

REVISION OF AUSTRALIAN *HYDROBIOMORPHA* BLACKBURN (COLEOPTERA: HYDROPHILIDAE)

C.H.S. WATTS

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The Australian members of the hydrophilid genus *Hydrobiomorpha* Blackburn are revised and redescribed and a key to the species is given. Five species are recognised; *H. troxi* sp. nov., *H. microspina* sp. nov., *H. helenae* Blackburn, *H. bovilli* Blackburn and *H. debbae* sp. nov. *H. tepperi* Blackburn is synonymised with *H. bovilli* Blackburn.

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The five Australian species of *Hydrobiomorpha* Blackburn, 1888, are restricted to coastal areas of northern Australia. *H. bovilli* Blackburn and *H. helenae* Blackburn are by far the commonest, sometimes being collected in large numbers at light. The other species, all new, are widespread but infrequently collected. Nothing is known of their life history.

The genus of about 30 species, which is widely distributed in tropical Asia, Africa, Australia and South America, was revised by Mouchamps (1959) who briefly redescribed the three Australian species then recognised and figured the male genitalia of *H. helenae* and *H. tepperi* (= *H. bovilli*).

The collections from which specimens were examined are listed under the following abbreviations:

AM	Australian Museum, Sydney
ANIC	Australian National Insect Collection, Canberra
BMNH	British Museum (Natural History), London
CW	Private Collection of Author
EUQ	University of Queensland, Brisbane
NMV	Museum of Victoria, Melbourne
NTM	Northern Territory Museum and Art Gallery, Darwin
QDPIM	Queensland Department of Primary Industries, Mareeba
QM	Queensland Museum, Brisbane
SAMA	South Australian Museum, Adelaide
WAM	Western Australian Museum, Perth

SYSTEMATICS

Hydrobiomorpha Blackburn, 1888

Hydrobiomorpha Blackburn, 1888, p. 814.

Neohydrophilus d'Orchymont, 1912, p. 59, syn. after Mouchamps, 1959.

Type species: *Hydrobiomorpha bovilli* Blackburn, 1888, subsequent designation of Knisch, 1924. *Neohydrophilus deplanatus* d'Orchymont from East Africa, by original designation of d'Orchymont, 1919.

The genus belongs to the sub-family Hydrophilinae, characterised by a continuous median longitudinal keel on the underside which is prolonged into a spine between the hind coxae (Figs 1, 2). Within the Australasian members of the sub-family, *Hydrobiomorpha* is characterised by having the front of the ventral keel notched, the prosternal pillar not hooded to receive the front end of the ventral keel and with a backward pointing spine in most species (Figs 16-23), the basal portion of only the profemora rugose, five rows of serial punctures on the elytra including a sub-lateral row, and the front margin of the clypeus widely emarginate exposing an extensive membranous area except in *H. troxi*.

Males differ from females by having the claws on all legs more sharply bent than in the females and with a bulbous basal portion which is lacking in the females. Compared with females the protarsi are slightly more expanded. The maxillary palpi are simple in the female but variously expanded in males, particularly the second joint.

Key to Australian *Hydrobiomorpha*

1. — Membranous areas on frons reduced to small shallow area in centre (Fig. 9); head strongly punctured; bare area at apex of last abdominal segment large. . . . *troxi* sp. nov.
- Membranous area on frons extensive (Figs 8 and 10); punctures on head variable; bare area at apex of last abdominal segment variable, usually lacking or small. . . . 2

2. — Spine on pronotal pillar lacking (Fig. 16); aedeagus without dorsal notch (Fig. 15).
..... *microspina* sp. nov.
- Spine on pronotal pillar well developed (Fig. 22); aedeagus with deep dorsal notch (Figs 13 and 14)..... 3
3. — Back portion of keel less than twice width of front portion, front portion dipping virtually at right angles beyond notch. 4
— Back portion of keel more than twice the width of front portion, front portion gently dipping in front of notch.....
..... *helenae* Blackburn
4. — Spine on pronotal pillar long (Figs. 22 and 23); central portion of membranous area at front of frons relatively wide (Fig. 8); maxillary palpi of male weakly expanded (Fig. 3); groove along front edge of pronotum usually reaching past inner edge of eye..... *bovilli* Blackburn
- Spine on pronotal pillar short; central portion of membranous area at front of frons relatively small (Fig. 10); maxillary palpi of male strongly expanded (Fig. 7); groove along front edge of pronotum usually not reaching to middle of eye.....
..... *debbae* sp. nov.

