

THE TAXONOMY AND NOMENCLATURE OF SOME AUSTRALIAN PARAGIINE WASPS (HYMENOPTERA: MASARIDAE)

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ABSTRACT. New taxa are described among the Australian masarid wasps. The genera known to occur in Australia are separated by a key. A new genus, *Ammoparagia* (type-species: *A. hua*, new species), is described. Two new species of *Rolandia*, *R. borrieriae* and *R. houstoni*, are described and *Riekia angulata* Richards is transferred to *Rolandia*; the four known species of *Rolandia* are separated in a key.

The genus *Metaparagia* and the subgenera *Cygnaea* and *Paragiella* of *Paragia* are synonymized under *Paragia*. Three new species of *Paragia* are described: *P. oligomera*, *P. confluens*, and *P. monocesta*. Comments on distribution and synonymy are made on *P. magdalena* Turner, *P. nasuta* F. Smith, *P. sobrina* F. Smith, and *P. walkeri* Meade-Waldo. Important taxonomic features of the new taxa are illustrated.

INTRODUCTION

The masarid wasps of the world were reviewed by Richards (1962); three subfamilies were recognized: Gayellinae, Euparagiinae, and Masarinae. The first two are small groups limited to the Western Hemisphere. The worldwide subfamily Masarinae was divided into two tribes, the Paragiini and the Masarini. Only the tribe Paragiini was known to be present in Australia, where there were four genera to accommodate about two dozen species.

Most recently, Carpenter (1982) has demonstrated that the Masaridae, as conceived by Richards, are an unnatural group, since the Euparagiinae are a sister group to the Masarinae + Gayellinae of Richards. In Carpenter's view, the several former families of Vespoidea are united into the single family Vespidae, with the Masarinae + Gayellinae as a subfamily, these groups assuming tribal rank; the erstwhile Paragiini of Richards is merged with the Masarini.

While, on the whole, I am in agreement with Carpenter's proposals, for purposes of discussion of the various taxa here, I am following the scheme of Richards (1962). This is, at present, the only recent monograph of the group. Therefore, it seems expedient for discussions to relate to the hierarchy used there. The higher classification of the masarids is presently being studied by Carpenter.

The following new taxa are described so that the names might be available to Terry Houston for his studies on their biologies.

SPECIMENS EXAMINED

Most of the material recorded below is from the collections of the Western Australian Museum, Perth (WAM); other specimens are from the collections of the British Museum (Natural History), London (BMNH); Australian National Insect Collections, Canberra (ANIC); National Museum of Victoria, Abbotsford (NMV); University of Queensland, St. Lucia (UQLD).

TERMINOLOGY

All measurements were made by means of a micrometer disc within one eyepiece of a binocular microscope.

Ammochaetae. Ammochaetae are present in a few genera of masarids. These are long bristles or setae, somewhat flattened, that form a definite fringe along the genal margin of the head and the lower margin of the mandibles. Since their tips curl inward, the ammosetae form a "basket." Although the function of the ammosetae is presently unknown, presumably they form a psammophore used to transport sand particles excavated from a nest. Note that most masarids have hairs on the underside of the head, but these are irregularly distributed, uneven in length, and do not form a definite, close-set row along the genal margin.

Clypeal length is measured along the midline, from base to apical margin.

Clypeal width is the maximum width across the clypeus at the level of the lateral angles. The distance between the clypeus and the inner eye margin is measured from the lateral angle of the clypeus to the nearest point on the eye margin.

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Head length is measured along the midline of the face and is the maximum measurable distance between the apical margin of the clypeus and the dorsal (preoccipital) margin of the head, when both are in focus in frontal view.

Head width is the maximum measurable width, in frontal view, across the eyes.

Occipital carinae (Figs. 25–27) have been used by Richards as both generic and specific diagnostic characters; the two carinae were designated the “dorsal occipital keel” and the “ventral occipital keel.” The “dorsal occipital keel” is the *preoccipital carina* (Fig. 27, *prc*) and begins on the preoccipital margin a little mesad of the summit of the compound eyes and follows the genal margin ventrad, and usually becomes obsolete before attaining the hypostomal carina. Richard’s “ventral occipital keel” extends dorsad from the posterior mandibular articulation along the posterior eye margin. I prefer the term *postocular carina* (Fig. 27, *poc*) for the latter since it better describes the position of the carina; use of the term “keel” suggests a higher and thinner structure than is the case. When the gena is greatly narrowed, as in most *Rolandia*, the preoccipital and postocular carinae become confluent.

Pretegular groove and *carina* are used to describe features on the dorsal, posterior portion of the pronotum anterior to the tegula. These are best developed in species of *Paragia* and consist of a broad, shallow groove followed by a low, but usually sharp, carina immediately anterior to the posterior margin of the segment. The description used by Richard (e.g. “Spiracular lobe of pronotum well marked off by a furrow”) seems less efficient than “pretegular groove present”; the terms used here are in accord with usage elsewhere among the vespoid wasps (e.g. Bohart, 1984; Giordani Soika, 1978).

Punctures are described according to size, as follows: *fine* (0.02–0.035 mm diameter), *moderate* (0.036–0.055 mm diameter), *coarse* (0.056–0.070 mm diameter), or *very coarse* (over 0.070 mm diameter). Distances between punctures are: *contiguous* (punctures so crowded as to often be deformed and interspaces are sharp-edged), *subcontiguous* (interspaces up to 0.30 times a puncture diameter), *dense* (interspaces ranging between 0.30 and 0.70 times a puncture diameter), *close* (interspaces 0.70–1.50 times a puncture diameter), *sparse* (interspaces from 1.50–3.00 times a puncture diameter), *scattered* (interspaces irregular and ranging 3.00–6.00, or more, times a puncture diameter). Variations in puncture size and/or density may be described by combining terms (punctures moderate to coarse; punctures subcontiguous to dense, etc.).

Total length is the sum of head length + thorax length + gaster length. Because gastric segments may be contracted or extended, this measurement is inexact and is made only to the nearest tenth of a millimeter. Note that *head length* is included, not from “front of head” or some such equally imprecise method; consequently, total lengths given here will seem larger than those of other authors. For example, Richards (1962) gives length for *Paragia excellens* (as *P. sobrina*) as 13.0–14.0 mm; my method for this species yields 16.6–17.2 mm.

