REICHENBACHIA

Staatliches Museum für Tierkunde Dresden

Band 26 | Ausgegeben: 10. April 1989 | Nr. 18

Notes on the Haloveliinae of Australia and the Solomon Islands

(Insecta, Hemiptera, Heteroptera: Veliidae)

With 64 Figures

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Oxford

Introduction

During an Expedition in 1979 to Australia to study the freshwater Hemiptera-Heteroptera as a preliminary to writing a full account of the fauna, a new species of *Halovelia* was collected from Mangrove swamp on Stradbroke Island, Queensland. The opportunity is taken of briefly reviewing all the species known from the Australian littoral with the exception of *H. angulana* POLHEMUS (1982) which was not available for study.

In the Hope Entomological Collections, Oxford, a small collection made by E. S. BROWN from several islands in the Solomons has been found to include marine gerrids and veliids, the latter are included in these notes as there are few if any records of Haloveliinae from these islands.

The Haloveliinae includes two genera which are associated with marine habitats particularly the intertidal zone, mangrove swamp and occasionally more exposed marine environments. These notes deal with the genera *Halovelia* BERGROTH and *Xenobates* ESAKI, the former includes at least twelve species. POLHEMUS (1982) erected subgenus *Colpovelia* to include those species without a comb on the male front tibia, he also comments on the more sombre coloration of *Halovelia* s. str. compared with *Colpovelia*. *Xenobates* closely resembles *Halovelia* in general structure and appearance, the most obvious difference is that the middle legs of *Xenobates* have a fringe of extremely long hairs (Fig. 56 & 63) these are not present in *Halovelia*.

Material and methods

All figures of dorsal, ventral and lateral habitus of adults drawn from dried material, specimens originally preserved in ethanol alcohol indicated in text. Text figures of the legs, antennae and male genitalia made from macerated slide mounted preparations, all measurements in text of these structures to a common scale 100 units = 1 mm. Male genitalia; parameres symmetrical, figured from different aspects. Fig. 27 (*Halovelia myorensis* sp. n.) shows left paramere dislodged during maceration. Some antennal segments have fairly prominent annular rings, these are not apparent in dry mounted specimens but are clearly visible when 'cleared' and slide mounted. The curvature of the first antennal segment of the *„maritima* group" especially the males is more apparent when viewed ventrally, the segment partially enclosing the lateral margins of the rostrum and associated structures.

Systematic position and biology of the Haloveliinae

ESAKI (1926) includes them in the Gerridae; CHINA & MILLER (1959) place them in the Veliidae. ANDERSEN (1982) summarises the opinions expressed on this aberrant group of Veliidae. ANDERSEN & POLHEMUS (1976) and POLHEMUS (1982) comment on their biology. KELLEN (1959) gives a detailed account of the biology of *Halovelia marianarum* USINGER in Samoa.

Halovelia can be divided into four groups:

1) *Halovelia (Halovelia)* male with a fore-tibial comb: *maritima* BERGROTH, *hilli* & *loyaltiensis* CHINA, *malayana* and *septentrionalis* ESAKI and *marianarum* USINGER.
2) *Halovelia (Colpovelia)* male without a fore tibial comb, fore trochanter not spinose and sternum keeled: *angulana* POLHEMUS.
3) *Halovelia* (species group) male without a fore tibial comb, trochanter spinose and sternum keeled: *browni* sp. n. and *carinata* sp. n.
4) *Halovelia* (species group) male without fore tibial comb, fore trochanter not spinose and sternum not keeled: *myorensis* sp. n.

Halovelia maritima BERGROTH (Figs. 1–7)

Halovelia maritima BERGROTH, 1893; Type species by Monotypy. Cartier Island, Timor Sea, about 175 miles from Cape Bouganville and Cape Voltaire, N. W. Australia.
H. maritima: ESAKI, 1926; New Guinea, Dregerhafen.
H. maritima: HALE, 1926; Western Australia, Pelsart Islands, figures and description of adults and immature stages.
H. maritima: CHINA, 1957; figured.
H. maritima: POLHEMUS, 1982; Northern Territory, Darwin, East Point Reef, compared with *hilli*.

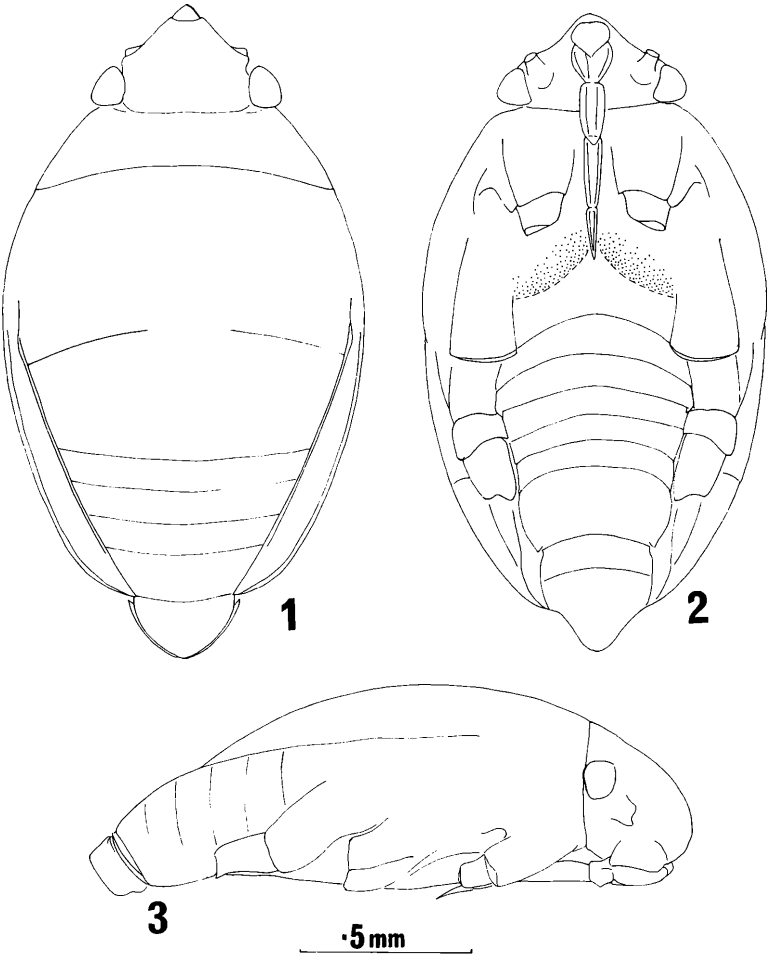
Figs. 1–7 are based on a male from the type locality – Arafura Sea, 18 May 1890, J. J. WALKER. A label in CHAMPION's handwriting states 'Under blocks of coral below high water mark. Cartier I. Timor Sea / 100 miles from mainland small island' This series of 3 males, 7 females and 1 immature female all stuck on the same piece of card were presented to the British Museum (Natural History), 1927–409. A male has been selected and marked with a red 'T' ♂ presumably to indicate type. Card also has another label in same handwriting '*Halovelia maritima* Bergr. EMM, 1893 p. 277' CHINA clearly regards the male marked with a red 'T' as BERGROTH's type. ESAKI (1926) commenting on *maritima* states 'The sex of the types of *Halovelia maritima* is female as supposed by Hale', ESAKI crediting HALE with the first description of the male. BERGROTH's description seems to apply principally to the female. ESAKI (1926: 158 & 163) interpretation does suggest that BERGROTH retained the Type of *maritima* in his collection. The male in the British Museum marked as Type and referred to as such by CHINA (1957) does indicate a certain amount of confusion as to which is the Type.

Males 1.7 mm long, 0.97–0.98 mm wide; females 2.14 mm long, 1.0–1.1 mm wide.

Apterous male (Figs. 1–3):
Head and antennae reddish brown, eyes darker. Pronotum and mesonotum becoming progressively darker towards the abdomen which is almost black. Connexivum slightly paler. Legs and underside uniform reddish brown.
Structure, antennae: 1) 30; 2) 22+1.5; 3) 29+2; 4) 39+1. First segment clearly thicker than 2 & 3, proximally slightly concave on inner margin, 4th segment fusiform (Fig. 4). CHINA (1957) figures for *maritima* are 1) 11; 2) 11; 3) 14; 4) 18; taken from carded series of specimens.