***Hydrobiomorpha troxi* sp. nov.**

Description (number examined 10). (Figs 4, 9, 11, 21)

Length 15–17 mm. Broadly oval. Predominantly black; elytron with about ten thin lighter lines visible in some lights; ends of legs and appendages lighter. Head densely covered with strong, variably sized punctures, the largest about twice size of smallest; row of very large punctures along inner edge of eye; a rough semicircle of very large punctures forward from each eye; a few large punctures along rear edge of clypeus and a short row of large punctures in middle of clypeus; finely reticulate; membranous area between frons and clypeus black, reduced to small narrow area in middle half (Fig. 9). Pronotum with somewhat sparser and weaker punctures than on head; finely reticulate; two oblique lines of large punctures and a short line or patch of punctures in front of them on each side; groove along front edge reaching to about level of inner edge of eye. Elytron finely reticulate; punctures sparser and finer than on pronotum with five rows of large serial punctures all but the outer in well marked single row, those

in third row sparser than in others. Sternal keel widely expanded in posterior half which is weakly grooved in midline, produced backwards into a short spine. Front portion of keel curving slowly upwards in front of notch, notch at or little below plane of rest of keel. Pronotal pillar narrow in lateral view, broad in ventral view with long setae, bulbous in front, small stout spine behind (Fig. 21). Meso- and metasterna and abdomen except keel, legs and large apical patch on last abdominal sternite, rugose-punctate. Non-rugose portion on apical sternite finely reticulate and with scattered very fine punctures. Lateral wings of mesosternum with extra portion on front edge. Front portion of gula lightly covered with moderate sized punctures of varying sizes, basal portion with a few similar punctures at each side only. Spines on apical edge of protibia enlarged, robust, both approximately same length and spatulate but outer a little larger.

Male

Protarsi slightly expanded, spine on apex of protibia larger, claws on all legs more sharply bent than in female with bulbous basal portion. Maxillary palpi with second joint expanded with shallow groove on ventral surface, apical joint much shorter than others (Fig. 4). Aedeagus as in Fig. 11.

Distribution

Known only from coastal Northern Territory.