KEY TO AUSTRALIAN GENERA OF PARAGIINI

- 1a. Parategula absent (Fig. 15); disc of last visible gastral tergum not extended over apical margin (i.e. apical margin is posteriormost portion of segment) (Fig. 12) . . . 2
- b. Parategula present (Fig. 8); disc of last visible gastral tergum extended so that true apical margin is ventral and anterior to posteriormost portion of segment (Fig. 3) *Ammoparagia*, new genus
- 2a. Glossa always exposed, not retractile into prementum; gastral tergum 2 constricted at base (Fig. 14); ammochaetae present (Figs. 25, 26) or absent (Fig. 27) along posterior genal margin; propleuron with or without lateral groove 3
- b. Glossa retractile into prementum, thus often concealed; gastral tergum 2 not constricted at base (Fig. 13); posterior margin of gena without ammochaetae; propleuron with lateral groove *Riekia*
- 3a. Anterior margin of pronotum convex (Fig. 28); gena without ammochaetae (Fig. 27) *Paragia*
- b. Anterior margin of pronotum angulate (Fig. 29); gena with ammochaetae along posterior margin (Figs. 25, 26) *Rolandia*

SYSTEMATICS

Ammoparagia, new genus

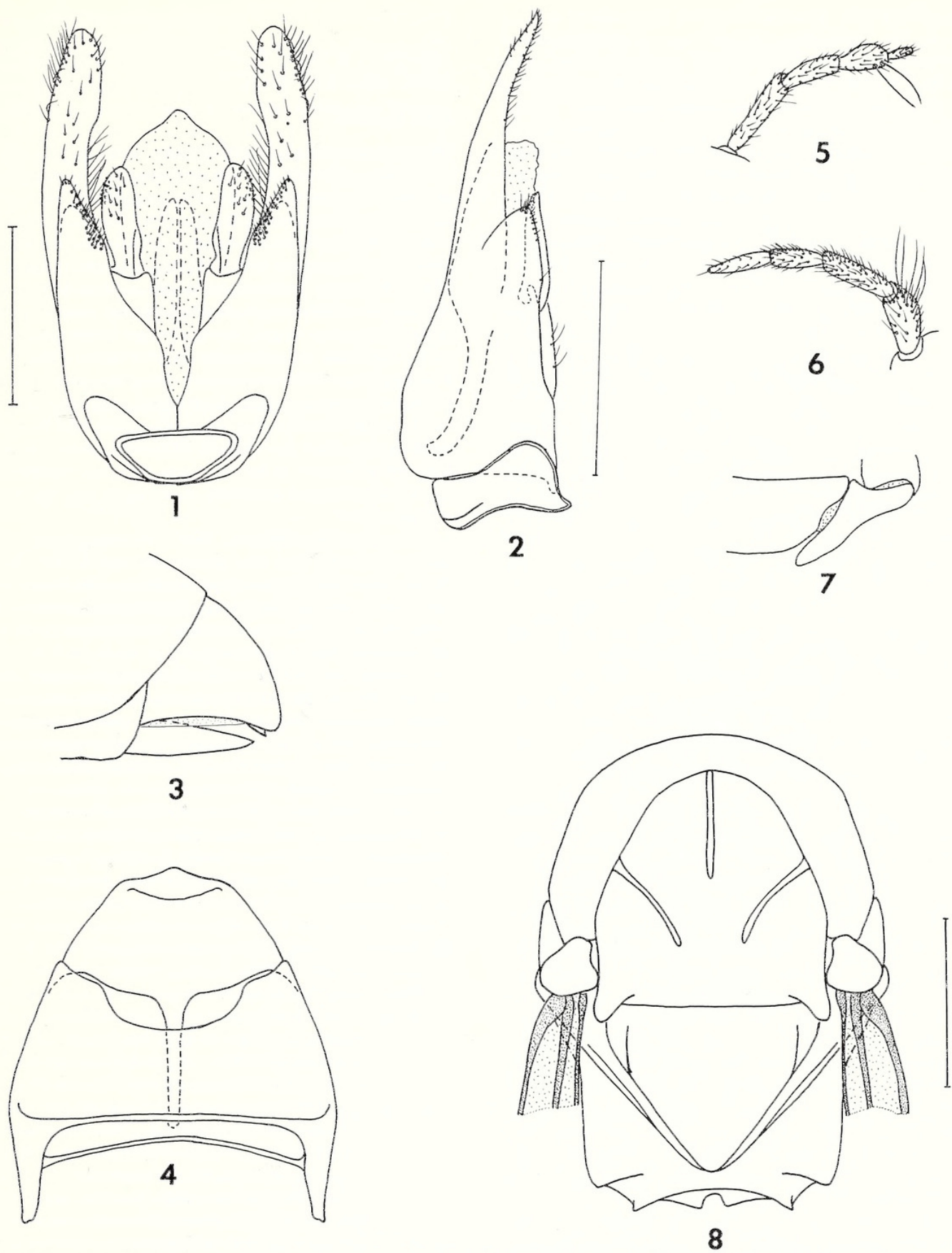
Figures 1–8

DIAGNOSIS

A member of the tribe Paragiini as defined by Richards (1962), recognizable by the following combination of characteristics: glossa retractile into prementum; parategula present; scutellum produced over metanotum and base of propodeum; gastral terga 2–4 (♀) or 2–5 (♂) with transverse basal groove; ocular sinus moderately deep; head hollowed out beneath and distinct genal ammochaetae present.

DESCRIPTION

Mandible with three acute apical teeth, decreasing in size from lower to upper; blade broad, narrowest at base. Maxillary palpus (Fig. 6) four-segmented, first segment short and stout, second segment longer and narrower; next two progressively a little shorter, each with fine bristles, most numerous on second. Prementum triangular in profile, little longer than high, uniformly sclerotized ventrally; labial palpus (Fig. 5) four-segmented, first segment longest, second and third subequal, last segment much narrower than others, third segment (♀) with two stout recurved bristles that extend much beyond tip of last segment; paraglossa and glossa with terminal sclerotized pads; paraglossa little longer than mentum; glossa about three times as long as prementum, bifurcated portion a little longer than basal portion, without dorsal comb-like processes proximally, entire dorsal surface finely imbricate, less strongly so distad. Hypostomal apodeme triangular; hypostomal bridge moderately broad, not depressed. Labrum flat, apical margin transverse (♂) or rounded (♀).



Figures 1-8. *Ammoparagia hua*. 1, 2, male genital capsule, ventral and lateral views, respectively; scale lines = 0.50 mm. 3, female gastric apex, lateral view. 4, male gastric apex, ventral view. 5, 6, labial and maxillary palpi, respectively. 7, male protrochanter and -femur base. 8, female thorax, dorsal view; scale line = 1.00 mm.

Clypeus about 1.4 times as broad as long, apical margin transverse and wider than distance from its lateral angle to lateral angle of clypeus, disc raised above paraocular area. Malar space absent. Antennal club stout and moderately defined (♀) or flagellum weakly broadened distad (♂).

Ocular sinus moderately deep, obtuse. Interantennal area flat, without median tubercle; antennal sockets separated from inner eye margin by less than a socket diameter; interantennal distance about five times antennal socket diameter. Preoccipital carina low, postocular carina weak to absent; suboccipital furrow deep. Ammochaetae present along genal margin and lower margin of mandible.

