

Two new species of the genus *Ropalidia* from New Guinea (Hymenoptera: Vespidae: Polistinae)

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Two new species of the genus *Ropalidia*, *R. bidens* van der Vecht, spec. nov. and *R. clypeata* Kojima, spec. nov., which share some characters unique in the genus, are described from New Guinea.

Introduction

In our attempt to make a comprehensive taxonomic work on the *Ropalidia* fauna of New Guinea and its neighbouring islands, two species proved to be new to science. Both share the following characters that have been rarely or never reported for the genus *Ropalidia* and both might form a natural species-group: the antennal flagellum of the male curled apically, and the gena narrowed near the level of one-third from the eye top in the female, and near the level of the middle of eye in the male.

Although the manuscript of the present paper was prepared nearly ten years ago, it has been left unpublished due to the death of the senior author (JV). During his stay at the Nationaal Natuurhistorisch Museum, Leiden (RMNH), the junior author (JK) had a chance to reexamine a part of the material on which our earlier version of the manuscript was based.

Descriptions

Ropalidia bidens van der Vecht, spec. nov.
(figs 1-15)

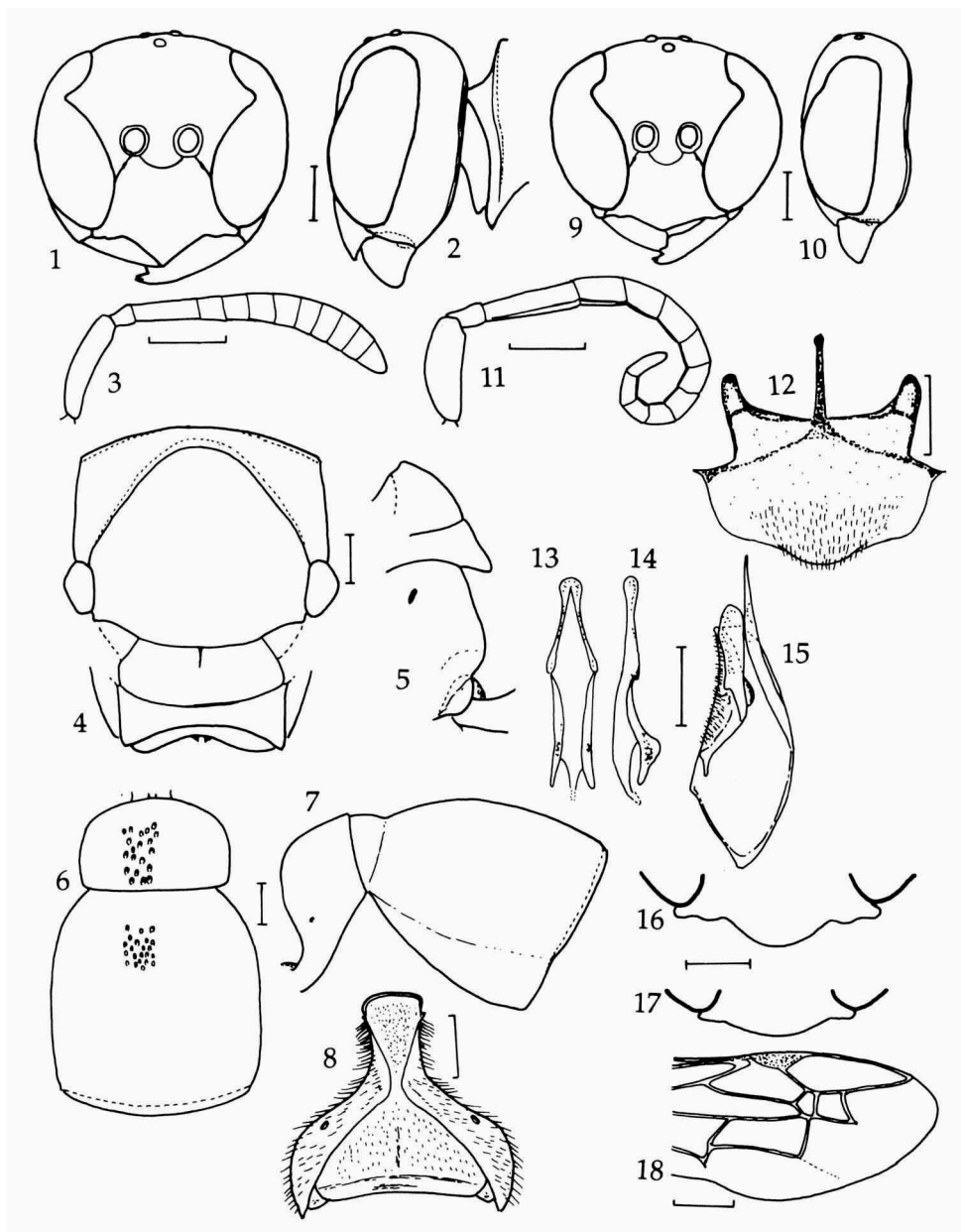
Material.— Holotype, ♀ (RMNH), "N.W. New Guinea, Klamono Oilfids. [1°08'S, 131°30'E], 18-24.viii.1948, M.A. Lieftinck". Paratypes: 1 ♂ (allotype) + 1 ♀ (Bishop Museum, Honolulu), "New Guinea, Bodem [1°58'S, 138°44'E], 100 m, 7-17.vii.1959, T.C. Maa".