	Femur	Tibia	Tarsi i	Tarsi ii
Front leg	60	52	7	11
Middle leg	100	76	28	19
Hind leg	69	60	14	15

Fore femur incrassate, tibia with a prominent distal comb (Fig. 5). Middle femur more or less parallel-sided, margins with a fine dense fringe of hairs (Fig. 6). Hind leg slightly incrassate with a dense fringe of hairs (Fig. 7).
Head with a faint median impressed line not reaching posterior margin. Eyes small, interocular space about 3.5x eye width. Head width slightly greater than median length 14:11. Rostrum reaching well beyond the front coxae. Pronotum short at mid-line, convex laterally, just under half median head length. Mesonotum long, suture laterally almost



Figs. 1–3: *Halovelia maritima* BERGROTH, male. 1 – dorsal aspect; 2 – ventral aspect; 3 – lateral aspect.

obsolete and 4x longer than pronotum. Metanotum rather shorter. Tergites appearing to be of equal length. Connexivum slightly raised, rather more conspicuous posteriorly. Sternites covered with a silvery pubescence overlying shorter dark brown pubescence.

Apterous female

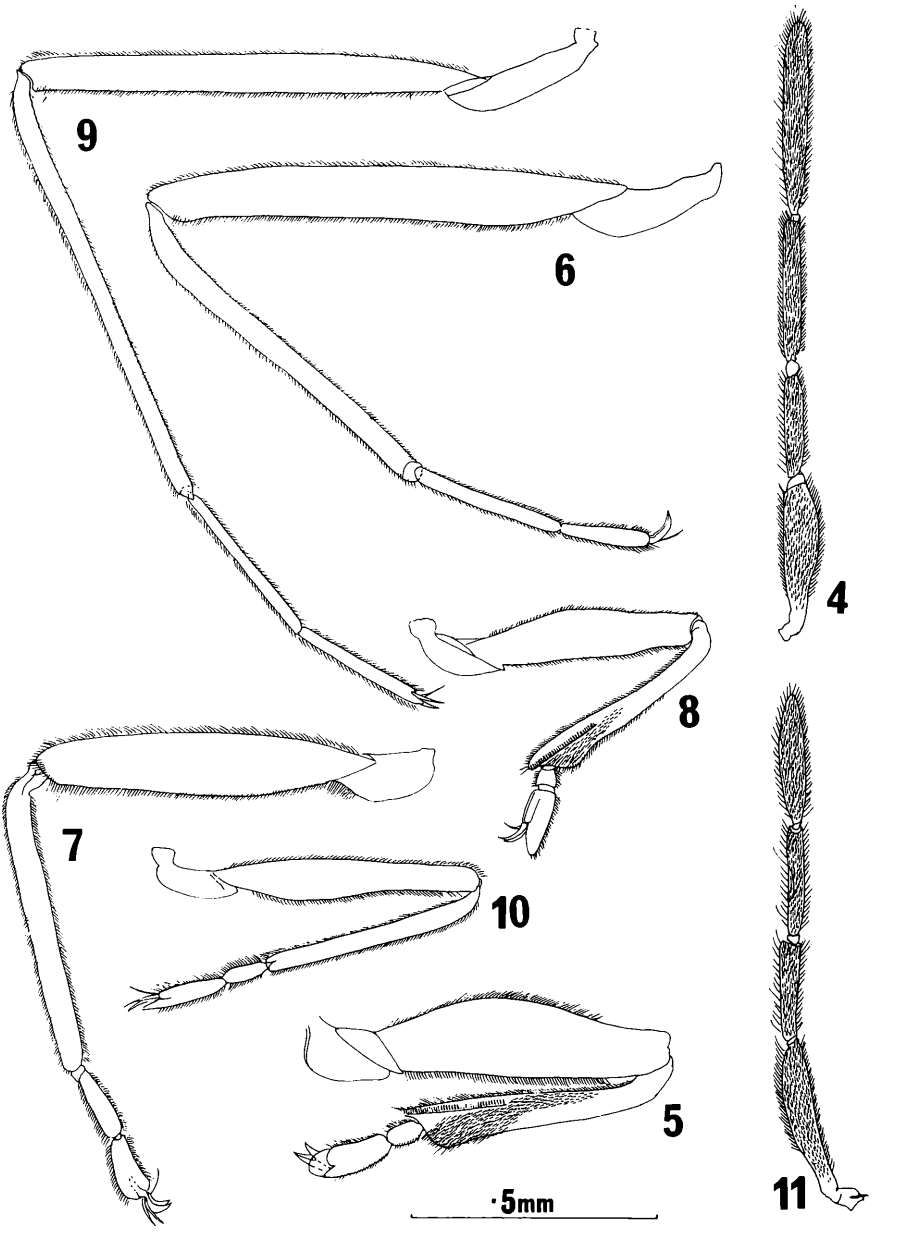
Similar to male in general coloration. Rather more elongate the male. Mesonotum, metanotum and basal tergites strongly elevated with a conspicuous patch of longer silvery hairs caudad. Remainder of tergites depressed, enclosed by a prominent connexivum, distally with a dense fringe of long pale yellow hairs curving round the end of the abdomen.

Halovelia hilli CHINA (Figs. 8–15)

Halovelia hilli CHINA, 1957; Monte Bello Island, South Hermite Mangrove swamp, August 1952, G. WEDD. Holotype ♂, 10 ♂♂ and 2 ♀♀ paratypes; 8 ♂♂ and 10 ♀♀ paratypes, same data, 21. x. 1952, F. L. HILL.

H. hilli: POLHEMUS, 1982; Northern Territory, Darwin, East Point Reef. Compared with *maritima*.

Males 1.4–1.46 mm long, 0.81–0.83 mm wide; females 1.97–2.01 mm long, 1 mm wide.

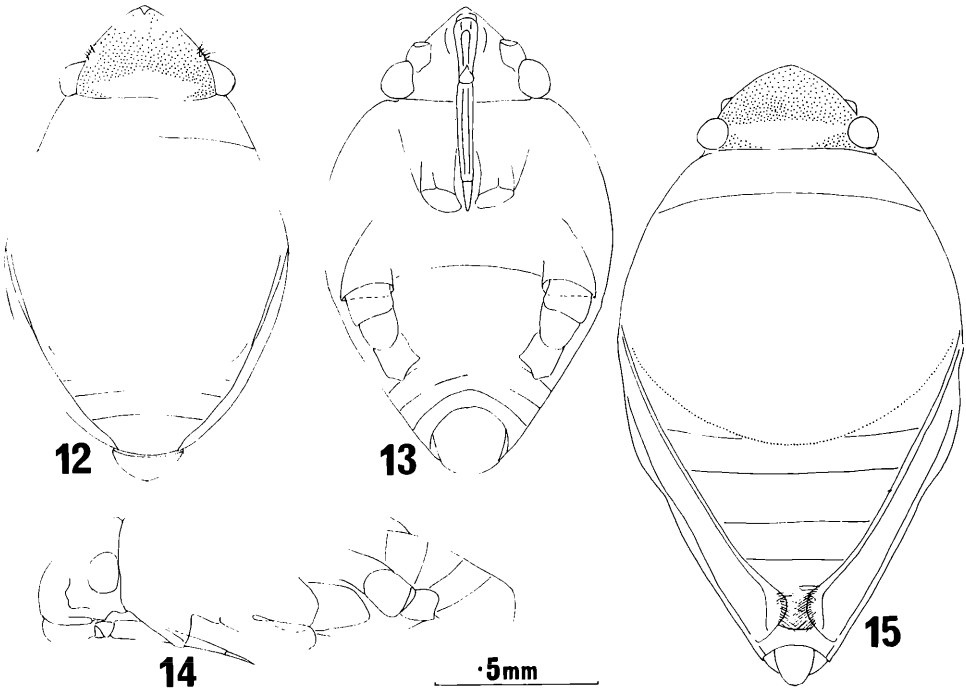


Figs. 4–11: *Halovelia* spp., male (4–7 *maritima*, 8–11 *hilli* CHINA). 4 – antennae; 5 – front leg; 6 – middle leg; 7 – hind leg; 8 – front leg; 9 – middle leg; 10 – hind leg; 11 – antennae.

