

AUSTRALIAN HELORIDAE, INCLUDING MONOMACHIDAE
(HYMENOPTERA)

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Summary

The genera *Helorus*, *Monomachus*, *Ropronia*, *Vanhornia*, and *Tetraconus* are considered to belong in one family, the Heloridae, rather closely allied to the genus *Austroserphus* of the family Proctotrupidae. A new genus (with three new species) combining many of the characters of the above genera is described as well as a new species and a new subspecies of *Monomachus*.

INTRODUCTION

As originally established by Ashmead (1902) the Heloridae consisted of two subfamilies, the Monomachinae (*Monomachus* and *Ropronia*) and the Helorinae (*Helorus*). Crawford (1909) described the peculiar *Vanhornia* and erected a new family for it. Subsequent authors (e.g. Townes *1948) have considered these four genera in distinct families with *Tetraconus* Szepilgeti 1903 a second genus in Monomachidae.

Undoubtedly they are all closely allied, differing slightly in wing venation and antennal segmentation and markedly so only in abdominal shape.

A new genus described below combines many of the characters of the known genera. It has the general habitus of *Ropronia*, the wing venation of *Monomachus*, and the antennal segmentation of *Helorus*. *Vanhornia* is the most distinct genus but this is mainly in abdominal shape, 13-segmented antenna, and head shape.

It is considered that the above five genera should be placed in the one family, Heloridae. Of the described genera only specimens of *Monomachus* have been examined.

It should be noted that the venation of the proctotrupid genus *Austroserphus* Dodd 1933 is very similar to that found in this family, particularly to *Ropronia* and *Vanhornia*, though the stem of *Rs* and the fused *Rs* + *M* are both incomplete in *Austroserphus*.

The family is characterized by 2-segmented trochanters; antennae inserted on the middle of the face; forewing with a stigma; mandibles dentate; antenna 13- to 15-segmented; tarsal claws simple or pectinate; and hindwing with or without distinct venation.

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KEY TO GENERA OF THE FAMILY HELORIDAE

1. Antenna with 15 segments. 2
 Antenna with 13 or 14 segments 5
2. Tarsal claws pectinate; stem of *Rs* fused *Ra + M* present; (abdomen not compressed, clubbed, petiole distinct). *Helorus* Latreille
 Tarsal claws simple; stem of *Rs* present, fused *Rs + M* absent. 3
3. Abdomen long and thin, tapering; antennae inserted on a frontal protuberance 4
 Abdomen laterally compressed, clubbed; antennae not inserted on a frontal protuberance (9). *Austronia*, gen. nov.
4. Clypeus and cheeks without horns. *Monomachus* Klug
 Clypeus with 2 horns and hind margin of cheek with a horn-like projection.
 *Tetraconus* Szepligeti
5. Antenna with 14 segments. 6
 Antenna with 13 segments; abdomen with only 2 (9) or 4 (\$) visible tergites, the 1st covering most of the abdomen; stems of *Rs* and *M* and fused *Rs + M* present; mandible very short, with 3 large teeth, widely separated, and not meeting when closed. *Vanhornia* Crawford
6. Abdomen strongly compressed; petiole distinct; stems of *Rs* and *M* and fused *Rs + M* present. *Ropronia* Provancher
 Abdomen not compressed; fused *Rs + M* absent (&). *Austronia*, gen. nov.

Genus HELORUS Latreille

Helorus Latreille, 1802, Hist. Nat. Crust. Ins. 3: 309.

Genotype *Helorus ater* Latreille, 1802, loc. cit. (monobasic).

Helorus is predominantly European but species are recorded also from North America, South America, and India. As far as is known *Helorus* is parasitic only on Chrysopidae (Neuroptera).

Genus ROPRONIA Provancher

Ropronia Provancher, 1886, Addit. Corr. Faune Ent. Canada, Hym.: 154.

Genotype *Ropronia pediculata* Provancher, 1886, loc. cit. (monobasic).