Female.— Head slightly wider than high in facial view (fig. 1), in dorsal view about twice as wide as long, flat anteriorly, shallowly emarginate posteriorly, scarcely wider than mesosoma including tegulae. Gena developed, nearly 0.8 times as wide as eye in lateral view, slightly narrowed ventrally to the level of one-third from eye top, then slightly widened (fig. 2); occipital carina complete, raised into a thin lamella in ventral half. Malar space very narrow, about 0.3 diameter of antennal socket. Ocelli arranged in a nearly equilateral triangle, posterior ocelli about 2.5 times as far from inner margin of eye as from each other, the latter distance nearly

equal to the diameter of posterior ocellus; area around ocelli nearly flat; space behind posterior ocelli wide, distance from the line joining the posterior margins of posterior ocelli to occipital carina longer than that between posterior ocellus and inner eye margin. Inner eye margins converging ventrally, distance between them about 1.6 times as wide at vertex as at clypeus. Clypeus small, about 0.35 times as wide (measured as a distance between the uppermost points where clypeus touches eyes) as head, pointed apically, about as wide as high (measured from the bottom of dorsal emargination to the apex), touching eye for a length more than twice diameter of antennal socket. Antenna remarkable for its clavate flagellum (fig. 3); scape weakly curved and slightly flattened, nearly 4 times as long as wide at apex, about equal to length of third and fourth segments combined; third segment slender, weakly thickened toward apex, about 2.5 times as long as wide at apex and about as long as length of fourth to sixth segments combined; fourth segment about as long as wide at apex; tenth segment about twice as wide as long; terminal segment slightly longer than wide at base.

Mesosoma short, in dorsal view about 1.2 times as long as wide. Pronotum in dorsal view truncate anteriorly, with lateral sides slightly diverging posteriorly in nearly straight lines; pronotal carina sharp, distinctly raised at humeral angles, but weak dorsally. Scutum slightly longer than wide between tegulae. Disk of scutellum trapezoid, laterally margined with carinae; median impression indistinct. Metanotum nearly flat in anterior part including posterolateral projections, almost vertically sloping down in posterior half; posterolateral lobes strongly projecting, with blunt apices (figs 4 and 5). Mesepisternum without epicnemial carina. Propodeum steep, with weak posterolateral projections (fig. 5), median depression wide and shallow; propodeal valvula large, broadly rounded apically, when seen in profile of mesosoma covering most of posterior projections forming propodeal orifice, which is parallel-sided with a broadly rounded top and about twice as long as wide. Second radio-medial vein (r-m2) of fore wing nearly straight, inserted to both radial vein (r) and media (M) at right angle (cf. fig. 18).