Apterous male (Figs. 12–14):

Head and eyes reddish brown posteriorly, remainder of dorsum black with silvery pubescence overlying a thick layer of black pubescence. Legs and antennae shining reddish reddish brown.

Structure, antennae: 1) 32; 2) 20; 3) 22+1.5; 4 26+1. First segment thickened, lower inner margin concave, 2nd and 3rd segments thinner, 4th fusiform (Fig. 11).



Figs. 12–15: *Halovelia hilli* CHINA (12–14 male, 15 female). 12 – dorsal aspect; 13 – ventral aspect; 14 – lateral aspect; 15 – dorsal view.

	Femur	Tibia	Tarsi i	Tarsi ii
Front leg	50	45	5	14
Middle leg	93	90	35	27
Hind leg	52	47	9	15

Fore femur moderately incrassate, tibia with a prominent comb (Fig. 8). Legs fringed with a dense mat of short whitish silvery hairs (Figs. 9 & 10).

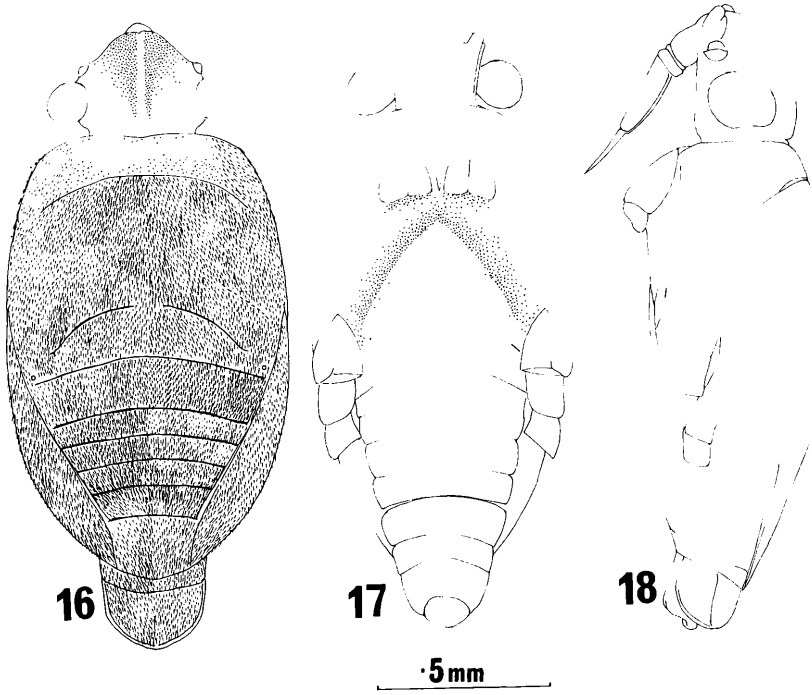
Head evenly rounded without a faint median impressed line. Eyes small about $^1/_4$ interocular space. Head width greater than median length 12:9 and 3x longer than the pronotum at mid-line, very slightly convex laterally. Suture between mesonotum and metanotum obsolete. Connexivum slightly raised. Meso- and metanotum continuous with tergites. Meso- and metasternum with short fine pubescence, sternites with longer silvery pubescence.

Apterous female

Coloration similar to male with a more prominent orange spot on head posteriorly (Fig. 15). First antennal segment not as robust as that of male. Pronotal suture tending to be obsolescent medially. Dorsal habitus excluding head black with faint iridescence, the fine pubescence overlayed by longer straggly silvery hairs. Meso- and metanotum elevated extending distally and sharply convex. Connexivum anteriorly reflexed outwards, gradually rotating and becoming upright posteriorly, terminating with a dense short fringe of hairs. Description based on 2 ♂♂ and 2 ♀♀ from the type locality, type series in the British Museum (Natural History).

Halovelia myorensis sp. n. (Figs. 16–22 & 27)

Males 1.70–1.83 mm long, 0,85–0.90 mm wide; females 1.87–1.95 mm long, 0.99–1.05 mm wide.



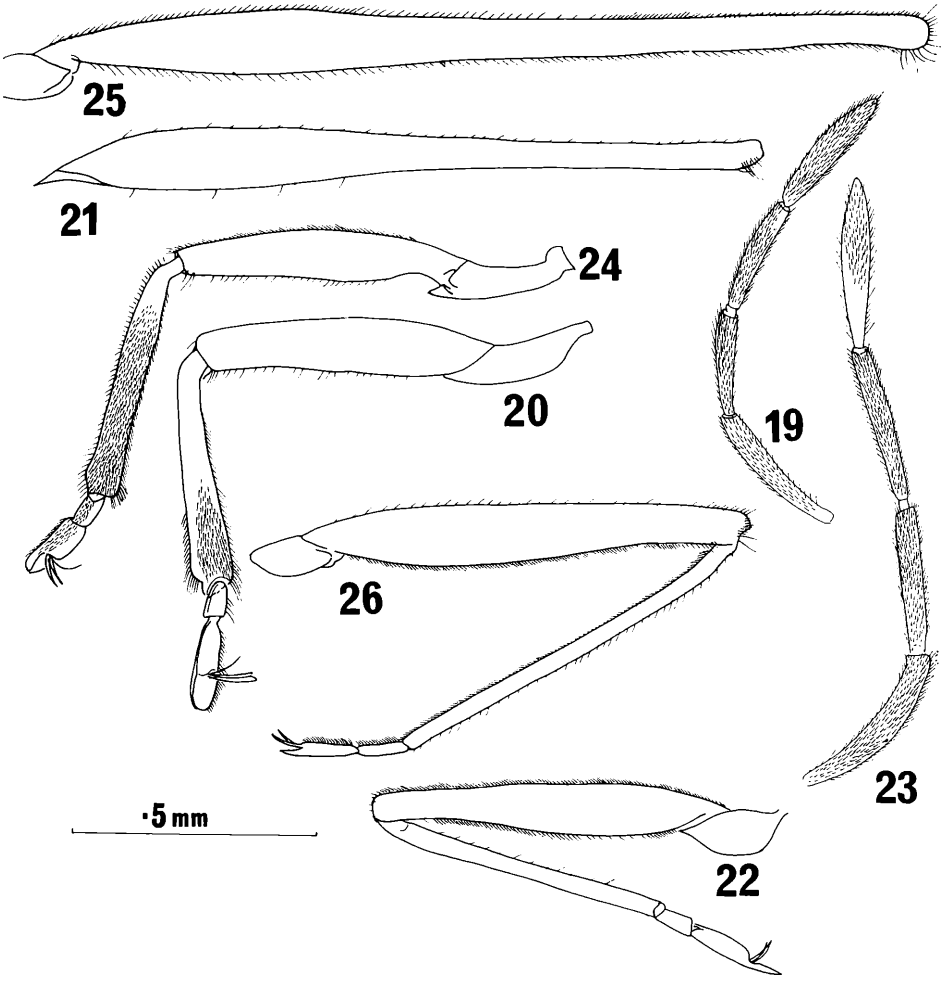
Figs. 16–18: *Halovelia myorensis* sp. n., male. 16 – dorsal aspect; 17 – ventral aspect; 18 – lateral aspect.

Apterous male (ethanol specimens):
Head, eyes and legs pale yellow, pronotum medially pale brown. Head apically pale reddish brown extending back towards posterior margin. Remainder of dorsum black appearing faintly iridescent. Rostrum and trochanters pale brown. Sternum black with genital segments reddish brown.

Structure, antennae: 1) 30; 2) 19; 3) 21+2; 4) 26.5+1. First segment evenly curved and thickened distally, 4th segment fusiform, all segments with uniform fine hairs (Fig. 19).