Side of pronotum without oblique impressed line; humeral margin obtuse and ill-defined; pretegular carina absent; pretegular groove shallow (more so in ♂). Outer margin of tegula subcircular. Notauli of mesoscutum well marked anteriorly, but not extending much distad of level of anterior margin of tegula; parapsidal line long, narrow; parategula present (Fig. 8). Anterior margin of scutellum confluent with posterior margin of mesoscutum; disc of scutellum convex along midline and obtusely produced over metanotum and base of propodeum (Fig. 8); disc evenly rounded onto axilla. Median portion of metanotum hidden under scutellum, vertical. Angles of propodeum obtuse.

Pterostigma of forewing about three times longer than broad, lower margin rounded, prestigma about one-third as long as stigma; marginal cell about 2.5 times longer than wide, apex abruptly curved away from wing margin; junction of M and Rs moderately swollen; first submarginal cell, on Rs, about one-third longer than second, second receiving both recurrent veins; cu-v considerably distad of separation of M and Cu; junction of Cu_{1a} and 2 m-cu rounded. Anal lobe of hindwing less than one-third as long as cell Cu; veins 1A and cu-a rounded together; 13 hamuli present. Tegula subcircular.

Protochanter of male (Fig. 7) with distal process elongate and spine-like in ventral view, its lower margin cariniform; first three segments of protarsus of both sexes strongly asymmetrical, posterior lobe, much the longer, especially on second and third segments; mesotibial spurs short and stout; femora without basal ring; outer metatibial spur much shorter than inner, inner spur trifid at apex; first and second metatarsal segments combined longer than metatibia; tarsal claws with small erect tooth at about midlength.

Gastral tergum 1, in dorsal view, more than twice wider than long; terga 2–5 (♂) or 2–4 (♀), depressed at basal and apical margins, especially in male; distal margin of last tergum (both sexes) hidden under protuberant “hood” of disc (Fig. 3); basal groove of sternum 2 very shallow and poorly defined; sterna flat (both sexes) and male without discal protuberances on any segment; sternum 6 of female broadly rounded at apex; apical margin of last visible sternum of male broadly rounded.

MALE GENITALIA (Figs. 1, 2). Parameral spine dorsoventrally flattened, apex simple, not recurved; digitus of volsella long and with tubercles along outer margin; cuspis of volsella prominent and fused to paramere.

TYPE-SPECIES. *Ammoparagia hua*, new species.

ETYMOLOGY

The generic name is combined from the Greek ammos (sand) plus the generic name *Paragia*.

DISCUSSION

The presence of parategulae and the four-segmented maxillary palpus will immediately separate *Ammoparagia* from all other known Australian paragiine genera. The genus is monotypic at the present time.

In the key to Australian genera of Paragiini by Richards (1962) *Ammoparagia* fails at the first couplet. It agrees with *Riekia* Richards, 1962, in that the glossa is retractile into the prementum, a feature previously believed unique to *Riekia* in the Australian fauna. *Ammoparagia* differs from *Riekia* in that the head is moderately concave beneath and there is a strong fringe of ammochaetae along the genal and lower mandibular margins, there is no lateral pronotal furrow, the scutellar disc extends over the metanotum and base of the propodeum, there is a definite propodeal angle, the gastral terga are depressed at the base, and the apical margin of the last exposed tergum is hidden under the disc of the segment in both sexes.

From *Rolandia* Richards, 1962, *Ammoparagia* is further separable by the lack of a lateral pronotal furrow, the lack of an impressed line on the propleuron, the shape of the scutellum, the shape of the last visible tergum, the lack of a definite basal furrow on sternum 2, and the lack of comb-like processes on the glossa.

Ammoparagia differs, also, from *Metaparagia* Meade-Waldo, 1911, in the presence of ammochaetae, the presence of notaulices, the subcircular tegula, asymmetrical protarsus, the presence of an erect tooth on each tarsal claw, the shape of the scutellum, the anteriorly constricted gastric terga, and the shape of the last gastric tergum.

Finally, from *Paragia* Shuckard, 1837, *Ammoparagia* may be further separated by the moderately developed ocular sinus, the presence of ammochaetae, the lack of a groove setting off the spiracular lobe of the pronotum, the lack of an impressed line on the side of the pronotum, the poorly developed furrow at the base of gastric sternum 2, the shape of the last visible tergum, the much longer glossa, the non-recurved parameral spines of the male, and the broadly rounded last exposed male sternum.

Outside of the Australian fauna there are two paragiine genera: *Ceramius* Latreille, 1810, in Eurasia and Africa, and *Ceramiopsis* Zavattari, 1910, in South America. Both of these genera differ from *Ammoparagia* in the absence of parategulae, the shape of the scutellum, the lateral (rather than dorsal) placement of the propodeal spiracle, the shape of the last gastral tergum as well as in many details of the mouthparts, wing venation, and male genital structure.

So far as I have been able to determine, no other masarid wasp possesses parategular processes on the mesoscutum, except in the Euparagiinae which have a minute process. However, in *Euparagia* Cresson, 1879, the mesoscutum has a sharp, raised margin adjacent to the tegula and the parategular process appears to be an extension of this margin. In

Ammoparagia the mesoscutum is not marginate and the parategular process is digitiform and bends down over the anterior portion of the scutellar axilla. This is a common feature in the related family Eumenidae. The shape of the last gastric tergum appears to be unique within the Masariidae.

Aside from these two unusual features, *Ammoparagia* seems to be nearest to *Riekia* and *Rolandia*. The retractile glossa is shared with *Riekia*, as well as the truncate clypeus and the poorly developed occipital ridges. The more prominent differences have already been noted above. There is a resemblance, too, to *Rolandia*, especially in the presence of genal ammochaetae and the reduced number of segments in the maxillary palpus, though *Rolandia* has lost only one, rather than two segments.

Ammoparagia hua, new species

Figures 1–8

DIAGNOSIS

Same as for the genus.

DESCRIPTION

MALE. Measurements. Holotype head width 2.03; head length 1.95, wing length 6.09; total length 9.4 mm. Paratypes: HW 2.06–2.13; HL 1.77–1.87; WL 5.85, TL 8.8–9.1 mm. Head 1.14–1.16 times as broad as long; mandible short and broad, tridentate, teeth acute and on strongly oblique margin, inner tooth much the shortest, dorsal margin straight, broadly rounded onto apical margin. Clypeal disc moderately shiny between subcontiguous to contiguous coarse, elongate punctures; vertex similar but punctures less elongate, moderate in size. Interocellar distance about twice diameter of anterior ocellus; ocellular distance about 1.7 times diameter of anterior ocellus; ocellocipital distance about 2.5 times diameter of anterior ocellus. Antennal scape shorter than interantennal distance; first flagellar segment a little more than twice as long as wide and about two-thirds as long as scape; following flagellar segments a little shorter than first; flagellum gradually broadened distad, apical segments about 1.5 times as broad as apical breadth of first segment.