First metasomal segment stout, in dorsal view (perpendicular to the dorsal face of posterior widened part of the tergum) only the anterior margin of petiolar part visible, posterior widened part little more than 1.5 times as wide as long and about 4 times as wide as petiolar part (fig. 6); in profile, dorsal face of tergum steeply rising from the end of short petiolar part, then slightly curved down towards apex (fig. 7); in ventral view, tergum with basal parallel-sided part as long as wide, posterior widened part strongly expanding in its anterior half, then slightly narrowed towards posterior margin; sides of tergum beneath very closely approaching each other before strongly diverging posteriorly (fig. 8); spiracles of tergum visible only from beneath; posterior flattened triangular area of sternum about 1.7 times as wide as long, hardly emarginate posteriorly (fig. 8). Second metasomal segment slightly longer than wide, in dorsal view gradually expanding posteriorly in anterior one-third, then nearly parallel-sided, maximum width about 1.4 of that of first tergum; posterior lamella wide and strongly depressed on tergum, narrow and weakly depressed on sternum; suture between tergum and sternum weak, nearly disappearing in posterior part; articulation of tergum smoothly passing into short "neck" medially, separated by truncation laterally.



Figs 1-15. *Ropalidia bidens* van der Vecht, spec. nov.; 1-8, ♀; 9-15, ♂; 1, 9, head, frontal view; 2, head and anterior part of pronotum, lateral view; 3, 11, left antenna; 4, mesosoma, dorsal view; 5, posterior part of mesosoma, lateral view; 6, first and second metasomal segments, dorsal view, punctures partly shown; 7, same, lateral view; 8, first metasomal segment, ventral view; 10, head, lateral view; 12, terminal metasomal sternum; 13, aedeagus, ventral view; 14, aedeagus, lateral view; 15, inner aspect of paramere with volsella and digitus.

Figs 16-18. *Ropalidia clypeata* Kojima, spec. nov.; 16, ♀; 17, 18, ♂; 16, 17, apical part of clypeus; 18, distal half of right fore wing.

Body dull, covered with fine appressed tomentum and moderately dense, erect hairs, which are rather long and brownish in dorsal parts of head and mesosoma; posterior part of metanotum polished. Eye without hairs. Clypeus with scattered punctures, frons and vertex with remote, shallow punctures; gena feebly punctured. Pronotum, scutellum, anterior half and posterolateral projections of metanotum densely covered with large, coarse punctures, which are particularly strong on metanotum; scutum with sparse, shallow punctures similar to those on vertex; mesepisternum with large punctures in posterodorsal area, punctures becoming sparser and smaller anteroventrally; metapleuron sparsely punctured, with faint striae above; propodeum with irregular but deep punctures. First metasomal tergum hardly punctured on anterior vertical face, with large, coarse punctures on posterior widened part; punctures on second tergum finer and denser than those on first tergum; second sternum less densely punctured than second tergum; third to sixth segments with sparse, small punctures.

Colour largely yellow; antenna fuscous above, yellowish brown in ventral part of flagellum; apical margin of clypeus and teeth of mandible, dark brown; vertex pale brown, darker around ocelli; scutum slightly darker than pronotum, with ill-defined yellow lateral bands; femora, tibiae and tarsi with ill-defined, pale brown markings; second metasomal segment pale ferruginous, posteriorly with ill-defined darker areas; following segments ferruginous. Wings hyaline, slightly fuscous along costa and in marginal cell.

Paratype female slightly darker than the holotype, with vertex and scutum coloured with brown.

Length (of head + mesosoma + first and second metasomal segments) 7.5–8 mm.