Nothing is known definitely of the biology of the species which are possibly limited to North America. One species is recorded doubtfully from China where it was possibly parasitic on *Perielista* (Tenthredinidae).

Genus VANHORNIA Crawford

Vanhornia Crawford, 1909, Proc Ent. Soc. Wash. 11: 63.

Genotype *Vanhornia eucnemidarum* Crawford, 1909, loc. cit. (monobasic).

The single species is parasitic on eucnemid larvae in North America.

Genus TETRACONUS Szepligeti.

Tetraconus Szepligeti, 1903, Ann. Hist. Nat. Mus. Hung. 1: 388.

Genotype *Tetraconus mocsaryi* Szepligeti, 1903, loc. cit. (monobasic).

The genus is recorded from South America.

Genus MONOMACHUS Klug

Monomachus Klug, 1841, Z. Entom. (Germar) 3(2): 378.

Genotype *Monomachus gladiator* Klug, 1841, loc. cit.

Body slender; abdomen long and thin, tapering; antenna with 15 segments; antennae inserted on a frontal protuberance; in the forewing stem of *Rs* present, fused *Rs + M* absent; clypeus and cheeks without horns.

The genus occurs in Australia and South America. Ashmead (1902) considered that the species may be parasitic on antlions. Specimens in the National Museum, Melbourne, are recorded as "1 parasites of *Boreoides subulata* Hardy" (Diptera).

KEY TO THE AUSTRALIAN SPECIES OF THE GENUS MONOMACHUS

1. Head in lateral view with posteroventral angle rounded; lower margin of eye less than half vertical length of eye from lower margin of face. (Head without glabrous area behind ocelli; posterior region of pronotum with a single row of punctures across meson; petiole at base with fine rugae.) _____ *australicus* Girault
- Head in lateral view with posteroventral angle pointed; lower margin of eye at least half vertical length of eye from lower margin of face 2
2. Glabrous area behind ocelli either broken at meson by scattered punctures or area entirely with scattered punctures. 3
- Head with a median glabrous area behind ocelli, laterad with a few transverse sulci. (Posterior region of pronotum with an irregular zone of punctures across meson; petiole at base with limited (4-6), short, longitudinal carinae followed by an irregular, transversely rugose area.) *osmondi*, sp. nov.
3. Posterior region of pronotum with a single transverse row of strong setose punctures; petiole at base irregularly coarsely rugose
- *antipodalis bendora*, subsp. nov.
- Posterior region of pronotum with scattered punctures; petiole at base with limited, (4-6), short, longitudinal carinae, then irregularly finely rugose
- *antipodalis antipodalis* Westwood

MONOMACHUS ANTIPODALIS Westwood

Monomachus antipodalis Westwood, 1874, Thesaur. Entom. Oxon.: 126.

Monomachus antipodalis Schletterer, 1889, Berl. Ent. Z. 33: 225.

MONOMACHUS ANTIPODALIS ANTIPODALIS Westwood

Female

Body mostly black; legs, except coxae, red, but fore and hind femora somewhat darkened; antenna red but flagellum darkened at apex and scape and pedicel sometimes darkened; pronotum above, anteriorly, red and also red at posterolateral corners; thorax reddish discally at posterior scutum, and at parapside and axilla mesally; abdomen above pale on 3 and succeeding segments; more so 5 to apex; tegula red; mandible red except for teeth; lower margin of face (margining mandibles) narrowly red.

Head with glabrous area behind ocelli extending laterally towards the eye, but broken at meson by scattered punctures or with scattered

punctures extending almost throughout; median projection from lower face (clypeus) usually distinctly trifid at apex; head in lateral view with the posteroventral angle pointed; lower margin of eye at least half the vertical length of eye from lower margin of face; posterior region of pronotum, except caudal margin more or less, with scattered punctures, the sunken area with distinct transverse sulci; axilla sparsely punctate mesally and posteromesally; scutellum glabrous but with widely scattered punctures extending towards the meson; propodeum with the median carina indistinct anteriorly; petiole at basal quarter irregularly, rather finely rugose, with limited (4-6) weak carinae at base; 1st funicle distinctly longer than scape, succeeding segments decreasing, apical club segment 2½ times as long as wide.