	Femur	Tibia	Tarsi i	Tarsi ii
Front leg	60	50	7	19
Middle leg	114	115	41	32
Hind leg	70	58	7	18

Fore femur (Fig. 20) more or less parallel, 6x longer than wide, no tibial comb, tibia distally slightly expanded. Middle femur proximally broad narrowing distally (Fig. 21). Hind femur proximally broad with a fringe of fine hairs.
Head with a faint median impressed line not reaching the posterior margin. Eyes large, interocular space just under 3x eye width. Head width same as median length (Fig. 16). Pronotum short at midline, about $^1/_4$ head length. Pronotal suture obsolete. Mesonotum about 3.3x longer than pronotum, mesonotal suture strongly convex, obsolete medially and laterally. Metanotum short, slightly longer than the pronotum. Tergites 1–4 all more or less the same length. Connexivum conspicuous, not raised but flattened along abdominal margins. Prosternum slightly elevated posterior of the front coxae. Mesosternal suture sharply convex between middle coxae. Metasternum short, about $^1/_2$ length of mesosternum (Fig. 17). Rostrum reaching just beyond anterior margin of the front coxae (Fig. 18).



Figs. 19–26: *Halovelia* spp. n., males (19–22 *myorensis*, 23–26 *carinata*). 19 – antennae; 20 – front leg; 21 – middle femur; 22 – hind leg; 23 – antennae; 24 – front leg; 25 – middle femur; 26 – hind leg.

Prothorax and abdomen covered with fine black pubescence overlayed with longer silvery hairs. Viewed laterally dorsum of prothorax and abdomen forming an even curve (Fig. 18).

Apterous female

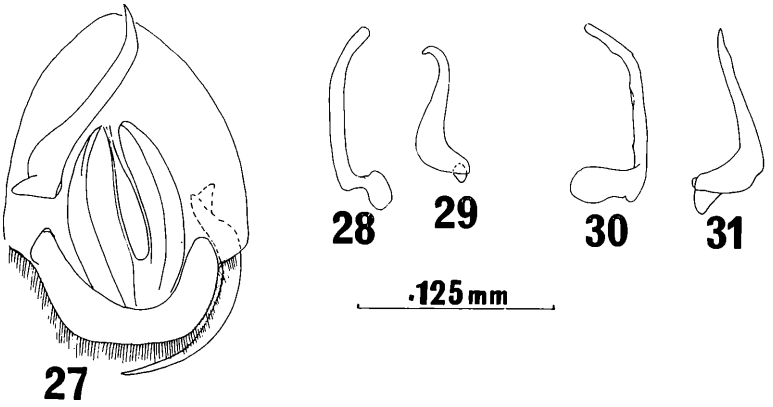
Colour similar to male but appearing more silvery as the density of longer hairs is greater than on the male. The tergites are more pubescent than those of the male and the connexivum is slightly raised.

Male genitalia (Fig. 27) genital capsule, left paramere displaced during maceration.

Holotype ♂, 4 ♂♂ and 10 ♀♀ paratypes; Queensland, Stradbroke Island, Myora Swamp, 8–9. vi. 1979, I. LANSBURY. Type series in Oxford; 2 ♂♂ paratypes in Staatliches Museum fuer Tierkunde Dresden.

Collected from Mangrove swamp, water shallow about 1–2 cms deep. The bugs occurring singly amongst mangrove shoots, their cryptic coloration making them difficult to see on the greyish-black ooze of the swamp.

Halovelia myorensis does not readily key out in CHINA (1957). The absence of a fore



Figs. 27–31 *Halovelia*, male genitalia; 27 – *myorensis* sp. n., genital capsule; 28, 29 – *carinata* sp. n., parameres; 30, 31 – *browni* sp. n., parameres.

tibial comb excludes *myorensis* from the *maritima* group. The absence of a sternal keel eliminates the *angulana* group. The mid-femur is clearly shorter than the total body length which distinguishes *myorensis* from *papuensis* ESAKI. *Halovelia myorensis* seems to most closely resemble *bergrothi* ESAKI, the latter has the hind tibia nearly as long as the femora, in *myorensis* the hind tibia is clearly shorter than the femora.

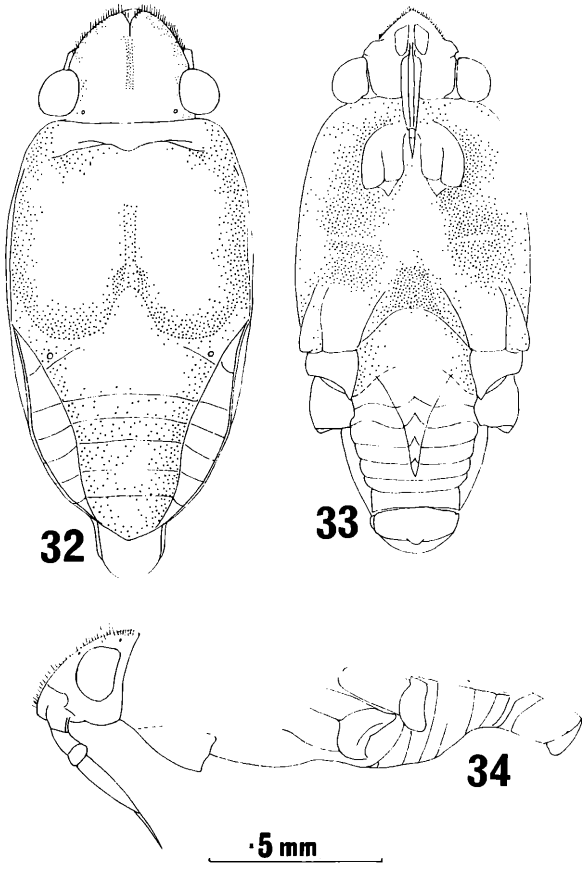
Halovelia carinata sp. n. (Figs. 23–26, 28, 29, 32–34)

Males 1.51–1.63 mm long, 0.67–0.77 mm wide; females 1.87–1.95 mm long, 0.95–0.97 mm wide.

Apterous males (ethanol specimens)
Head and basal half of pronotum orange brown with a darker median triangular patch, apex not reaching the posterior margin of head. Thorax dorsally black, lateral margins dark reddish brown. Connexivum and tergites black. Underside pale yellowish brown. Coxae and trochanters pale yellow. Antennae and fore femora pale yellow. Underside of antennae and tibia dark brown. Middle and hind legs dorsally dark reddish brown, undersides pale yellow.
Structure, antennae: 1) 35; 2) 26; 3) 32+2.5; 4) 35+1. First segment curved broader distally, 2nd & 3rd parallel (Fig. 23).

	Femur	Tibia	Tarsi i	Tarsi ii
Front leg	60	50	5	15
Middle leg	165	131	61	45
Hind leg	86	77	8	15

Fore trochanter spinose, femur proximally concave adjacent to trochanter, tibia densely pubescent, slightly explanate distally with thicker hairs (Fig. 24). Middle femur longer than total body length (Fig. 25). Hind leg (Fig. 26).
Head (Fig. 32) with a faint median impression not reaching posterior margin of head. Eyes large, interocular space about 2.7x eye width. Interocular space equalling median head length. Rostrum just surpassing anterior margin of fore coxae. Pronotum short at midline, about $^1/_3$ length of head, laterally pronotal suture obsolete. Posterior margin of mesonotum deeply emarginate and about 5x longer than the pronotum. Metanotum appearing long because of the mesonotal emargination, about 3.5x longer than pronotum. Tergites 1 & 2 and 4 same length – 3 & 5 slightly longer. First and 2nd tergite lateral margins with longer black hairs overlying black pubescence. Connexivum slightly raised, lateral margins with several rows of erect yellow hairs. Prosternum (Fig. 33) slightly raised medially, posteriorly with a conspicuous depression between middle coxae. Mesosternum slightly longer than



Figs. 32–34: *Halovelia carinata* sp. n., male. 32 – dorsal aspect; 33 – ventral aspect; 34 – lateral aspect.

metasternum. Sternites 1–4 medially elevated forming a prominent blunt ridge. Meso- and metasternum and raised sternites continuous and with a sparse covering of long straggly white hairs. Distal sternites and genital capsule slightly concave. Viewed laterally, prothorax and abdomen evenly curved, prothorax not elevated dorso-ventrally, abdominal tergites very slightly depressed (Fig. 34).

