservoir moderately well developed, wings present; gonoporal process distal to helicoid process long, with more than 5 coils (e.g., Fig. 13e); only occasionally macropterous; New Zealand 2
2. Labium not greatly exceeding hind coxae, segment III shorter than I and II ..... *truncatus*
—Labium extending nearly halfway along abdomen, segment III subequal to II and much longer than I ..... *ornatus*

Tomocoris truncatus Woodward (Fig. 13a–f)

Woodward, 1953, Rec. Canterbury Mus. 6: 194, 198, 204, 212–13, fig. 8, 24, 38.

Total length 2.4(2.0–2.4), width 0.9(0.7–0.9).

Head length 0.46(0.36–0.40), width across eyes 0.50(0.46–0.50), interocular distance 0.42(0.36–0.43). Antennae: length of segments – I 0.26(0.26–0.30), II 0.33(0.33–0.40), III 0.20(0.20–0.23), IV missing in holotype (0.35–0.40). Labium: segment I not reaching base of head; length of segments – I 0.34(0.30–0.33), II 0.30(0.28–0.36), III 0.26(0.24–0.29), IV 0.25(0.25–0.30).

Pronotum: length 0.41(0.40–0.50), width at posterior margin 0.65(0.60–0.70). Scutellum: length 0.25(0.24–0.26), width 0.33(0.30–0.31). Length of hemelytra 0.70(0.52–0.72). Inner laterotergites of abdomen absent. Abdominal terga I, II, and most of III not sclerotised. Anterior scent-gland scar slightly wider than posterior 2 scars. Tergum VII in male with several sparse punctures on distal half. Median apodeme on anterior margin of sternum VII in male chisel-shaped, as long as sternum VI.

Genitalia. Female. Ovipositor as in Fig. 13a,a'. Spermatheca as in Fig. 13b. Male. Pygophore as in Fig. 13c. Paramere (Fig. 13d): lobes prominent. Aedeagus (Fig. 13e): body and wings as in Fig. 13f; gonoporal process with 5–8 large, loose coils.

MATERIAL EXAMINED. Holotype ♀ (data in original description). **KA.** Kaikoura: Spey Downs, 3♀, 24 Oct 1962, J.T. & A.E.; Mt. Alexander, 1005 m, 3♂, 12 Oct 1966, A.W.: Green Burn R., 1♀, 27 Jan 1947, A.J. Healy (NM).

Tomocoris ornatus (Woodward) (Fig. 13g–l")

Woodward, 1953, Rec. Canterbury Mus. 6: 194, 198, 215, fig. 10, 28 (*Longihaustrum ornatum*). –Ashlock, 1964, Ann. ent. Soc. Am. 57: 417–19, fig. 2h, 3m (♂ genitalia, abdominal morphology, etc.).

Total length 2.4(2.1–2.5), width 0.9(0.8–1.0).

Head length 0.36(0.40–0.47), width across eyes 0.50(0.47–0.56), interocular distance 0.35(0.36–0.43). Antennae: length of segments – I 0.26(0.29–0.32), II 0.39(0.38–0.43), III 0.30(0.29–0.32), IV 0.42(0.38–0.41). Labium: segment I reaching base of head; segment II passing fore coxae, narrowed proximad, distinctly arched forward to accommodate swollen