Type.—9. Location not known.

Type locality.—Melbourne, Vic.

Specimens examined.—VICTORIA: Murrumbeena (16.V.1924, A. J. Campbell), 5 ♀, in National Museum, Melbourne, ? parasite on *Boroides subvkda* Hardy; Mordialloc (May 1907), 1 ♀, in National Museum, Melbourne; Mordialloc (25.iv.1930, A. N. Burns), 2 ♀♀, in A. N. Burns Collection; Mordialloc (24.V.1933, A. N. Burns), 1 ♀, in A. N. Burns Collection; Carrum (19.V.1945, C. Oke), 3 ♀♀, in A. N. Burns Collection; Olinda (26.V.1940, F. E. Wilson), 1 ♀, in A. N. Burns Collection; Melbourne (Mar. 1929, Blackbourne), 1 ♀, in Queensland Department of Agriculture, Entomology Branch Collection.

The propodeum is variable in this species. The median carina is either present or absent depending on the ornamentation and its strength. The punctures of the posterior half of the pronotum also are variable.

MONOMACHUS ANTIPODALIS BENDORA, *subsp. nov.*

Plate 1, Figs. 1 and 2

Female

Body mostly black; legs, except coxae, all red; antenna all red; pronotum all dark; abdomen above pale on 2, less so on 4 and succeeding; tegula red; mandible red except for teeth; lower margin of face (marginating mandibles) narrowly red.

Head with glabrous area behind the ocelli extending laterally towards the eye but broken at meson by scattered punctures; median projection from lower face distinctly trifid at apex; head in lateral view with the posteroventral angle pointed; lower margin of eye at least half the vertical length of eye from lower margin of face; posterior region of pronotum with a single transverse row of strong punctures, pronotum widely glabrous at meson except for this transverse row and 2 punctures in the sunken zone; axilla sparsely punctate, particularly mesally and posteromesally; scutellum glabrous but with scattered punctures towards meson; propodeum with distinct median carina, particularly anteriorly,

the laterad glabrous area almost obsolete; petiole at basal quarter irregularly coarsely rugose; 1st funicle segment distinctly longer than scape.

Type.—Holotype ? in the Division of Entomology Museum, C.S.I.R.O., Canberra.

Type locality.—Bendora, A.C.T. (21.iii.1951, E. F. Riek).

Only the holotype is known. The subspecies is distinguishable readily from the typical form on the ornamentation of the pronotum and of the petiole.

MONOMACHUS AUSTRALICUS Girault

Monomaehua australicus Girault, 1925, some Gem-like or Marvellous Inhabitants of the Woodlands etc.: 2.

Female

Body mostly black; legs, except coxae, mostly red, but basal half of all femora and hind tibia above, except at base, dark; antenna red, but scape and pedicel darkened; pronotum pale above at caudal half except widely at meson, posterolateral corners pale; thorax pale at scutellum, except anteriorly and narrowly at scutum discally; abdomen above pale at apical third of petiole, segment 2 at meson, 3 and 4 except at apex, succeeding all pale; tegula red; mandible red except for teeth; head reddish narrowly at vertex, extending laterally and widening behind the eye, narrowly pale on mesal margin of eye over lower half, lower margin bordering mandibles narrowly red.

Head without a distinct glabrous area behind the ocelli, completely punctate; median projection from lower face apparently trifid at apex (partly obscured by glue); head in lateral view with the posteroventral angle-rounded; lower margin of eye less than half the vertical length of eye from lower margin of face; posterior region of pronotum with a single transverse row of strong punctures; pronotum, behind the transverse carina at the anterior declivity, widely glabrous at meson except for a single large puncture in the sunken area; axilla sparsely punctate only mesally; scutellum glabrous except towards the lateral margins and there sparsely punctate; propodeum with the median carina indistinct anteriorly, laterad glabrous area very small and finely etched; petiole at basal quarter irregularly finely rugose, with a few coarser rugae at base, without a laterad carina at base; 1st funicle segment distinctly longer than scape.