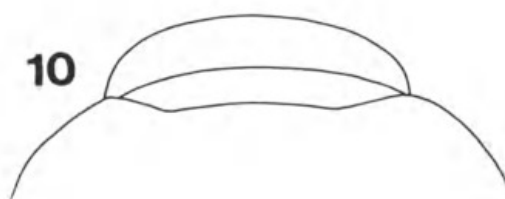
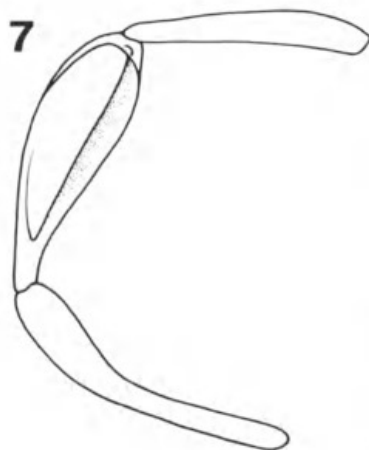
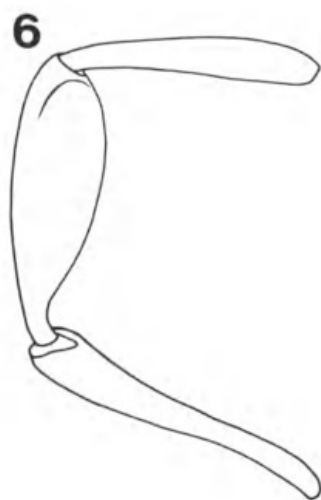
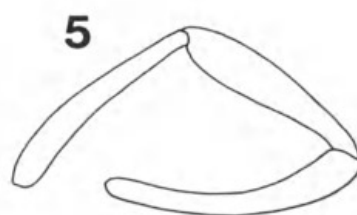
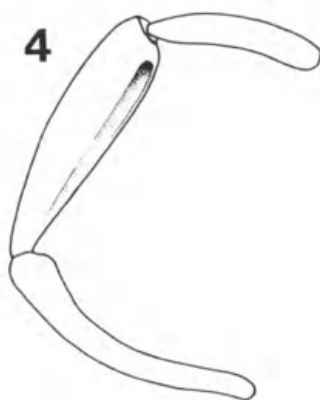
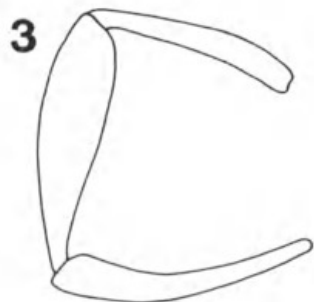
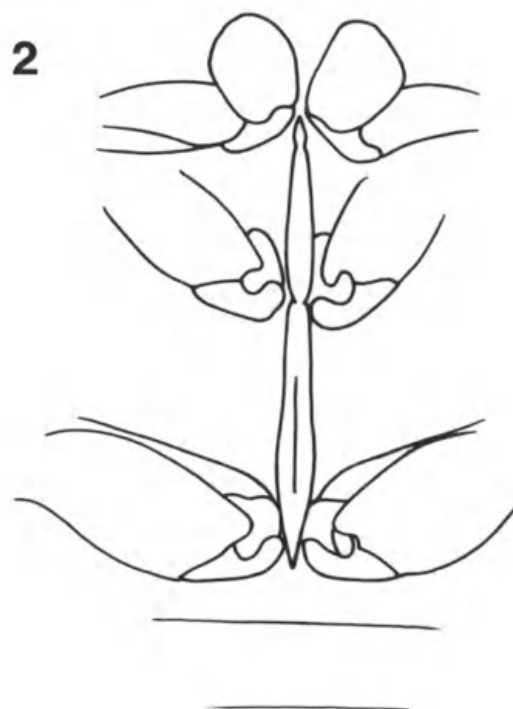
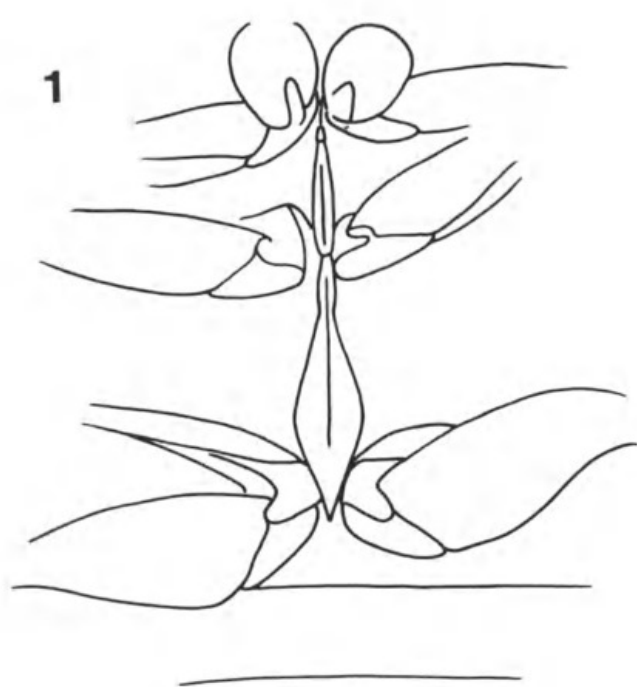
Types

Holotype: M. 12°52'S 132°47'E, Noulangie Creek, N.T., 8 km E. of Mt Cahill, 22.v.1973, at light, E.G. Matthews, SAMA.