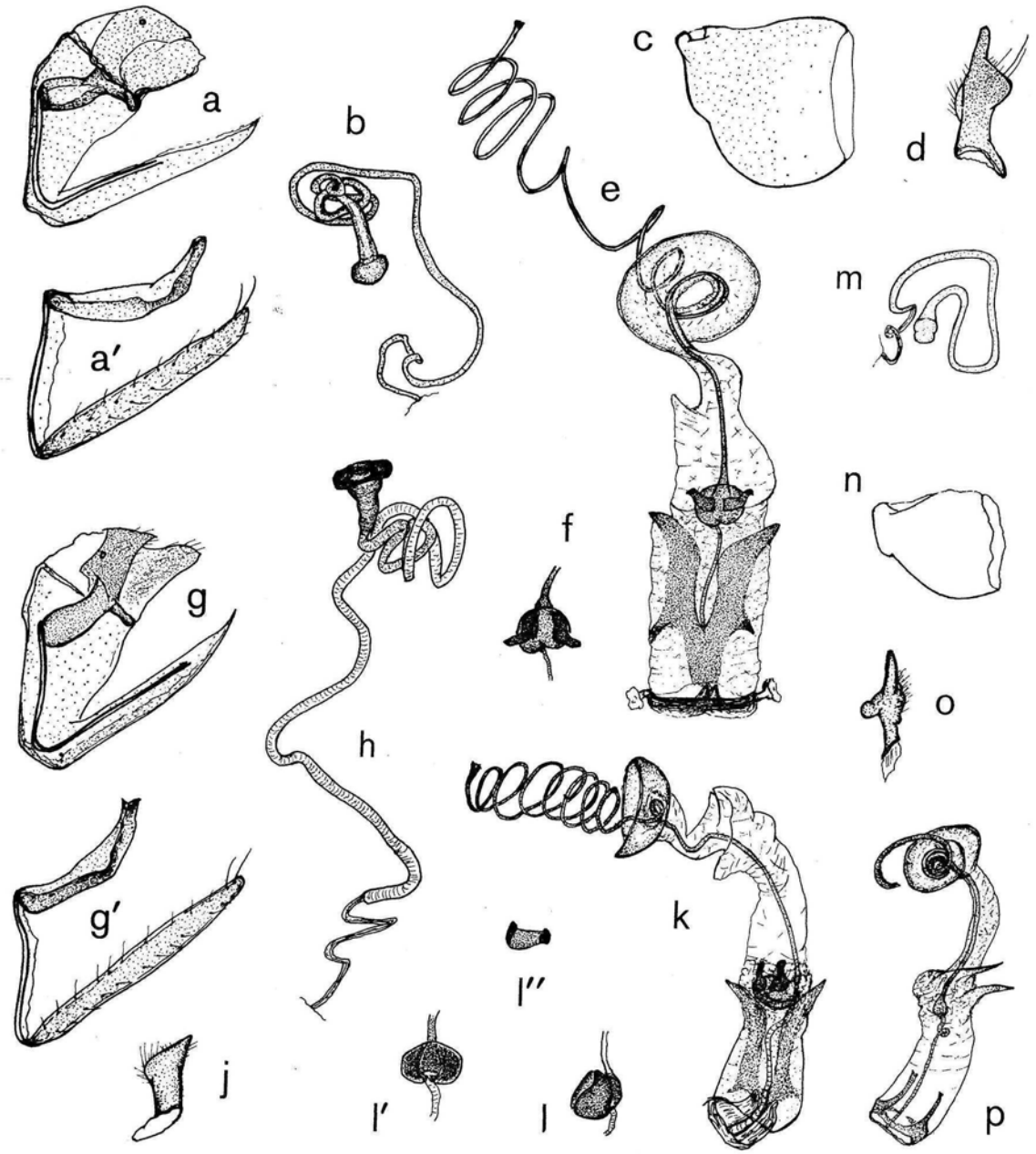


Fig. 13. *Tomocoris* spp. **a–f,** *truncatus* (a–b, holotype ♀): (a,a′) ovipositor; (b) spermatheca; (c) pygophore, lateral view; (d) left paramere, dorsal or inner view; (e) aedeagus, ventral view; (f) ejaculatory reservoir. **g–l″,** *ornatus* (g–h, allotype; i–l″, holotype ♂): (g,g′) ovipositor; (h) spermatheca; (i,i′) pygophore, lateral and dorsal views; (j) right paramere, dorsal or inner view; (k) aedeagus; (l–l″) ejaculatory reservoir – body, lateral and front views, and left wing. **m–p,** *cookensis* (m, allotype; n–p, paratype); (m) spermatheca; (n) pygophore, lateral view; (o) right paramere; (p) aedeagus.

prothoracic sternum; length of segments – I 0.31 (0.30–0.38), II 0.39(0.42–0.50), III 0.40(0.36–0.45), IV 0.32(0.32–0.40).