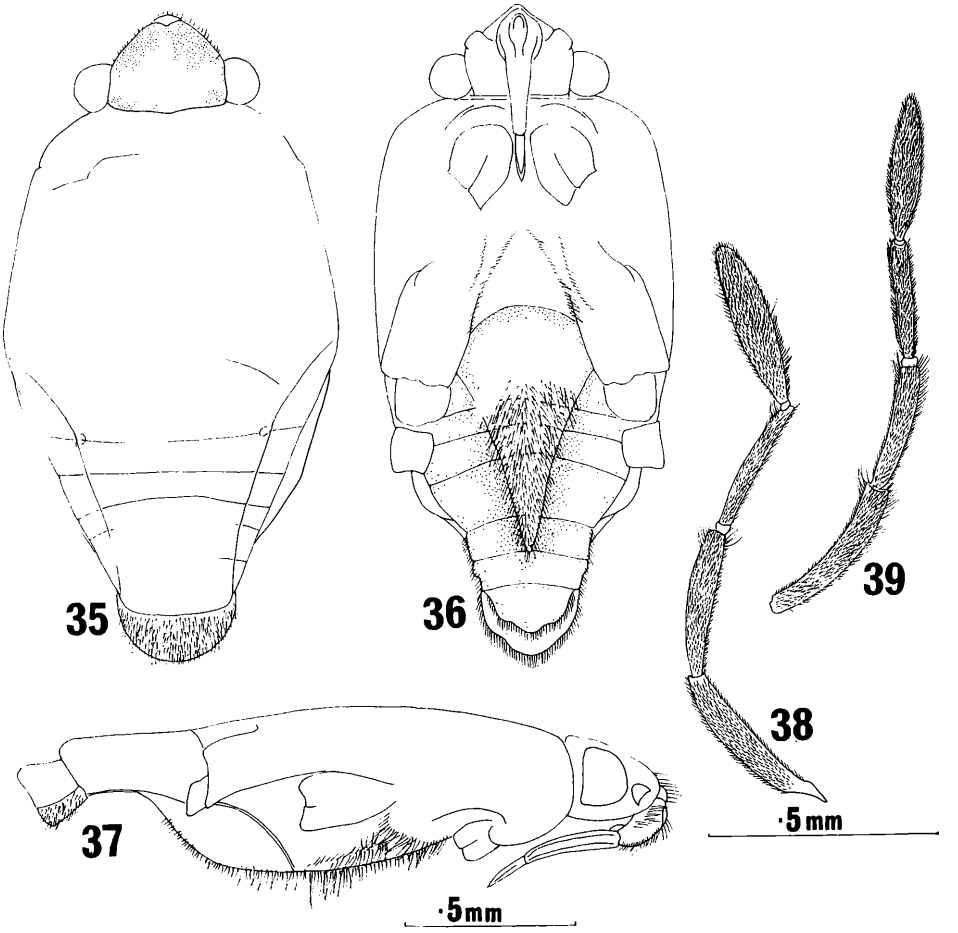
Apterous female

Coloration varying between uniform dark brown-black with the exception of a narrow orange strip along posterior margin of head to a coloration resembling the male. Legs and antennae dark reddish brown. Connexivum raised converging distally and fringed with long silvery hairs. Prothorax dorsally elevated, prosternum sharply depressed posterior of front coxae. Mesosternum with longer golden dense fine iridescent pubescence, tergites less pubescent than in the male. Middle femur slightly shorter than total body length.

Male genitalia (Figs. 28 & 29) parameres from different aspects.

Holotype ♂, 5 ♂♂ and 14 ♀♀ paratypes; Solomon Islands, New Georgia, sheltered rocky beach, 4. ii. 1979, W. D. WILLIAMS. Type series in Oxford; 1 ♂ 1♀ paratypes in Staatliches Museum fuer Tierkunde Dresden.

Closely allied to *angulana*, the spinose trochanter clearly distinguishes *carinata* from *angulana*.



Figs. 35–39: *Halovelia browni* sp. n. (35–38 male, 39 female). 35 – dorsal aspect; 36 – ventral aspect; 37 – lateral aspect; 38 – antennae; 39 – antennae.

Halovelia browni sp. n. (Figs. 30, 31, 35–45)

Male 1.9 mm long, 0.86 mm wide; female 2.18 mm long, 1.10 mm wide.

Apterous male

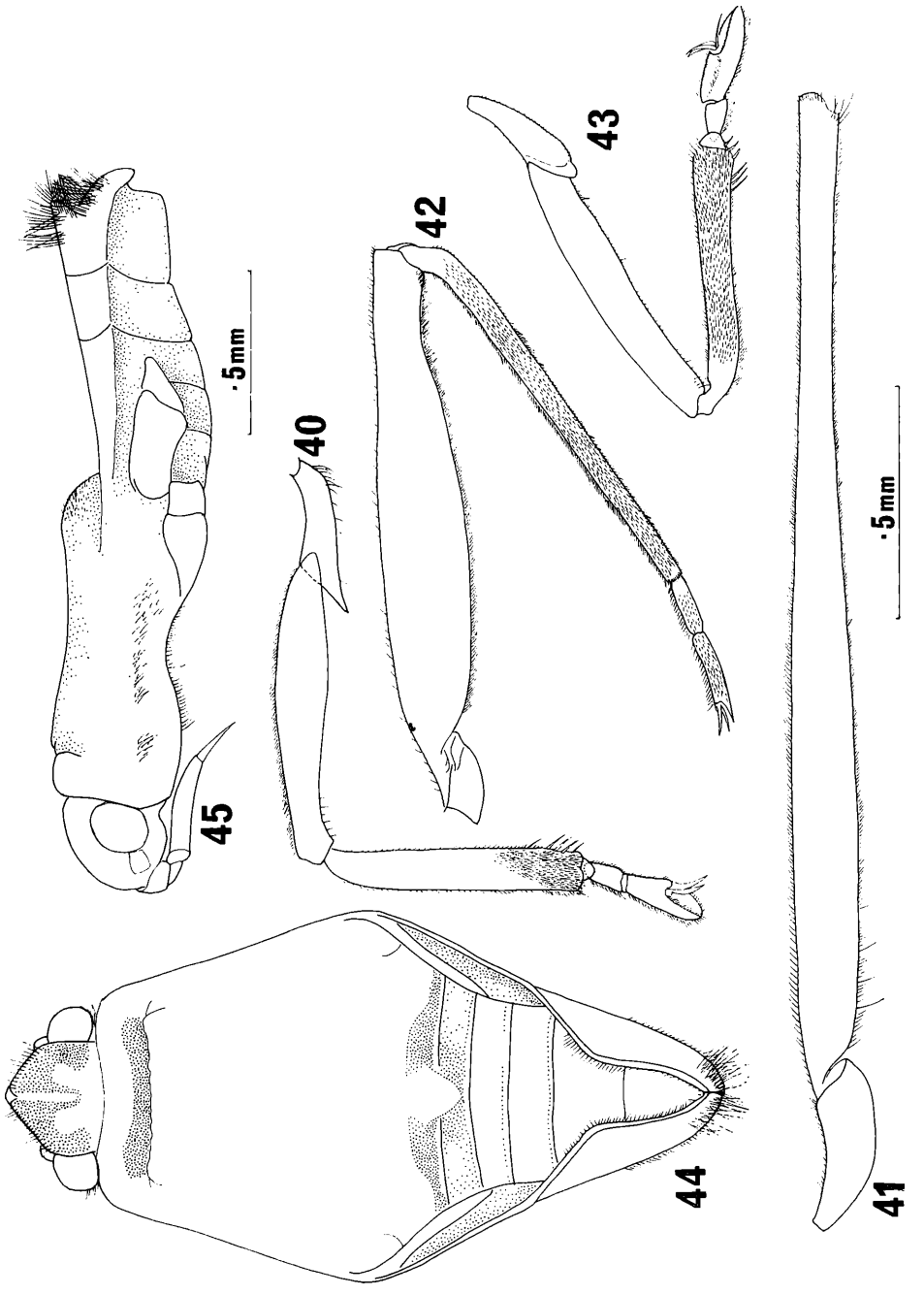
Overall dorsal appearance black. Vertex between eyes and median posterior margin of pronotum dark reddish brown. Legs and antennae dark brown-black. Underside of thorax and abdomen black.