Paratypes: 1, same data as Holotype, ANIC; 1, Australia, N.T. Humpty Doo 6 km E. 9.ii–4.iii. 1987, R.L. Storey, QDPIM; 4, King R. N.T., 24.12.15, one with additional label, King R. N.T. Coll'd W. McLennan, 24.12.15. Pres. H.L. White 17.10.v.6, NMV; 1, King R. N.T., 24.12.15, CW; 1, Port Darwin N.T., SAMA; 1, N.T. Australia, Groote Eylandt 17.11.1925, G.H. Wilkins, BMNH.

Remarks

H. troxi is a distinctive species (reminding me of the trogid genus *Trox*), and is readily separated from other Australian *Hydrobiomorpha* by the lack of an extensive membranous area at the front of the frons, the strong even punctation on the frons, the large shiny area at the apex of the apical sternite, and the short apical segment of the male palpi.



Hydrobiomorpha microspina sp. nov.

Description (number examined 21). (Figs 5, 15, 16, 17)

Length 11–16 mm. Oval. Predominantly black; front and sides of clypeus testaceous, border of colour a little broader in midline; appendages and much of underside testaceous. Head, finely reticulate, quite densely covered in quite large (for genus) punctures; a patch of much larger punctures on inner edge of eye; a rough, broken semicircle of similar punctures forward from eye; rear margin of clypeus with several large punctures; front portion of gula covered in very strong punctures, much sparser and smaller on hind portion almost lacking in midline; membranous area between frons and clypeus broad, broadest part restricted to not much more than central half. Elytra sculptured as on pronotum, with five uneven (particularly lateral ones) rows of large serial punctures. Pronotum, with fine reticulation, covered with punctures noticeably weaker than those on head; sides with two short oblique lines of large punctures and one line parallel to edge; grooves along front edge variable in length, from virtually non-existent to nearly joining in centre. Sternal keel weakly expanded in posterior half, produced behind into a broad blunt spine. Meso- and metasternum and abdomen rugosely punctate except sternal keel and appendages. Apical abdominal sternite without, or with only a trace of, bare area at apex. Lateral wing of metasternum with narrow extra portion on front edge. Front portion of sternal keel curving upwards rapidly, notch at or a little above level of rest of keel. Pronotal pillar moderately narrow in ventral view, front edge bulbous, spine on hind edge lacking or very small (Figs 16, 17).

Male

Protarsi slightly expanded, claws on all legs more sharply bent than in female with bulbous hind portion. Maxillary and labial palps stout, particularly second segments of maxillary palpi (Fig. 5). Aedeagus as in Fig. 15.

Distribution

Restricted to wetter coastal areas of the Northern Territory and Cape York. Known only from type localities.

Types

Holotype: M. N.T. At light, 10 mi E. Daly River, 28 June 1972. B.K. Head, SAMA.

Paratypes: 2, At MV lamp, Mornington Is, Mission Qld., 15 May 1963, N.B. Tindale and P. Aitken; 1, Mornington Is, Mission Qld., 15 May 1963, P. Aitken, N. Tindale, SAMA; 3, Mataranka, N.T., 1 March 1967 M.S. Upton, ANIC, CW; 1, Daly R., Mission N.T. 19 km E. by S. of Mt Borradaile,

31.v.73, at light, E.G. Matthews, SAMA; 1, Ditto 5.vi.73, M.S. Upton, SAMA; 2, Brock Creek Burnside N. Aust. 4 May 1929 T.G. Campbell, ANIC; 1, 100 mi. E. of Kununurra W.A., light trap 27.3.66 J.A. Mahon, ANIC; 1, Australia, N.T. Murrella Park, Kakadu 18.v.1987 Fay and Halfpapp at light, QDPIM; 2, Kowanyama, N. Qld., 9.i.1977, D.L. Hancock, QM; 1, at light Normanton Qld., 3 May, 1963 N.B. Tindale and P. Aitken, SAMA; 3, Hann Riv., N.Q. 100 mls S. of Coen, 23.vi.1970, J.Le Souef, NMY; 2, 12°17'S 133°13'E. Birraduk Creek, N.T. 18 km E. of N. of Oenpelli 4.vi.1973, Upton and Feehan, ANIC.