Anterior margin of side of pronotum straight, not angled below midlevel; pronotal humerus obtuse at side; pronotum moderately shiny, interspaces slightly sculptured between moderate, subcontiguous punctures. Mesoscutum moderately shiny between moderate punctures that tend to be arranged in short rows, punctures more elongate cephalad. Scutellum dull, punctures coarse and elongate, mostly subcontiguous, but with linear impunctate area on center of disc, integument microstriate, appearing somewhat silky. Metanotum visible only at sides, visible portion concave, shiny, coarsely areolate. Mesopleuron shiny between dense to subcontiguous, moderate to coarse punctures, and with sparse, minute setigerous punctures. Propodeal angle obtuse; disc moderately shiny between coarse, dense punctures and with short, irregular rugulae; side shiny, with irregular impunctate areas in

middle, punctures coarse and dense above, finer and more separated below.

Ventral process of protrochanter (Fig. 7) longer than segment, apex narrowly rounded in profile, ventral margin compressed and subcarinate.

Gastral terga moderately shiny between coarse, dense punctures, last tergum subcontiguously to contiguously punctate; sternal punctures coarse, dense to subcontiguous interspaces with minute piliferous punctures, surface appearing dull due to numerous fine hairs.

Erect hairs yellowish and abundant on all body surfaces, especially long and dense on frons, vertex, and dorsum of thorax; hairs conspicuously shorter, but no less abundant, on gastral terga; gastral sterna with hairs shorter and less abundant and with numerous short appressed hairs.

Head black, the following yellowish with a weak orange tint: mandible; clypeus; ocular sinus, narrowly extended along inner orbit nearly to base of mandible; large, irregular frontal band, narrowly separated from clypeus and from ocular sinus mark; linear band along upper outer orbit.

Thorax black, the following yellowish with a weak orange tint: most of pronotum except anterior margin of propleuron, mark along margin of collar adjacent to anterior margin of mesoscutum, and narrow mark in front of tegula; parategula of mesoscutum; tegula, except transparent central spot; most of upper plate of mesopleuron; linear bar in middle of scutellum, not reaching anterior margin; metanotum with minute median spot; dorsolateral spot on propodeum, including angle. Legs principally yellowish, but with irregular black marks ventrally on all coxae. Wings dusky, veins dusky ferruginous basad to brownish distad.

Gaster largely orange-yellow; base and obscure submedian spot on dorsal surface of tergum 1 (absent in one paratype) blackish; tergum 2 with small, irregular dark blotch on either side of middle; terga 3–6 with large, submedian blackish spots that extend nearly to apical depression, their respective inner margins obliquely convergent basad; tergum 7 more ferruginous, with a pair small, submedian dark blotches at base; ventral segments yellowish ferruginous, a little dusky basad.

FEMALE. Measurements. Head width 2.16–2.19; head length 1.94–1.97; wing length 5.97; total length 9.2–9.5 mm.

Head similar to that of male with the following differences: about 1.11–1.12 times as broad as long; frons and vertex duller, contiguously rugosopunctate; preocciput similar, punctures a little coarser. First flagellar segment about twice as long as wide and about one-half as long as scape; remainder of flagellum forming a stout club, antepenultimate segment about twice broader than long. Interocellar and ocellular distances about 2.5 times diameter of anterior ocellus; ocellocipital distance about 2.7 times diameter of anterior ocellus.

Thoracic structure similar to that of male, but dorsum duller, interspaces minutely lineolate; angles of propodeum distinctly short-dentiform.

Legs as described for male, but without protrochanteral process.

Gaster as described for male, with usual sexual differences.

Pilosity much shorter than in male, that of front of head

about as long as an ocellar diameter; that of pronotal dorsum a little shorter, the hairs of the middle portion more or less spatulate at tips, a few longer hairs along posterior portions of humeral angle; hairs of mesoscutum distinctly shorter; hairs of side of thorax longer than on pronotal dorsum; gastral hairs very short and sparse (longer and more abundant caudad), but with abundant fine, appressed hairs.

Head black, the following yellow-orange: mandible, except reddish margins and apical teeth; clypeus; broad band across lower frons, ending about midway between clypeus and anterior ocellus, and with a narrow stripe along inner orbit nearly to base of mandible; broad upper outer orbital mark.

Thorax similar to that of male, but marks yellow-orange and with the following additional markings: narrow, rectangular posteromedian mark on mesoscutum; most of dorsum of scutellum (but not reaching anterior margin); large spot on lower plate of mesopleuron; propodeal mark extended onto side. Legs yellow-orange. Gastral terga yellow-orange, with irregular, obscure basal areas dusky, last segment mainly dusky; ventral segments ferruginous.

TYPE MATERIAL (All Western Australia)

Holotype male, eight male and four female paratypes: 43 km ENE Landor Homestead (25°08'S, 116°54'E), 23 Aug. 1984 (T.F. Houston and B.P. Hanich, no. 596-1), on flowers of *Goodenia berardiana* (Goodeniaceae). Additional paratypes: 1 ♂, 2 ♀♀, 16 km WSW Lyons River Homestead (24°38'S, 115°20'E), 30 Aug.–1 Sept. 1980 (C.A. Howard and T.F. Houston, no. 344-9), on flowers of *G. berardiana*; 5 ♂♂, 9 km SW Gifford Creek Homestead (20°03'S, 116°13'E), 2 Sept. 1980 (C.A. Howard and T.F. Houston, no. 350-1), on flowers of *G. berardiana*. Holotype and most paratypes in WAM; additional paratypes in BMNH and LACM.

ETYMOLOGY

The specific name is an arbitrary combination.

DISCUSSION

All the males are very similar to one another, except for minor variations in color. One of the Gifford Creek males has a minute preapical yellowish spot on the right antennal scape; presumably, males with more conspicuously maculate scape will eventually be discovered. Two males have the lower plate of the mesopleuron wholly black and two (including the holotype) have a small irregular yellowish spot a short distance in front of the posterior margin.

The six available females are very similar to one another. The distally clavate hairs on the pronotal dorsum are an unusual feature; they are not present in the males, nor in females of other Australian paragiines that I have examined.

Riekia Richards

Riekia Richards, 1962:54–55. Type-species: *Riekia nocatunga* Richards, 1962; monotypic and original designation.

This genus was established by Richards (1962) for a species

known only from females from New South Wales. Additional females of *R. nocatunga* were recorded from New South Wales by Richards (1968). In the latter paper a second species, *R. angulata*, was described from females from Queensland and New South Wales; in my opinion this is not a *Riekia*, but rather a species of *Rolandia* (see below).

In his key to the Australian paragiine genera, Richards stated that the first recurrent vein (1 m-cu) is received by the first submarginal cell. In the description of *Riekia*, however, it is stated that the vein is received in the second submarginal cell. In the two specimens of *R. nocatunga* (including a paratype) that I have seen, the latter statement is correct, and presumably that in the key is a *lapsus*.

A further source of possible confusion lies in the characterization of the occipital carinae or "keels." In the key Richards states: "Occipital keels not developed." The detailed description of *Riekia* does not agree: "Dorsal occipital keel not developed, ventral occipital keel long and strong . . .". In the specimen I have studied the preoccipital carina (= "dorsal keel" of Richards) is present and well developed along the posterior genal margin from the occiput to the base of the mandible. There is no postocular carina (see TERMINOLOGY). The table by Richards (1962) on p. 12 indicates that both are absent in *Riekia*.