Pronotum: length 0.46(0.46–0.53), width at posterior margin 0.76(0.72–0.86). Scutellum: length 0.40(0.36–0.40), width 0.42(0.40–0.47). Length of hemelytra 1.1(1.1–1.2). Inner laterotergites of abdomen present but reduced. Scent-gland scars subequal. Median apodeme on anterior margin of sternum VII in male short, not as long as sternum VI.

Genitalia. Female. Ovipositor as in Fig. 13g,g′. Ramus I extending to over three-quarters length of gonapophysis I. Spermatheca as in Fig. 13h; distal part with 3–4 loose, irregular coils; distal bulb with conspicuous flange at apex. Male. Pygophore (Fig. 13i,i′) with lip-like projection on posterior end. Paramere (Fig. 13j): lobes reduced. Aedeagus (Fig. 13k): body of ejaculatory reservoir as in Fig. 13l,l′; wing (Fig. 13l″) with ends shallowly and oppositely twisted—inner (broad) end outcurved, outer (narrow) end incurved; gonoporal process with 6–8 uniform loose coils.

MATERIAL EXAMINED. Holotype ♂ (data in original description). **Three Kings Is,** Great I., Tasman Vly: 240 m, 4♂2♀, Nov 1970, G.R.; West Gully summit, 9♂13♀, Nov 1970, J.W. **AK.** Helensville, Mt. Auckland, 3♂, 10 Sep 1962, B.M. May. Hunua: 1♀ (AIM): ——Ra., 2♂1♀, 2 Dec 1961, G.K. **CL.** Mercury Is: Stanley I., NW corner, 1♀; Middle I., 1♀; Red I., von Luckner Cove, 1♂7♀, 21–24 Nov 1972, G.R. Ohena Is, Koruenga I., 3♂2♀, 27 Nov 1972, G.R. The Aldermen, Ruamahua-nui I., 5♂4♀, 16 Nov 1972, G.R. **NN.** Little Wanganui R., mouth of Lawrence Stm, 2♀, 24 Jun 1967, F.A. **BR.** Maruia Saddle, 2♂4♀, 23 Mar 1965, B.B. Given. **WD.** Haast Pass, 1♂, 20 Mar 1968, R.C.

REMARKS. Differs from *truncatus* in the characters keyed and listed above.

Woodward (1963) mentioned for this species the existence of an uncommon macropterous form, based on 4 (3♂1♀) specimens collected on Rangitoto Island (Hauraki Gulf, Auckland, Aug 1961, G. Batt (UQ)). In the present study a macropterous male from the Three Kings Islands (Great I., Tasman Valley, Nov 1970, G.R.) has been examined; its dimensions are as follows. Total length 2.5, width 1.0. Head length 0.40, width across eyes 0.50, interocular distance 0.36, interocellar distance 0.26, eye–ocellus 0.04. Length of antennal segments – I 0.26, II 0.36, III 0.27, IV 0.36. Length of labial segments – I 0.33, II 0.40, III 0.36, IV 0.32. Pronotum: length 0.53, width at posterior margin 0.90. Scutellum: length 0.46, width 0.45. Claval commissure 0.23. Hemelytral length 1.66; corial length 1.23; membrane width 0.63.

Tomocoris cookensis n.sp. (Fig. 13m–p)

Generally fuscous. Dorsum of head (excluding tylus) and abdomen shiny black. Pronotum, scutellum excluding apical marginal area, and thoracic pleura dull black. Antennae, tylus, labium, and legs dark brown. Clavus and hemelytra generally testaceous. Most of middle third (transversely) and apical angle of corium fuscous. Small area near inner angle of corium greyish. Membrane uniformly brown. Body covered with only short, pale, sparse hairs.