Remarks

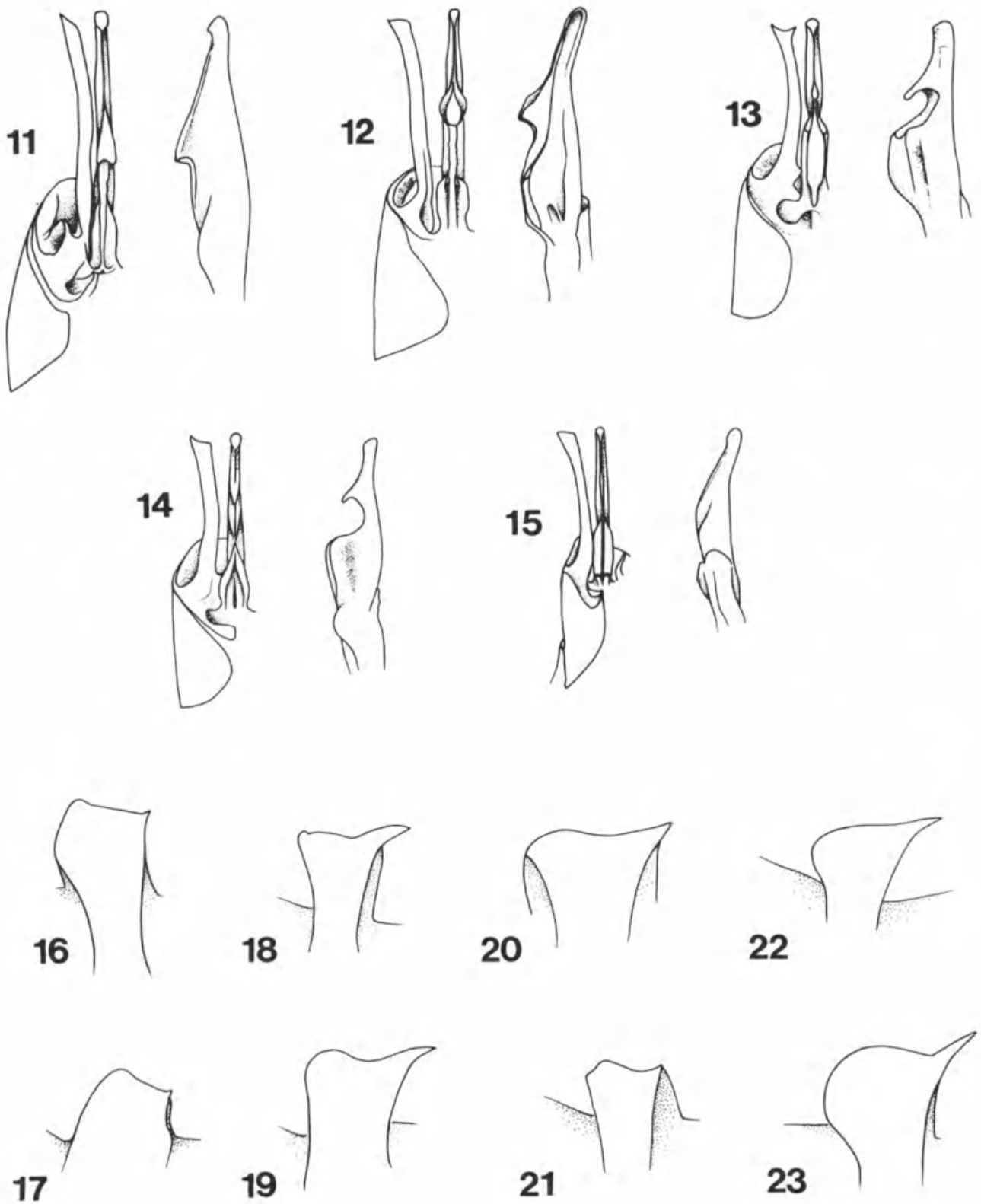
Separated most readily from other Australian species by the lack of, or virtual lack of, a spine on pronotal pillar. The aedeagus lacks or virtually lacks any trace of the deep dorsal notch present in the other Australian species.