In addition to the characters cited by Richards that distinguish between *Riekia* and *Rolandia*, it should be noted that in the latter genus the anterior margin of the pronotum is abruptly angulate opposite the base of the procoxa (Fig. 29). In *Riekia* the margin is evenly and very broadly curved (much as in Fig. 28). The lateral furrow of the pronotum is sharply defined, crenate, and extends to the posterior margin of the segment, above the lower corner, in *Riekia*. There is no lateral furrow in *Rolandia*. Instead there is a blunt ridge that extends dorsomesad from the angulation of the anterior margin, behind which the disc is very broadly and shallowly depressed. The depressed portion is crossed by a few widely spaced, weak rugulae.

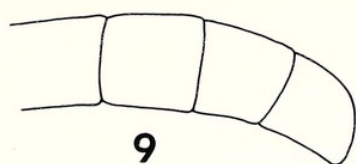
Riekia sp.

Figures 10, 19–21

A male specimen from 43 km ENE Landor Homestead (25°08'S, 116°54'E), Western Australia, 23 Aug. 1984 (T.F. Houston and B.P. Hanich, TFH #596-1; WAM), on flowers of *Goodenia berardiana*, is obviously a species of *Riekia*. There is, however, no certainty that it is the opposite sex of *R. nocatunga*, and I suspect that it is not. More material must be available before the specific status of this male can be determined.

The male will key to *Riekia* and agrees generally with the original description of *Riekia*, except for the expected sexual differences. Agreement with females of *R. nocatunga*, sexual differences aside, is good, but the shape of the scutellum is different; the posterior margin is broad and abruptly declivitous, rather than gradually descendant to the metanotum. The pretegular carina is distinct. There are differences, too, in surface sculpturing but these might be sexual differences.

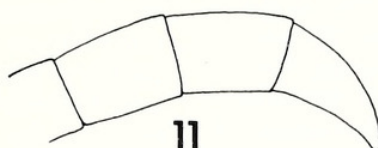
The last three flagellar segments are slightly concave be-



9



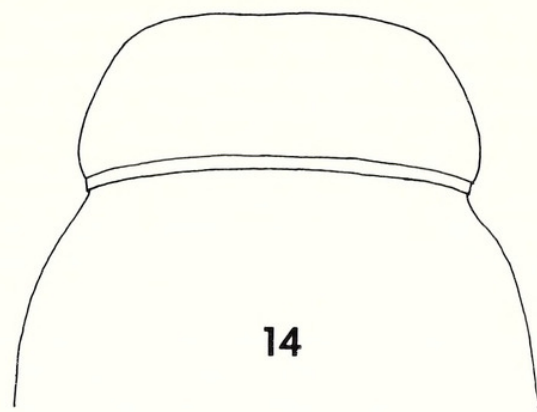
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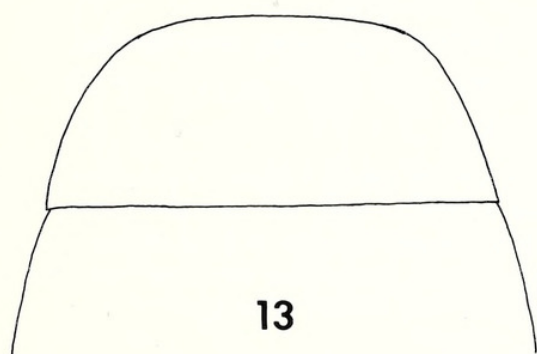
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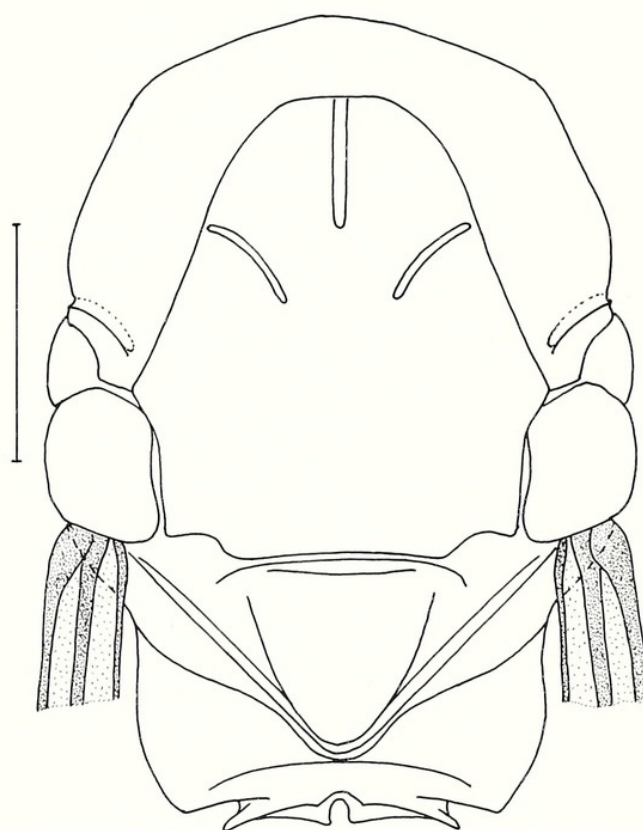
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13



15

Figures 9–15. *Riekia* and *Rolandia* spp. 9–11, apex of male antenna of *Rolandia houstoni*, *Riekia* sp., and *Rolandia borrieriae*, respectively. 12, female gastric apex, *Rolandia houstoni*. 13, 14, base of gaster of *Riekia nocatunga* and *Rolandia houstoni*, respectively. 15, female thorax, dorsal view, *Rolandia houstoni*.

neath and the apical segment is long and distinctly curved (Fig. 10). The protochanter lacks a ventral process and the profemur is narrow at the base. Genitalic and associated structures are shown in Figures 19–21; the parameral spine is broad and thick, not at all hook-like.

Rolandia Richards

Rolandia Richards, 1962:57. Type-species: *Paragia maculata* Meade-Waldo, 1910; monotypic and original designation.

In describing *Rolandia*, Richards stressed the reduced number of segments in the maxillary palpus (five, or rarely six, segments) and the obtusely truncate clypeus, as seen in profile. The following additional species agree generally with the description of *Rolandia*, but have the clypeal profile normal for a paragiine, i.e. low and somewhat convex for most of its length and flattened or a little concave toward the apex.

Other departures from the original characterization of *Rolandia* include the presence of a minute tooth on the tarsal claws; the propodeal angle may be obtuse and not at all spine-like; the hind wing may possess a very small anal lobe (this actually is a correction, for while Richards stated that the anal lobe is absent, it is present though quite small in *R. maculata*).

The four species of *Rolandia* may be separated as follows.