[Dimensions: holotype first, range of remaining type series in parentheses.] Total length 2.5(2.2–2.7), width 1.0(0.9–1.1).

Head length 0.40(0.40–0.42), width across eyes 0.56(0.51–0.60), interocular distance 0.40(0.35–0.40), interocellar distance 0.25(0.25–0.32), eye-ocellus 0.05(0.04–0.05). Eyes large, facets conspicuous. Ocelli prominent. Antennae long and slender, segment IV as thick as I; length of segments – I 0.32(0.30), II 0.46(0.40–0.46), III 0.32(0.31–0.36), IV 0.45(0.41–0.43). Labium slightly exceeding hind coxae, segment I nearing but not reaching base of head; length of segments – I 0.36(0.33–0.40), II 0.45(0.40–0.51), III 0.43(0.37–0.52), IV 0.36(0.32–0.38).

Pronotum large and broad, only slightly narrowed anteriorly; anterior lobe region slightly more swollen than posterior lobe region; collar and posterior lobe region finely punctate; length 0.56(0.50–0.56), width at posterior margin 1.00(0.90–1.06). Scutellum large, disc raised in a 'Y' shape, finely punctate; length 0.53(0.47–0.53), width 0.52(0.46–0.56). Metathoracic scent-gland auricle narrow, crescentic. Clavus with 3 regular, nearly parallel rows of punctures; inner margin expanded towards claval base; commissure 0.17(0.16–0.21). Hemelytra macropterous, exposing part of terminal abdominal segment in holotype, covering almost the entire abdomen in others; corium punctate in 2 regular parallel rows adjoining claval suture, the outer row extending on to posterior margin, which is emarginate medially, outer half of remainder of corium rather irregularly punctate, lateral margins slightly carinate, slightly narrowed in proximal third; membrane with obscure veins; length 1.50(1.40–1.70); length of corium 1.20(1.10–1.30); width of membrane 0.55(0.52–0.65). Hind wings well developed, venation distinct. Legs long and slender; hind basitarsus *c.*1¾× as long as distal 2 segments together. Inner laterotergites of abdomen well developed. Scent-gland scars prominent, posterior scar slightly wider than anterior 2 scars. Apodeme on anterior margin of sternum VII in male chisel-shaped, about three-quarters as long as sternum VI.

Genitalia. Female. Ovipositor moderately slender, ramus I extending to about half length of gonapo-

physis I. Spermatheca as in Fig. 13m. Male. Pygophore as in Fig. 13n. Paramere (Fig. 13o) moderately flat, ventral lobe emarginate. Aedeagus (Fig. 13p): phallothecal processes not as prominent as in other species studied; conjunctiva moderately long; vesica with proximal membranous processes, slender distal to these; helicoid process with 1–2 coils, pigmented; ejaculatory reservoir greatly reduced; wings absent; gonoporal process distal to helicoid process with 2–3 coils.

TYPE DATA. Cook Islands, Rarotonga. Holotype ♂, allotype, 1♂ paratype: Totokoitu, 32 m, litter, 17 March 1975, J.S. Dugdale. Other paratypes: 1 (abdomen missing), Totokoitu, pit trap in second-growth forest, 2–15 October 1975, J.C. Watt; 1♂, Te Rua Manga, moss and litter, 15 March 1975, J.S. Dugdale; 1♂, leaf litter, 9 May 1965, G.W. Ramsay. (Holotype, allotype, and 1 paratype, Entomology Division Coll., DSIR, Auckland; other paratypes, BM, NM, UQ. Allotype and 2 paratypes dissected.)

REMARKS. Differs from the New Zealand species in the characters keyed and in having generally darker coloration, longer antennae, larger eyes, and the ventral lobe of the paramere emarginate.

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