Structure, antennae: 1) 36; 2) 27.5; 3) 25+3; 4) 33+1. First segment slightly curved distally narrowed, 2nd and 3rd parallel, 4th fusiform (Fig. 38).

	Femur	Tibia	Tarsi i	Tarsi ii
Front leg	63	58	7	18
Middle leg	195	150	79	58
Hind leg	105	87	10	18

Front leg (Fig. 40) trochanter sharply spinose; tibia expanded distally with a conspicuous group of spines. Middle femur (Fig. 41) equalling body length, hind leg (Fig. 42).

Head (Fig. 35) with a faint median impression accentuated with bluish-black frosted spots, impression not reaching the posterior margin of head. Eyes large, interocular space about



Figs. 40–45: *Halovelia browni* sp. n. (40–41 male, 42–45 female). 40 – front leg; 41 – middle femur; 42 – hind leg; 43 – front leg; 44 – dorsal aspect; 45 – lateral aspect.

2.3x eye width. Head length clearly greater than interocular space 32:28. Rostrum short (Fig. 37). Pronotum narrowest at midline, approximately $^1/_3$ length of head, laterally pronotal suture obsolete. Posterior margin of mesonotum evenly emarginate, mesonotum about 5x longer than pronotum. Metanotum about $^1/_2$ length of mesonotum. Tergites 1–3

more or less same length, 4th and 5th clearly longer. Genital capsule with long dense straggly hairs, tergites without long hairs. Mesosternum depressed with prominent long fringes of hairs along inner margin. Anterior margin of metasternum shallowly concave. Meso- and metasternum raised, basal tergites sharply raised forming a densely hairy ridge (Fig. 36). Connexivum slightly raised.

Apterous female
Coloration similar to male, black appearing iridescent with posterior margin of head and posterior margin of pronotum orange brown.
Antennae: 1) 32; 2) 24; 3) 23.5+2.5; 4) 30+1. First segment curved distally wider, 2nd slightly fusiform, 3rd parallel, 4th fusiform (Fig. 39). Mesonotum medianly shallowly depressed (Fig. 45). Metanotum medianly slightly elevated. Connexivum upright anteriorly, posteriorly converging and parallel, distally with dense fringes of long hairs. Lateral margins of thorax and upper margin of connexivum with long yellow straggly hairs. Prosternum medianly with fine whitish hairs. Front leg (Fig. 43).

Male genitalia (Figs. 30–31) parameres from different aspects.

Holotype ♂ and 1♀ paratype; Solomon Islands, Kokorana Island, Rendova, taken on the surface of the sea in exposed situation, 7 x. 1954, E. S. BROWN. Type series in Oxford.

Allied to *angulana* and *carinata*; the acutely spinose fore trochanter, dense covering of fine hairs ventrally and very long middle femur clearly distinguish *browni* from described species.

Halovelia oculata sp. n. (Figs. 56–51)

Female 1.75 mm long, 0.86 mm wide.

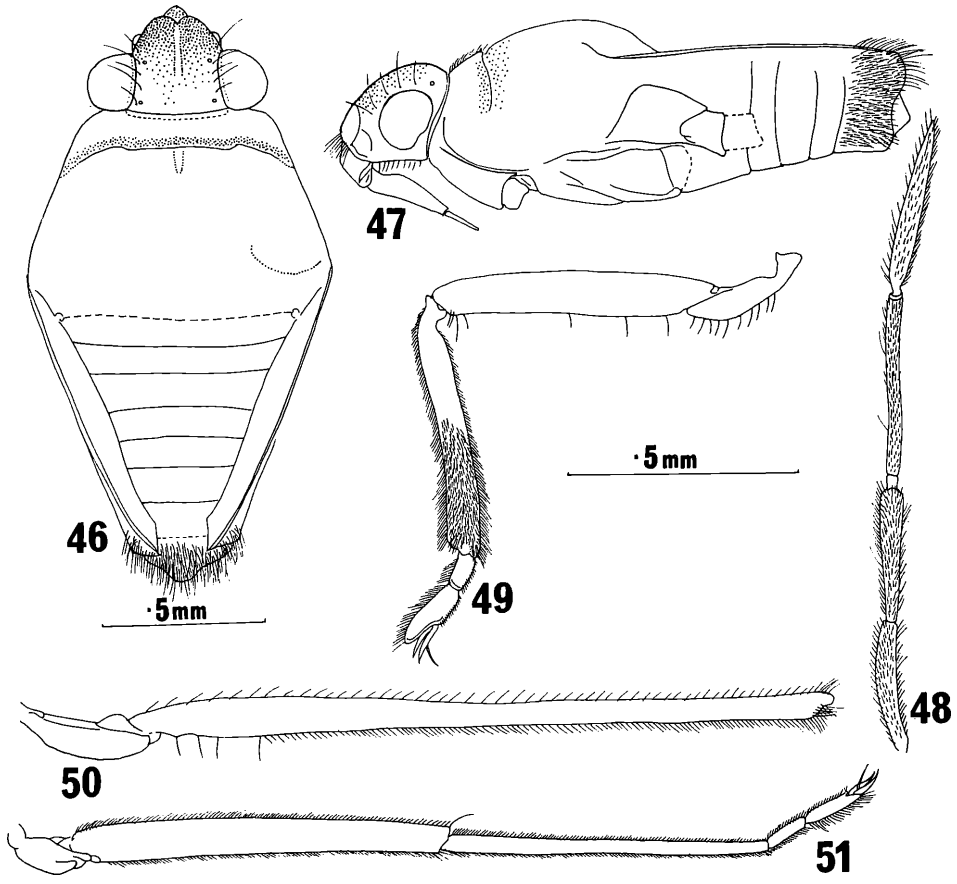
Apterous female
Head and prothorax reddish brown, head distally and thorax dark brown-black. Pronotum yellowish brown. Tergites very dark brown. Connexivum yellowish brown, pleura brown, sternites black. Genital segment, coxae and trochanter yellowish. Fore femora proximally pale yellow. Middle and hind legs and antennae dark reddish brown.
Structure, antennae: 1) 29; 2) 27; 3) 38+1; 4) 35. First segment slightly curved, 2nd distally expanded, 3rd parallel and 4th slightly fusiform (Fig. 48).

	Femur	Tibia	Tarsi i	Tarsi ii
Front leg	57	55	6	16
Middle leg	150	135	22	13
Hind leg	81	65	9	13

Fore femur (Fig. 49) parallel sided with 3 prominent hairs, femoral length approximately 6x maximum width. Middle femur fringed with short hairs shorter than width of femur (Fig. 50). Hind femur (Fig. 51).
Head with a median impression not reaching the posterior margin. Eyes large, interocular space just over 2x eye width. Inner lateral margins of head with two rows of long prominent hairs curving over the eyes (Fig. 46). Tip of rostrum just reaching coxal insertion. Pronotum at midline about 1/4 median head length, posterior lateral margins curving caudad, almost obsolete laterally. Mesonotum sharply elevated, all but lateral margins covered in prominent semi-erect yellowish hairs. Posterior margin of mesonotum obsolete (shown by broken line in Fig. 46). Metanotum appearing short, slightly narrower than tergites. Connexivum elevated, erect converging distally and terminating with a conspicuous tuft of hairs. Thorax dorsoventrally slightly expanded (Fig. 47).

Holotype ♀, Solomon Islands, Kolombangara, Karikana, surface of river running into lagoon (Jack Harbour) slow flowing, 1. x. 1954, E. S. BROWN. Type in Oxford.