Type.—Holotype ♀ in the Queensland Department of Agriculture, Entomology Branch Collection.

Type locality.—Cleveland, Qld. (14.v., A. A. Girault), on dead tree.,

Only the holotype is known. The species has a most distinctive head, with rounded posteroventral angle, short face, and without a glabrous area behind the ocelli.

MONOMACHUS OSMONDI, sp. nov.

Female

Body mostly black; legs, except coxae, red, but all trochanters, darkened middle and hind femora darkened over part of base, but pale at apex; antenna all red; posterolateral corners of pronotum red; abdomen with segment 2 and less so petiole pale above; tegula red; mandible red except for teeth; lower margin of face (margining mandibles) narrowly red.

Head with a median glabrous area behind the ocelli, only as wide as the space between the ocelli, laterad with a few transverse sulci; median projection from lower face not distinctly trifold; head in lateral view with the posteroventral angle pointed; lower margin of eye at least half the vertical length of eye from lower margin of face; posterior region of pronotum with irregular punctures across the meson, forming a distinct zone, pronotum glabrous only narrowly at the sunken zone; axilla sparsely punctate particularly mesally and posteromesally; scutellum glabrous except towards the lateral margins and there sparsely punctate; propodeum with only a faint median carina, with a large glabrous area on each side laterad at about the middle of its length; petiole at base with limited (4-6) short carinae followed by an irregular transversely rugose area (which extends to base narrowly at meson); 1st funicle segment distinctly longer than scape.

Type.—Holotype ♀ in the Division of Entomology Museum, C.S.I.R.O., Canberra.

Type locality.—Glen Osmond, S.A. (13.V.1937, D. Swan).

Only the holotype is known. The species is more closely allied to *antipodalis* than to *australicus*. It differs from the former principally in the ornamentation of the head and of the pronotum.

Genus AUSTRONIA, nov.

Genotype *Austronia nitida*, sp. nov.

Female

Habitus of *Ropronia* but differing in the structure of the antenna and in wing venation; abdomen shaped as in *Ropronia* but segment 2 (1st after petiole) quite small; pronotum quite large, upper surface almost half as long as wide, with the carina at the anterior declivity broken at the meson; venation of both wings basically as in *Monomachus*, forewing with the fused *Rs + M* vein obsolete and the *m-cu* crossvein meeting *CuA* well before the forking of *CuA*, hindwing with an additional vein to that seen in *Helorus* but with the basal vein similar; a transverse vein arising from *R* somewhat before its apex, reaching the hind margin and curved towards the base, sometimes with a basal stump at the point of greatest curvature; tarsal claws simple; antenna 15-segmented; ovipositor issuing before apex.

Male

Similar to female but antenna only 14-segmented and pronotum rather shorter.

Nothing is known of the biology of the species.

The three species can be separated readily on the colour of the thorax and legs.

AUSTRONIA NITIDA, Sp. nov.

Plate 1, Fig. 4

Female

Shining black; legs red, except coxae and trochanters; tegula red; scape narrowly red at base; wings slightly infuscated, venation fuscous.

Scape stout, pedicel quadrate, 1st funicle longer than scape, succeeding segments decreasing regularly, 12th only slightly longer than wide, apical segment somewhat longer; head setose, finely so at vertex; dorsal thorax finely setose; propodeum with a median carina over basal half, irregularly, coarsely, longitudinally rugose over apical half, coarsely, transversely rugose at basal half; petiole finely, irregularly rugose; abdomen punctate and setose, less so at meson, segment 2 at meson twice as long as subequal succeeding segments, 7 visible segments.

Type.—Holotype 9 in the Division of Entomology Museum, C.S.I.R.O., Canberra.

Type locality.—Lake St. Clair, Tas. (25.U949, E. F. Riek). A 2nd 9, Nichols Hut, Tas., 2500 ft (21.U949, N. B. Tindale) in the South Australian Museum, Adelaide.