KEY TO SPECIES OF *ROLANDIA*

- 1a. Apical portion of clypeus, in profile, flattened and thin (Figs. 26, 27); longest hairs in center of second gastral tergum about one-half as long as transverse diameter of anterior ocellus; scutellum finely, contiguously punctate and with longest hairs on disc shorter than diameter of anterior ocellus 2
- b. Anterior portion of clypeus, in profile, obtuse (Fig. 25); longest hairs in center of second gastral tergum about as long as transverse diameter of anterior ocellus; disc of scutellum coarsely rugosopunctate and with erect hairs very long, some more than twice diameter of anterior ocellus *maculata* (Meade-Waldo)
- 2a. Punctures on discs of second and third gastral terga clearly delimited by slightly shiny interspaces; hairs of female clypeus whitish and distinctly shorter than transverse diameter of anterior ocellus; male profemur broad at base (Fig. 18) and flagellar segments beyond first no longer than broad 3
- b. Discs of second and third gastral terga contiguously punctate and without definite interspaces; hairs of female clypeus yellow to reddish, mostly distinctly longer than transverse diameter of anterior ocellus; male profemur narrow at base (Fig. 17) and flagellar segments beyond first distinctly longer than broad *borreriae*, new species
- 3a. Frons weakly shiny, contiguously finely punctate and without shiny, linear, raised interspaces, midline raised and shiny, ending short of anterior ocellus by about its own length; scutellum, in profile, evenly sloping to meta-

notum, without definite posterior face; maxillary palpus six-segmented *angulata* (Richards)

- b. Frons with numerous irregular, elongate, shiny interspaces between otherwise contiguous punctures; midline present as a short interantennal tubercle separated from anterior ocellus by several times its own length; scutellum, in profile, with a short, abruptly descending posterior face; maxillary palpus five-segmented *houstoni*, new species

Rolandia angulata (Richards), new combination

Riekia angulata Richards, 1968:101–102. ♀.

I have been able to examine a paratype of this species and cannot agree with its placement in *Riekia*; it is possible that its description in *Riekia* is a *lapsus*. The paratype differs from a paratype of *Riekia nocatunga* Richards, 1962 (the type-species of *Riekia*), in the following characteristics, all shared with *Rolandia*: the glossa is not retractile; ammochaetae are present along the genal margin; the anterior margin of the propleuron is angulate; the propodeal angle is obtuse and ends in an obtusely tooth-like projection; gastral tergum 2 is constricted at the base.

This species was described from females only from Queensland and New South Wales. I have examined one paratype female; it differs from *R. houstoni* in the features discussed under that species. Although males of *R. angulata* are unknown, they will presumably differ from those of *R. houstoni* by the same features that separate the female in the key.

In addition to a paratype of *R. angulata*, I have examined eight females from Cunnamulla, Queensland, 7 Oct. 1949 (N. Geary; NMV).

Rolandia houstoni, new species

Figures 9, 12, 14, 15, 18, 22, 23, 26, 29

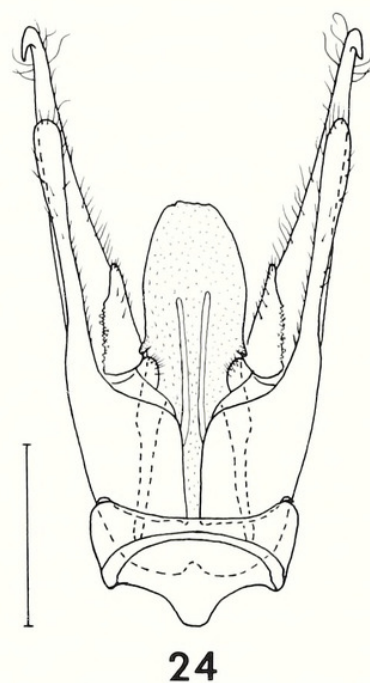
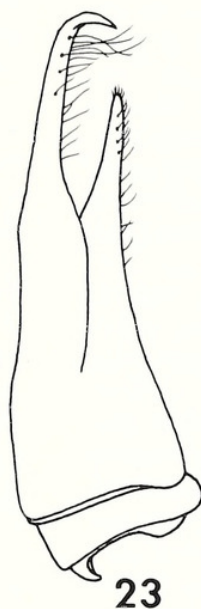
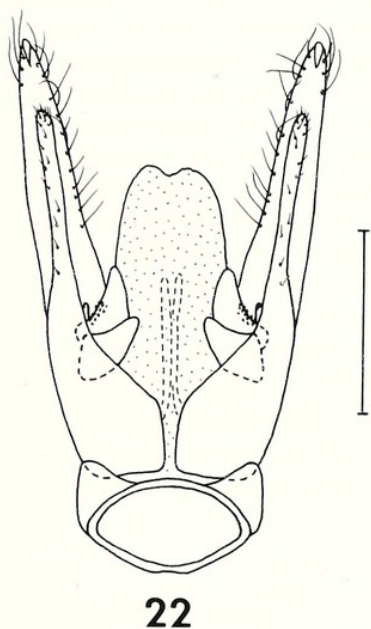
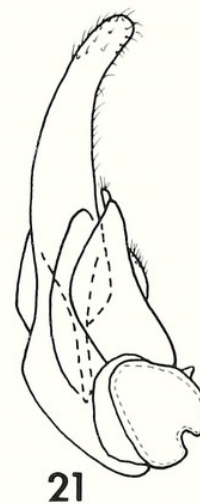
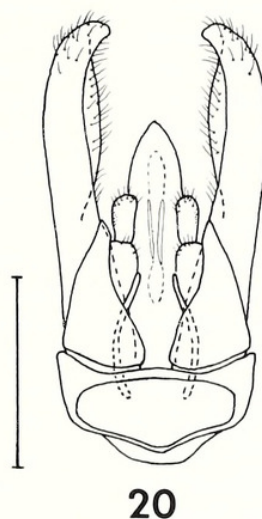
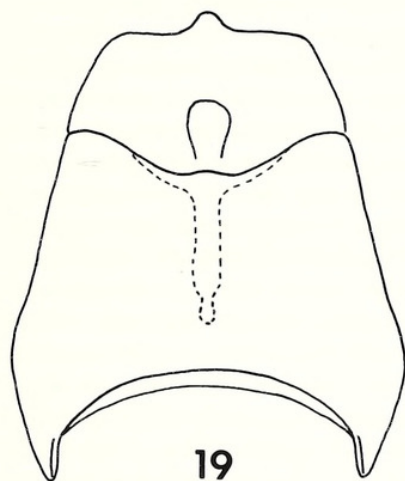
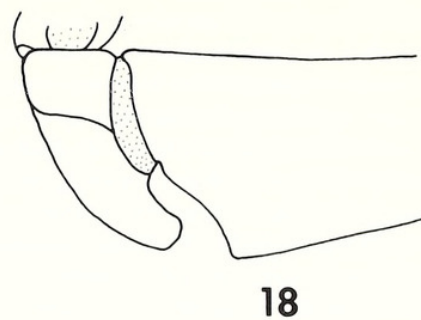
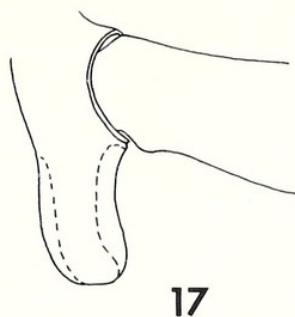
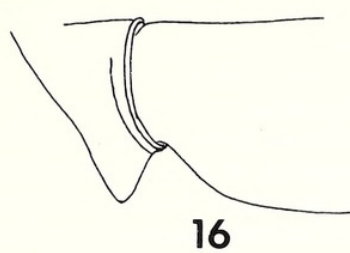
DIAGNOSIS

Mandibular teeth of female subacute and upper margin not conspicuously concave basad of inner tooth; clypeus not obtuse in profile and apical margin broadly truncate; scutellum with short, abruptly descendant posterior face; midline of face reduced to short interantennal tubercle.