Male.— Similar to female, but clypeus proportionally smaller, less strongly produced below, about 0.3 times as wide as head, nearly flat, slightly wider than high (fig. 9); eye strongly swollen; gena narrower, in lateral view narrowest at the level of middle of eye, where it is about half as wide as eye (fig. 10); distance between inner eye margins about 1.5 times as wide at vertex as at clypeus; distance from the line joining posterior ocelli about equal to distance between posterior ocellus and inner eye margin. Antenna remarkable for its apically curled flagellum (fig. 11); scape short, about 3 times as long as wide at apex, and about as long as second and third segments combined; third segment about 3.5 times as long as wide at apex; fourth segment about 1.5 times as long as wide; terminal segment about 3 times as long as wide at base; third to terminal segments with tyloids of longitudinal ridges; apical margin of each of eighth to twelfth segments slightly emarginate ventrally; ninth to terminal segments slightly compressed in ventral part. Terminal metasomal sterna (seventh and eighth sterna) as in other *Ropalidia* (fig. 12). Genitalia as in figs 13–15; ventral process of aedeagus finely serrate beneath.

Dark ferruginous; antenna brown below; upper half of head and scutum nearly black; clypeus except ventral margin, mandible except teeth, space between antennal sockets, ventral part of ocular sinus, and ventral half of gena, yellow; pronotum, scutellum, metanotum, mesepisternum and propodeum irregularly marked with pale ferruginous; metapleuron yellowish brown; coxae yellow; fore legs paler than mid and hind ones; second metasomal sternum slightly paler anteriorly.

Length (of head + mesosoma + first and second metasomal segments) 7 mm.

Ropalidia clypeata Kojima, spec. nov.
(figs 16-18)

Material.— Holotype, ♂ (RMNH), "New Guinea, Sivipi near Sasambata, Popondetta subdist., xi.1963, D.K. McAlpine". Paratypes: 1♀, "New Guinea, Finsch Harbour [6°34'S, 147°51'E], Wareo, L. Wagner, South Australian Museum"; 1♀, "New Guinea, Kokoda, Pitoki [8°53'S, 147°45'E], 400 m, 23.iii.1956, J.L. Gressitt". The paratypes were in the possession of JV when we prepared an earlier version of the manuscript, but JK was not able to ascertain the current depository of the specimens.

Male.— Structure including genitalia similar to that of male of *R. bidens*, but apex of clypeus broadly rounded (fig. 17).

Colour largely yellow; antenna except basal half of scape fuscous above; vertex and upper frons black; anterior vertical face of pronotum, scutum except yellow spots inside tegulae and a large ferruginous spot near the center, a spot at the posteroventral corner of mesepisternum, metapleura, narrow median bands of scutellum and metanotum, propodeum except ill-defined yellow spots around spiracles and on posterolateral projections, and anterior face of first metasomal tergum, nearly black; posterolateral corners of pronotum, second metasomal tergum except yellow apical band, and third to seventh metasomal terga, ferruginous; femora, tibiae and tarsi of mid and hind legs extensively marked with brown.

Length (of head + mesosoma + first and second metasomal segments) 7 mm.

Female.— Structure and wings as in female of *R. bidens*, but apex of clypeus broadly rounded as in male of this species (fig. 16).

Colour of female from Finsch Harbour.— Black; antenna fuscous above, yellowish below; clypeus except ferruginous apical margin, mandible except ferruginous apical teeth and ventral margin, and ventral half of frons, yellow; gena extensively marked with pale ferruginous. Pronotum, except posterodorsal corners which are coloured with ferruginous, large lateral spots on scutellum, posterolateral lobes of metanotum, and scrobal spot, yellow; legs pale ferruginous; coxae, mid and hind trochanters and femora, fuscous. Metasoma dark ferruginous; wide posterior band of first tergum and narrow apical band of second tergum, yellow.

Colour of female from Kokoda.— Much brighter as follows: vertex ferruginous; gena mostly yellow; pronotum largely yellow, with posterodorsal areas coloured with pale ferruginous; large median spot on scutum and small spots inside tegulae, ferruginous; yellow spots on scutellum and metanotum larger; mesepisternum pale ferruginous, yellow spot on it larger; metapleuron ferruginous; propodeum with yellow lateral bands; anterior part of second metasomal segment ferruginous.

Length (of head + mesosoma + first and second metasomal segments) 7-8 mm.

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