AUSTRONIA RUBRITHORAX, sp. nov.

Plate 1, Fig. 3

Female

Head and abdomen shining black, thorax, except below, all red; legs, except coxae in part, all red; abdominal petiole all red; scape narrowly red at base; wings clear, venation fuscous.

Apical club segment shorter than in *nitida*, 12th funicle almost quadrate, apical segment not twice as long as wide; pronotum with carina at declivity distinctly broken laterally as well as at meson; propodeum more finely rugose than in *nitida*, with a median carina over basal half, surface mostly foveate and rugose; petiole with ornamentation similar to but finer than on propodeum.

Type.—Holotype 9 and paratype 9 9 in the Division of Entomology Museum, C.S.I.R.O., Canberra.

Type locality.—Beaconsfield, Vic. (15.xi.1946, B. B. Given).

Specimens examined.—NEW SOUTH WALES: Twenty miles east of Canberra (20.xi.1953, E. F. Riek), 49 9. The red thorax and abdominal petiole clearly distinguish this species from *nitida*.

AUSTRONIA NIGRICULA, sp. nov.

Male

Shining black; legs black or dark except for tarsi mostly and fore tibia; tegula black; wing somewhat infuscated, particularly at base and costal space.

Antenna as in *nitida* but with only 14 segments, apical segment about twice as long as wide, penultimate distinctly longer than wide, pronotum not half as long as wide, carina at anterior declivity entire; dorsal thorax shining with numerous long setae; propodeum coarsely irregularly foveate, without distinct median carina; petiole almost glabrous at meson, irregularly longitudinally rugose laterally; abdomen mostly glabrous, with fine scattered setae laterally, extending to meson on apical segments, segment 2 (1st after petiole) the longest, segment 3 almost as long, succeeding segments decreasing, 6 visible segments as well as petiole.

Type.—Holotype ♀ in the Queensland Museum, Brisbane.

Type locality.—National Park, Qld. (25.X.1923, & Hacker).

Only the holotype is known. It shows a general similarity to the male of *Ropronia* but has a distinct wing venation. This could possibly be the male of one of the other two species of which only the female is known.

REFERENCES

- ASHMEAD, W. H. (1902).—Classification of the pointed-tailed wasps. Proctotrypoidea Part 1. *J. N. Y. Ent. Soc.* 10: 240-7.
- CRAWFORD, J. C. (1909).—A new family of parasitic Hymenoptera. *Proc. Ent. Soc. Jvvh.* 11: 63-4.
- DODD, A. P. (1933).—A new genus and species of Australian Proctotrypidae. *Proc. Linn. Soc. N.S.W.* 58: 275-7.
- SCHLETTERER, A. (1889).—Die Hymenopteren-Gattungen *Stenophasmus* Smith, *Monomachus* Westw., *Pelecinus* Latr., und *Megalyra* Westw. *Bert Ent. Z.* 33: 197-250.
- SZEPLIGETI, V. (1903).—Neue Evaniiden aus der Sammlung des ungarischen National-Museum. *Ann. Mus. Nat. Hung.* 1: 364-95.
- TOWNES, H. (1948).—The serphoid Hymenoptera of the family Roproniidae. *Proc. US. Nat. Mus.* 98: 85-9.
- WESTWOOD, J. O. (1874).—Thesaur. Entom. Oxon.: 126.

EXPLANATION OF PLATE 1

- Fig. 1.—*Monymachus antipodalis bendora*, subsp. nov., holotype female, dorsal view. X c.5.
- Fig. 2.—*Monomachus antipodalis bendora*, subsp. nov., holotype female, lateral view. X c.5.
- Fig. 3.—*Austronia rubrithorax*, gen. et. sp. nov., holotype female. X c. 6.
- Fig. 4.—*Austronia nitida*, gen. et sp. nov., holotype female. X c. 6.

AUSTRALIAN HELORIDAE