Halovelia oculata has affinities with *loyaltiensis*, the long 3rd antennal segment may be diagnostic. The eyes of *oculata* are relatively larger than those of *loyaltiensis*:



Figs. 46–51: *Halovelia oculata* sp. n., female. 46 – dorsal aspect; 47 – lateral aspect; 48 – antennae; 49 – front leg; 50 – middle femur; 51 – hind leg.

	eye width	interocular space
loyaltiensis paratype ♀	5	14
oculata holotype ♀	4.5	10

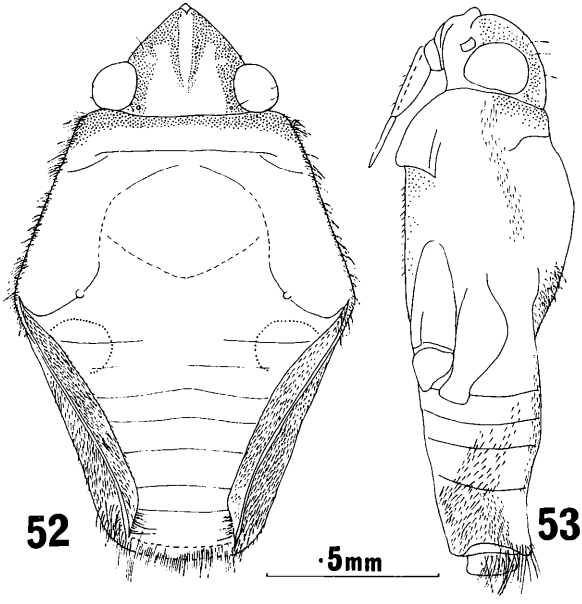
Xenobates seminulum (ESAKI) (Figs. 52, 53–57)

Microbates seminulum ESAKI, 1926; New Guinea, Friedrich-Wilhelm-Hafen, 1893, BIRO. Type series 9 ♂♂ & 6 ♀♀ in Budapest.
Xenobates ESAKI, 1927; replacement name for *Microbates* preoccupied by *Microbates* SCLATER, 1873.
Xenobates seminulum: LUNDBLAD, 1933, listed in Gerridae.
Xenobates: ANDERSEN & POLHEMUS, 1976, p. 194, brief comment.
Xenobates: ANDERSEN, 1982, various references.

Female 1.67 mm long, 0.86 mm wide.

Apterous female

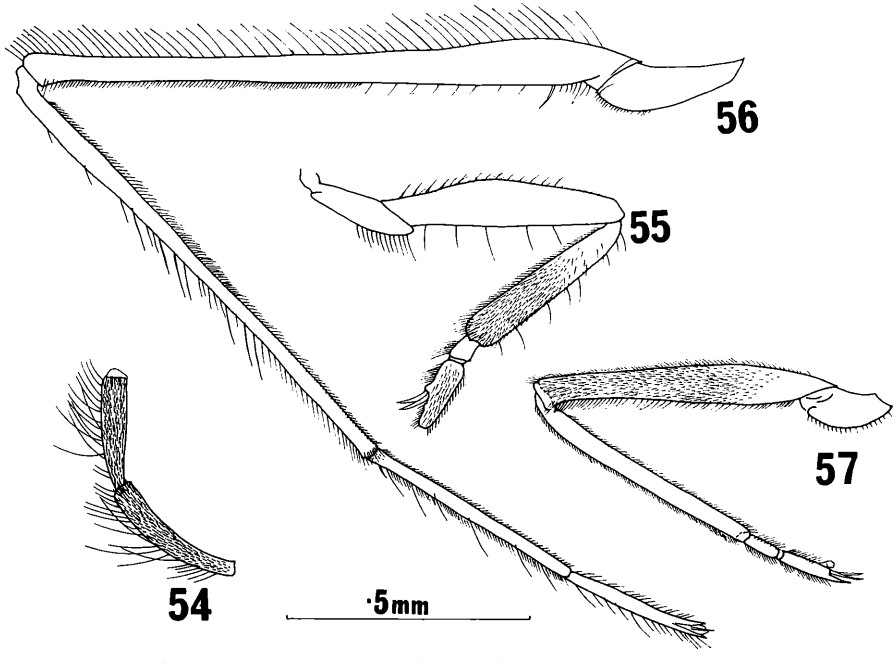
Head dark brown with a 'U' reddish brown patch between the eyes. Pronotum anteriorly dark brown, posteriorly orange-yellow. Mesonotum and pleura dark reddish brown, medially iridescent black. Metanotum black with lateral evanescent bluish hairs. Connexivum dark reddish brown. Prosternum orange brown, abdomen reddish brown. Coxae pale yellow. Rostrum dark brown. Fore tibia, middle and hind legs dark brown, fore femur yellow underside, reddish brown dorsally



Figs. 52–53: *Xenobates seminulum* (ESAKI), female. 52 – dorsal aspect; 53 – lateral aspect.

Structure, antennae: 1) 29; 2) 20; remainder of segments missing. First and 2nd segments covered with long hairs more than 2x longer than width of segments.

	Femur	Tibia	Tarsi i	Tarsi ii
Front leg	48	40	5	14.5
Middle leg	120	100	45	30
Hind leg	60	51	6	15



Figs. 54–57: *Xenobates seminulum* (ESAKI), female. 54 – antenna; 55 – front leg; 56 – middle leg; 57 – hind leg.

Fore femur (Fig. 55) with sparse erect long hairs, femoral width at widest 4.8x length. Tibia expanded slightly distally, with a sparse fringe of hairs as long as tibial width. Middle femur (Fig. 56) shorter than total body length and with a conspicuous fringe of long hairs much longer than tibial width. Hind leg (Fig. 57) tibia parallel-sided.

Head with a median impression reaching about $^1/_2$ way between the eyes. Inner margin of eyes with a row of long hairs (trichobothria?) curling over the eyes, two similar pairs of hairs in front of the eyes. Interocular space just over 2x width of an eye 29 12.5–13. Interocular space same as median head length. Pronotum at midline about $^1/_3$ median head length. Pronotal suture laterally appearing bifurcated, not reaching lateral margins. Mesonotum and metanotum not clearly separated by a suture. Lateral margins elevated and evenly rounded, medianly depressed with an obsolete rounded ridge. Tergites 1–4 more or less of equal length, 5th slightly longer. Connexivum elevated, slightly curved inwards, converging slightly and almost parallel caudad, inner distal margins with patches of long hairs. Genital segment with a dense covering of long hairs (Fig. 52). Pro-, meso- and metapleura with long silvery pubescence. Prosternum with fine short pubescence. Sternites evenly rounded (Fig. 53).

One ♀, Solomon Islands, Kolombangara, Lady Lever Estate, shaded and deep cut stream in valley on slopes in coconut plantation, 12. x. 1954, E. S. BROWN. Specimen in Oxford.

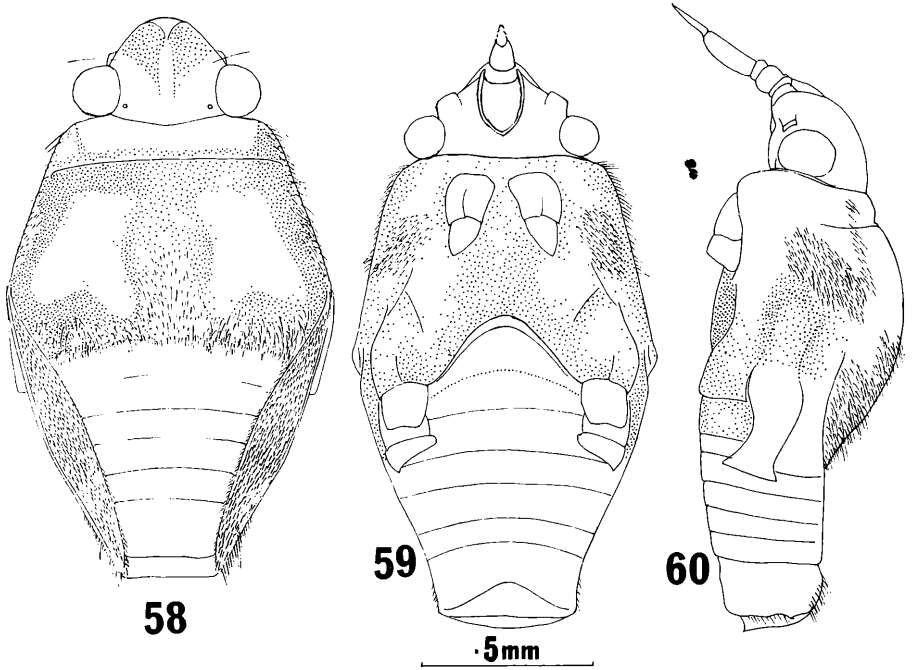
Comparative note See *X. solomonensis* sp. n. for discussion. The solitary female seems to agree with ESAKI's description, a species of *Rheumatometroides* (Gerridae) was taken with *X. seminulum*.