Hydrobiomorpha helenae Blackburn

Hydrobiomorpha helenae Blackburn, 1890, p. 741; Knisch, 1924, p. 234; Mouchamps, 1959, p. 303.

Description (number examined 141). (Figs 1, 7, 8, 13, 18, 19)

Length 11–16 mm. Broadly oval. Predominantly black, front half of clypeus and appendages rufous yellow, elytra usually with alternating dark and light longitudinal stripes of green-grey separated by narrow black lines. This colour pattern of variable distinctiveness and sometimes lacking in which case elytra black. Head with evenly spaced, small, variably sized, sharply impressed, punctures and very fine reticulation; patches of much larger punctures inwards from eyes and in a rough semicircle forward from each eye; hind margin of labium with a few large punctures; membranous area between clypeus and frons broad, wide, little restricted laterally; front portion of gula quite densely covered with strong punctures, back portion with fewer, particularly in midline, similar or smaller punctures. Pronotum punctured as on head with three obliquely slanted fields of large punctures on each side; groove along front edge reaching well beyond inner border of eye. Elytra covered in very small sharply impressed punctures, very finely reticulate and with five uneven rows of large setae-bearing puncture lines, the lateral ones with scattered, poorly aligned punctures. Sternal keel widely expanded in posterior half, sharply restricted between postcoxae to a short thin carinate point; front portion curving sharply upwards with notch well above plane of mesosternum. Meso- and metasternum and abdomen rugose-punctate except sternal keel, appendages and a small triangular bare



FIGURES 11-23. 11, dorsal view of aedeagus and left paramere and lateral view of aedeagus of *H. troxi*; 12, ditto, *H. debbae*; 13, ditto, *H. helenae*; 14, ditto, *H. bovilli*; 15, ditto, *H. microspina*; 16 and 17, lateral views of different pronotal pillars of *H. microspina*; 18 and 19, ditto, *H. helenae*; 20, ditto, *H. debbae*; 21, ditto, *H. troxi*; 22 and 23, ditto, *H. bovilli*.

patch at apex of apical abdominal sternite. Lateral wing of metasternum with narrow additional portion on front edge. Pronotal pillar broad in ventral view, with well developed backward pointing spine (Figs 18, 19).

Male

Protarsi slightly expanded, claws on all legs more sharply bent with bulbous basal portion. Joints of maxillary palpi expanded, robust, second joint greatly expanded and concave on ventral surface (Fig. 7). Aedeagus as in Fig. 13.

Distribution

Restricted to wet coastal areas from Derby to Bundaberg. Also in Papua New Guinea.

Types

Lectotype: M. 3030 N.T. T; *Hydrobiomorpha Helenae*, Blackb.; Blackburn coll. 1910-236, BMNH, herein designated.

Paralectotypes: F. 3030 N.T.; S. Aust. 90.11; *Hydrobiomorpha Helenae*, Blackb., BMNH; ? sex 3030; N. Territory, *Hydrobiomorpha Helenae*, Blackb. Co-type, SAMA, herein designated.

Additional localities

W.A. — Barradale, ANIC; Derby, WAM, SAMA; 90 ml. E. Derby, SAMA; Fitzroy Crossing, ANIC; 100 ml. E. Kununurra, ANIC; Mitchell Plateau, ANIC; Ord River, WAM; Windjana Gorge, ANIC; Wyandotte, ANIC; Wyndham, NMV.