DESCRIPTION

MALE. Measurements. Holotype head width 2.61; head length 2.58; wing length 6.77; total length 11.2 mm. Paratypes: head width 2.48–2.63; head length 2.42–2.58; wing length 6.56–6.82; total length 10.7–11.4 mm.

Head 1.01–1.03 times as broad as long; mandible short and broad, tridentate, teeth subacute, inner tooth smallest, upper margin basad of inner tooth weakly convex. Clypeus about 1.2 times as broad as long, gently convex in profile, merging into weakly concave apical one-third; apical margin, in frontal view, truncate, truncate portion subequal to dis-



Figures 16–24. *Rolandia* and *Riekia* sp. 16–18, protrochanter and femur base of *Rolandia maculata*, *R. borreriae*, and *R. houstoni*. 19–21, male gastric apex (ventral) and genital capsule (ventral and lateral) of *Riekia* sp. 22–24, male genital capsules of *Rolandia houstoni* (ventral and lateral) and *R. borreriae*; scale line for 19–24 = 0.50 mm.

tance from end to truncation to lateral angle of clypeus; disc moderately shiny between dense fine to moderate punctures. Interantennal tubercle low, obtuse, its lower facet moderately shiny and impunctate. Frons dull, finely rugosopunctate, with occasional flat interspaces that are dull and finely lineolate; vertex and preoccipital areas finely, contiguously to subcontiguously punctate, interspaces shinier than on frons. Interocellar distance about two times diameter of anterior ocellus; ocellocular distance subequal to interocellar distance; ocellocipital distance about three times diameter of anterior ocellus. Antennal scape shorter than interantennal distance; first flagellar segment a little less than four times as long as thick, about four-fifths as long as scape, and about twice as long as following segment; segments gradually broader distad, antepenultimate segment about twice as thick as first and about as long as broad; apical segment short and stout (Fig. 9).

Dorsum of pronotum dull, moderately rugosopunctate; pretegular groove well defined; side of pronotum with broad, shallow impressed area behind anterior margin that does not reach anterior angle, depressed area with a few very short longitudinal ridges that originate at anterior margin (Fig. 29). Mesoscutum slightly shiny, finely to moderately rugosopunctate. Scutellum dull and roughened between dense to subcontiguous, obscure, fine punctures; axilla with a few, fine, longitudinal rugulae. Mesopleuron slightly shiny and roughened between close to dense fine punctures. Side of propodeal angulation, in dorsal view, straight, its terminus bluntly rounded; dorsal area moderately shiny and roughened and moderately shiny between sparse obscure punctures that are a little coarser than those of dorsal area; side shiny and weakly roughened between scattered fine punctures.

Process of protrochanter large, broadly digitiform in posterior view (Fig. 18) and slightly curled forward; profemur compressed over basal one-half, ventral margin acute, angulate near base.

Gastral tergum 1 with dorsal face moderately shiny between dense, fine punctures; punctures of remaining terga subcontiguous, progressively finer on succeeding segments; sterna moderately shiny, with mixed minute and fine punctures that become very obscure toward margins; middle of juncture of sterna 7 and 8 deeply and narrowly impressed; genitalia as in Figures 22 and 23.

Pilosity abundant, hairs fine and mostly shorter than diameter of anterior ocellus, but a few longer hairs on side of frons, on mesopleuron, and on gastral sterna; mesoscutum with some very short, erect, brownish hairs.

Head black, the following yellowish white: mandible; clypeus; side of face from above ocular sinus nearly to base of mandible; large frontal mark, very narrowly separated from lateral face mark. Underside of scape and large spot on upper outer orbit yellow-orange.

Thorax black, with yellow-orange marks: pronotum (dusky ferruginous near tegula and on propleuron); tegula; obscure posterolateral spot on mesoscutum and adjacent axilla; most of disc of scutellum, not attaining anterior margin; middle one-third of metanotum; large spot on mesopleuron below wing base; lateral angle of propodeum. Legs mostly dusky

ferruginous, but coxae largely blackish and profemur yellowish apicad and along lower margin. Wings dusky, veins reddish basad, becoming brownish apicad.

Gastral segments dusky ferruginous, becoming darker caudad; terga 1–5 with lateral yellow blotches, largest on second, progressively smaller on segments 3–5; terga 1–6 with more or less quadrate yellow blotch or spot on apical middle; sterna without defined yellowish marks, all segments more or less ferruginous to dusky.

FEMALE. Measurements. Head width 2.48–2.65; head length 2.45–2.58; wing length 6.56–7.13; total length 10.9–12.5 mm.

Head 1.00–1.04 times as broad as long. Otherwise similar to male, with following differences: frons and vertex duller, a little more coarsely rugulose; ocellocular distance distinctly greater than interocellar distance; first flagellar segment about twice as long as thick; flagellar club weakly defined.

Thorax about as described for male, but mesoscutum more sharply rugosopunctate; protrochanter and profemur simple.

Gaster about as described for male, except usual sexual differences.

Pilosity about as in male, but everywhere shorter, especially on head and thorax; profemur with ventral fringe of long hairs, some longer than apical thickness of femur.

Markings about as in male, and uniformly orange-ferruginous, but: frontal and lateral face marks confluent; entire pronotum colored; mesoscutum with irregular lateral marks along posterior three-fourths; scutellum largely colored; dorsal area and disc of propodeum colored; yellow marks of gastral dorsum weakly defined.

TYPE MATERIAL (All Western Australia)

Holotype male, four male and four female paratypes: 10 km ESE Meedo Homestead (25°40'S, 114°37'W), 23–26 Aug. 1980 (C.A. Howard and T.F. Houston, no. 336-8), on flowers of *Goodenia berardiana* (Goodeniaceae). Additional paratypes: 1 ♂, 1 ♀, 7 km N Booloogo Homestead (24°29'S, 113°42'W), 27–29 Aug. 1980 (C.A. Howard and T.F. Houston, no. 338-13), on *G. berardiana*; 1 ♂, same data except no. 338-115, on *Pileanthus peduncularis* (Myrtaceae); 1 ♀, 16 km WSW Lyons River Homestead (24°38'S, 115°20'W), 30 Aug.–1 Sept. 1980 (C.A. Howard and T.F. Houston, no. 344-9) on *G. berardiana*; 1 ♀, same data except no. 344-24, ex burrow in sand. Holotype and most paratypes in WAM; three paratypes in LACM.