Xenobates solomonensis sp. n. (Figs. 58–64)

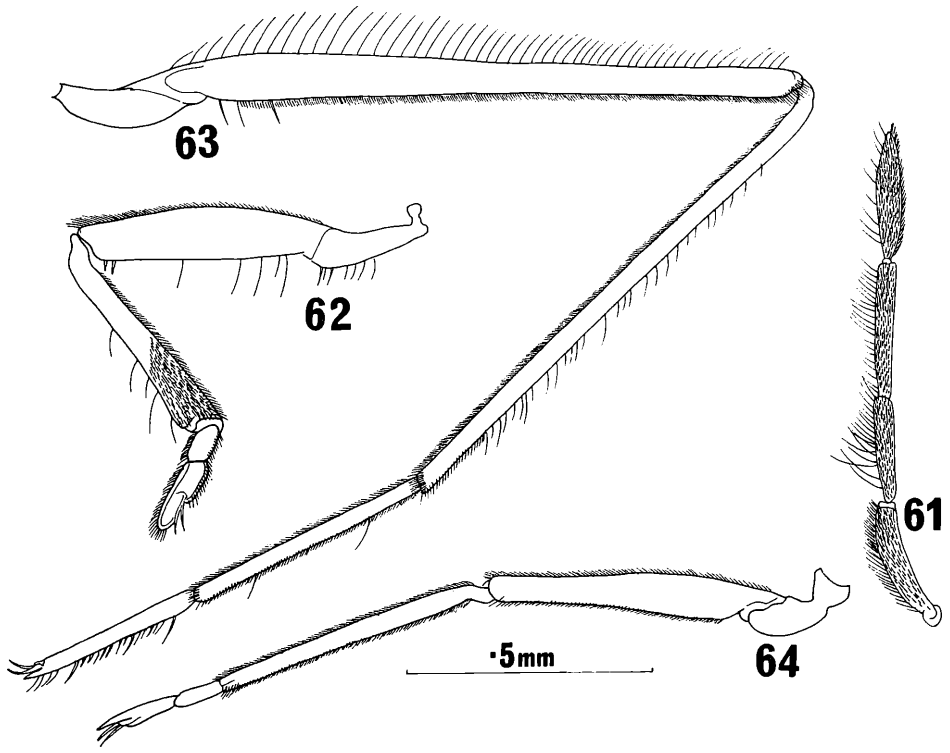
Female 1.66 mm long; 0.96 mm wide.

Apterous female

Head and pronotum yellowish brown. Apex of head and lateral margins of pronotum dark brown-black. Mesonotum broadly yellowish with lateral margins and medianly darker.



Figs. 58–60: *Xenobates solomonensis* sp. n., female. 58 – dorsal aspect; 59 – ventral aspect; 60 – lateral aspect.



Figs. 61–64: *Xenobates solomonensis* sp. n., female. 61 – antennae; 62 – front leg; 63 – middle leg; 64 – hind leg.

Metanotum dark brown. Connexivum and tergites shining dark reddish brown. Pleuron, dorsum of meso- and metanotum and connexivum with long straggly hairs. Underside pale reddish brown, leg insertions pale, antennae dark reddish brown, fore femora pale yellow, rostrum almost black.

Structure, antennae: 1) 24; 2) 20; 3) 24+2; 4) 24+1. First segment curved distally, fringed with hairs longer than the antennal width, 2nd segment fringed with hairs at least 2x width of segment; 3rd parallel, hair fringe at least 2x width of segment, 4th fusiform, some of the hair fringe longer than segmental width (Fig. 61).

	Femur	Tibia	Tarsi i	Tarsi ii
Front leg	49	45	7	10
Middle leg	127	111	47	37
Hind leg	60	55	9	15

Fore femur approximately 5x longer than broad with long hairs, tibia distally expanded (Fig. 62). Middle femur with a fringe of long hairs either equalling or up to 2x with of femur, tibia fringed with hairs 2x tibial width. Middle femur shorter than body length (Fig. 63). Hind leg (Fig. 64).

Head with a median impression almost reaching the posterior margin of the head. Eyes large, interocular space 2.3x eye width. Head width almost equalling median length. Vertex in front of eyes with prominent spinose hairs (Fig. 58). Pronotum at midline about $^1/_4$ head length. Pronotal suture almost reaching the lateral margins. Mesonotum sharply elevated, suture between mesonotum and metanotum obsolete. Tergites more or less equal length, connexivum elevated, converging posteriorly with a group of hairs (Fig. 60). Prosternum medianly slightly elevated; posterior margin sharply concave, mesosternal suture obsolete, metasternal suture evenly curved (Fig. 59).

Holotype ♀, Solomon Islands, New Georgia, Munda, surface of sea by jetty, 6. x. 1954, E. S. BROWN. Holotype in Oxford.

Xenobates solomonensis is very similar to *seminulum*, the relative lengths of the antennae and legs are almost the same in both species. Most notable distinctions are: Prothorax of *solomonensis* expanded dorso-ventrally and the genital capsule does not terminate in a fringe of long hairs as in *seminulum*. The body length of *seminulum* is approximately 2x maximum width whereas in *solomonensis* the body length is clearly less than 2x maximum body width.

Acknowledgements The author wishes to thank Dr. W D. DOLLING, British Museum (Natural History), for the loan of critical type material. The Leverhulme Trust, London; CSIRO, Canberra and the Australian Biological Resource Study are thanked for their financial and logistical support during my 1979 field trip to Australia.

Summary

The *Halovelia* recorded from Australia are briefly reviewed with notes on distribution and biology, syntypes of recorded species are figured. The Haloveliinae of some of the Solomon Islands are reviewed with n. spp. of *Halovelia* and *Xenobates*.

References

ANDERSEN, N. M., 1982: The Semiaquatic bugs (Hemiptera, Gerromorpha). – Entomonograph **3**: 1–445.

ANDERSEN, N. M. & POLHEMUS, J. T., 1976: 8. Water-striders (Hemiptera; Gerridae, Veliidae, etc.). In L. CHENG (ed.), Marine Insects (pp. 187–224). North Holland Publ. Co.; Amsterdam, 581 pp.

BERGROTH, E., 1893: On two halophilus Hemiptera. – Entomologist's mon. Mag. **29**: 277–279.

CHINA, W. E., 1957 The marine Hemiptera of the Monte Bello Islands with descriptions of allied species. – J. Linn. Soc. Zool. **40**: 342–357.

CHINA, W. E. & MILLER, N. C. E., 1959: Check list and Keys to the families and subfamilies of the Hemiptera-Heteroptera. – Bull. Br. Mus. nat. Hist. Ent. **8** (1): 1–45.

ESAKI, T., 1926: The water-striders of the subfamily Halobatinae in the Hungarian National Museum. – Annls. hist-nat. Mus. natn. hung. **23**: 117–164.

—, 1927 An interesting new genus and species of Hydrometridae (Hem.) from South America. – Entomologist **60**: 181–184.

HALE, H. M., 1926: Studies in Australian Hemiptera. VII. Families Naeogeidae, Mesoveliidae, Veliidae. – Rec. S. Aust. Mus. **3**: 195–217.

KELLEN, W. R., 1959: Notes on the biology of *Halovelia marianarum* Usinger in Samoa (Veliidae: Heteroptera). – Ann. ent. Soc. Amer. **52**: 53–62.

LUNDBLAD, O., 1933: Zur Kenntnis der aquatilen und semiaquatilen Hemipteren von Sumatra, Java und Bali. – Arch. Hydrobiol. Suppl. **12**: 1–195, 263–489.

POLHEMUS, J. T., 1982: Marine Hemiptera from the Northern Territory, including first fresh-water species of *Halobates* Eschscholtz (Gerridae, Veliidae, Hermatobatidae and Corixidae). – J. Aust. ent. Soc. **21**: 5–11.

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