NT — Adelaide River, ANIC; 31 km W.S.W. Borroloola, ANIC; Brock Ck Burnside, ANIC; Daly River Mission, ANIC; Darwin, NWV, SAMA; Groote Is., SAMA; Horn Islet, Sir Ed. Pellew Gp, EUQ; Howard Springs, ANIC; 17 ml. N.N.E. Borroloola, ANIC; Humpty Doo, QDPIM; Katherine, ANIC, UQIC; King River, NMV; Koonagarra, ANIC; Oenpelli, NMV; Wessel Isl., ANIC.

QLD — Bloomfield River, EUQ; Bundaberg, ANIC; Cairns, SAMA; Cape York, QM; Cooktown, QM; Ingham, ANIC; Kowanyama, QM; Mornington Isl. Mission, SAMA; Mutchilba, NMV; Normanton, ANIC, SAMA; Saibai Isl., EUQ.

PNG — Morehead River, ANIC.

Remarks

Apart from *H. troxi*, which lacks the membranous portion between the frons and clypeus, *H. helenae* is the only Australian *Hydrobiomorpha* with alternating dark and light stripes on the elytra of most specimens and a widely expanded posterior portion of the keel. Some specimens, particularly large females lack the elytral stripes.

Hydrobiomorpha bovilli Blackburn

Hydrobiomorpha bovilli Blackburn, 1888, p. 816; Knisch, 1924, p. 234; Mouchamps, 1959, p. 305. *Hydrobiomorpha lepperi* Blackburn 1888, p. 817; Knisch 1924, p. 234; Mouchamps 1959, p. 305. Syn. nov.

Description (number examined 118). (Figs 2, 3, 14, 22, 23)

Length 11-17 mm. Narrowly oval, black; front of clypeus, membranous area on head and much of underside testaceous, small circular patches of grey around punctures on head, pronotum and elytra. Head finely reticulate, moderately densely covered with small fine punctures. A field of large punctures along inner border of eye, a rough semicircle in front of eye, a few large punctures along rear edge of clypeus and a couple in middle of clypeus. Membranous area between frons and clypeus broad, angularly restricted in lateral quarter. Pronotum sculptured as head, with oblique field of punctures in middle on each side and an oblique broken row towards the front on each side, groove along front edge of pronotum reaching beyond edge of eye. Elytron punctured as on pronotum, with five rows of relatively small serial punctures, the lateral three rows with sparser punctures, a few linear rows of small punctures visible in some lights towards apex. Sternal keel virtually same width throughout, produced into short sharp blunt point behind. Meso- and metasternum and abdominal sternites rugose-punctate except keel and quite large triangular to semicircular bare area at apex of apical sternite, bare area often longitudinally wrinkled. Pronotal pillar narrow in ventral view with strong slightly downward pointed spine (Figs 22, 23). Front portion of keel dipping sharply upwards in front of notch which is on same plane as rest of keel. Front area of gular region moderately covered with moderately sized punctures, rear portion with some much larger punctures on lateral portions, midline impunctate.

Male

All claws sharply bent with bulbous area at base. Maxillary palps stouter particularly second joint which is expanded to about twice width of apical joint (Fig. 3). Aedeagus as in Fig. 14.

Distribution

A northern coastal species which is relatively common from the Northern Territory around to the Townsville - Home Hill region of Queensland. Also known from New Guinea.

Types

H. bovilli Blackburn. Holotype: F. 2310 N.T. T.

Hydrobiomorpha Bovilli. Blackb.; Blackburn coll. 1910-236. Mounted on cutaway card, in BMNH. Locality given as Palmerston N.T. by Blackburn (1888).

H. tepperi Blackburn. Lectotype: F. 2356 N.T. T; *Hydrobiomorpha* Tepperi, Blackb.; Blackburn coll. 1910-236. On card. Card once contained two specimens, the right hand one labelled 'T' remains. In BMNH. Locality given by Blackburn (1888) as Palmerston N.T. Herein designated. Paralectotype: M. N. Territory J.P. Tepper *Hydrobiomorpha* Tepperi Blackb., in SAMA; N. Territory, Tepperi, Blackb., in SAMA. Herein designated.

Additional localities

QLD — Cairns, SAMA; 21 k NW. Cooktown, ANIC; Home Hill, CW; 14 k NW, Hope Vale Mission, ANIC; Ingham, QDPIM; Iron Range, ANIC. EUQ; Kowanyana, QM; Laura, ANIC, QDPIM; Mornington Isl., SAMA; Mt Baird, ANIC; Mt Webb Nat. Pk, ANIC; 38 k S. Musgrave, ANIC; Normanton, SAMA; Rounded Hill 15°17'S 145°13'E, ANIC; 40 k S. Weipa, QDPIM.

NT — Adelaide River, ANIC; Bentinck Isl., SAMA; Cooper Creek, ANIC; Darwin, CW; Dirraduk Ck, SAMA; Howard Springs, ANIC; King River, NMV; 16 k N.E. Mt Cahill, ANIC; 18 k N.E. Oenpelli, Sire Edward Pellet Gp, EUQ; 6 k SW. Oenpelli, SAMA; Rimbija Isl., ANIC.

PNG — Morehead, ANIC; Rouku, Morehead River, ANIC; Weam, ANIC.

Remarks

The strong spine on pronotal pillar, relatively even width of keel and long groove on the front of the pronotum separate this common species from other Australian *Hydrobiomorpha*. The male maxillary palpi are not as expanded as in the related, but rather larger species, *H. debbae*.

Hydrobiomorpha debbae sp. nov.

Description (number examined 5). (Figs 6, 10, 12, 20)

Length 15-18 mm. Oval. Predominantly black; front of clypeus, membranous area on head, tarsi and appendages testaceous, punctures on elytra, particularly serial ones, are in the centre of small grey spots. Head with scattered fine punctures of varying size; very finely reticulate; row of seriferous punctures along inner border of eye; a field of extremely large punctures in front of eye; a few large punctures along rear edge of clypeus and a few scattered ones in middle; membranous area between frons and clypeus broad, narrowing rather slowly in lateral quarters (Fig. 10). Pronotum with very fine weak reticulation sparsely covered in fine punctures;

three oblique lines of moderately large punctures on each side; groove along front edge reaching to level of middle of eye. Elytron with reticulation and punctures somewhat stronger and denser than on pronotum; with five rows of moderately large serial punctures, sparser in third row and lateral two close together. Sternal keel with hind portion a little broader than front portion, produced into a blunt point between hind coxae; front portion slopes sharply upwards in front of notch which is on approximately same plane as rest of keel. Pronotal pillar quite broad in ventral view, bottom edge produced backwards in short stout spine (Fig. 20). Front portion of gular area well covered in strong punctures, back portion similarly punctured except for small impunctate area in midline. Wings of mesosternum without additional portion on front edge. Meso- and metasternum and sternites rugose-punctate except for keel and triangularly shaped bare patch at apex of apical sternite.

Male

Profarsi a little expanded, all claws sharply curved and with a small bulbous portion at base. Second joint of maxillary palpus broadly expanded, concave beneath (Fig. 6). Aedeagus as in Fig. 12.

Distribution

Known only from the type localities on the eastern coast of Cape York.

Types

Holotype: M. Cairns dist. A.M. Lea, SAMA. Paratypes: 1, Cape York Pen. Lockerbie N.Q., 9-15 April 1975. Coll. M. Walford-Huggins, CW; 1, Cairns, SAMA; 1, same data as Holotype, SAMA; 1, 'Bald Hills' Sta, 44 km N. of Isabella Falls, Qld., 15°15'S 145°00'E, 29 Dec. 1984 in lamp, G. and A. Daniels, EUQ.

Remarks

H. debbae can be separated from *H. bovilli* by the short pronotal spine and short length of groove along front of pronotum, which seldom reaches to level of the inner edge of eye and is usually much shorter, the relatively short width of wide portion of membranous area at front of frons (Fig. 10) and the more strongly expanded second segment of male maxillary palpus (Fig. 6). *H. debbae* is generally longer and broader than *H. bovilli*.

ACKNOWLEDGEMENTS

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