ETYMOLOGY

This species is dedicated to Terry F. Houston who collected many of the type series and who has made available much of the material on which this paper is based.

DISCUSSION

Both sexes of *R. houstoni* and *R. angulata* may be separated from *R. maculata* by the shape of the clypeal profile; in *R. maculata* the clypeus is obtusely truncated at the apex (Fig. 25) while that of *R. angulata* and *R. houstoni* (Fig. 26) is not

much different from that of other paragiines. The sculpture, especially of the dorsum of the thorax, is much less coarse in *R. angulata* and *R. houstoni*.

In *R. maculata* the mandibular teeth are broad, with rounded apices and the upper margin, basad of the inner tooth is concave for a short distance. The mandibular teeth are narrower and more acute, and the upper margin does not have the characteristic profile in *R. angulata* and *R. houstoni*.

I have seen males of *R. maculata*, and the genital structures suggest further differences between the two species. The digitus (Fig. 23) is shorter and less digitiform in *R. houstoni*. The ventral process of the paramere is sharply narrowed to an acute apex in *R. maculata*; in *R. houstoni* the process is approximately parallel-sided for most of its length and the apex is narrowly rounded (Fig. 23).

This species is very similar to *R. angulata*. Although males of *R. angulata* are not presently known, they will presumably differ from those of *R. houstoni* in the same characters as do the females.

In addition to the characters cited in the key, females of *C. houstoni* differ from the paratype of *R. angulata* in the following: clypeal interspaces shiny (dull in *R. angulata*); in dorsal view, anterior margin of pronotal collar slightly convex and humeral margin broadly rounded (in *R. angulata*, straight, humeral margin subangulate); long hairs on pronotal dorsum about 0.1 mm long (about 0.2 mm long in *R. angulata*).

***Rolandia borreriae*, new species**

Figures 11, 17, 24

DIAGNOSIS

Clypeus of both sexes low-convex; male flagellar segments all longer than broad, last segment slightly curved and acute at apex (Fig. 11); male profemur narrow at base (Fig. 17); hairs of female clypeus stout and bristle-like, distinctly longer than transverse diameter of anterior ocellus.

DESCRIPTION

MALE. Measurements. Holotype head width 2.65; head length 2.48; wing length 6.23; total length 11.1 mm. Paratypes: HW 2.45–2.68; HL 2.33–2.50; WL 5.91–6.33; TL 10.2–10.9.

Head 1.05–1.07 times as broad as long; mandible short and broad, tridentate, teeth acute on strongly oblique margin, inner tooth much the shortest, dorsal margin weakly convex. Clypeal disc moderately shiny and microscopically lineolate between contiguous to subcontiguous, round to oblong punctures. Interocellar distance 2.00–2.30 times anterior ocellus diameter; ocellocular distance 3.12–3.40 times anterior ocellus diameter. Antennal scape a little shorter than interantennal distance; first flagellar segment about 0.8 times scape length and about 1.7–1.8 times length of second segment; all flagellar segments longer than broad, last segment about 2.4 times as long as broad, slightly curved in profile, apex acute (Fig. 11).

Pronotal humerus broadly rounded, transverse carina extended nearly to posterior margin; propleural ridge short, weak, curved; pretegular groove distinct and narrow, pretegular carina weak; disc slightly shiny, punctures moderate to coarse, mostly contiguous. Mesoscutum slightly shiny, finely to coarsely vermiculate-punctate. Disc of scutellum dull and roughened between subcontiguous to close moderate punctures; lateral portions slightly shiny between coarse, longitudinal rugae; disc, in profile, evenly and strongly curved from anterior declivity to posterior margin. Metanotum dull and densely tessellate across middle, laterally a little shinier between coarse, longitudinal rugae. Disc of mesopleuron dull and densely tessellate between subcontiguous to close, fine punctures, becoming moderate and contiguous above. Propodeal angle obtuse; disc and laterobasal surfaces slightly shiny between fine punctures that are mostly contiguous on disc, becoming close to sparse on laterobasal area; side shiny between scattered minute punctures.

Process of protrochanter much longer than segment (Fig. 17); profemur narrow at base.

Dorsal face of gastral tergum 1 slightly shiny between contiguous to subcontiguous minute punctures; following terga dull, punctures in middle of tergum 2 so dense as to be indistinguishable, becoming slightly more separated laterad and on following segments; all segments with scattered, barely discernable, fine, setigerous punctures. Gastral sterna shinier, but otherwise similar, fine setigerous punctures more distinct. Genital capsule shown in Figure 24.

Very short, fine hairs abundant on thorax and gaster, mostly appressed, but erect on mesoscutum; brownish on mesoscutum, lighter elsewhere and white on mesopleuron. Front of head with numerous long, slender hairs, longest on clypeus equal to about diameter of anterior ocellus and longest on vertex equal to about twice diameter of anterior ocellus; hairs on pronotal dorsum a little longer than on clypeus; longest hairs on gastral dorsum equal to about one-half diameter of anterior ocellus.

Head black, the following whitish: mandible, except reddish teeth; clypeus; large supraclipeal mark; narrow stripe along inner orbit almost to top of eye; large postocular spot; underside of scape. Upperside of scape and flagellum blackish, flagellar segments irregularly dull reddish beneath.

Thorax black, the following yellowish white: broad band on pronotal collar, short stripe anterior to tegula, joined to stripe across posterior lobe; tegula, except small ferruginous spot; large subtegular mark; small mesoscutal spot adjacent to tegula; disc of scutellum; large mark along lateral ridge of propodeum. Legs mostly yellowish, but upper side of femora yellowish ferruginous. Wings slightly brownish, veins brown, becoming reddish toward base.

Gaster blackish brown, the following yellowish white: apical bands on terga 1–5, narrowed sublaterally and broadened at extreme side; similar on tergum 6, but only weakly, or not at all, narrowed sublaterally; tergum 7 brownish ferruginous; sterna dusky ferruginous, with irregular blackish bands basad and transverse, preapical whitish mark on middle of segments 2–5.

FEMALE. Measurements. Head width 2.60–2.83; head

length 2.50–2.65; wing length 6.70–6.93; total length 10.6–11.7 mm.

Head 1.04–1.07 times as broad as long. Otherwise similar to male, with following differences: interocellar distance 2.08–2.27 times anterior ocellus diameter; ocellocular distance 2.75–3.00 times anterior ocellus diameter; interantennal distance 1.31–1.35 times scape length; first flagellar segment 0.51–0.56 times scape length and 2.09–2.30 times length of second flagellar segment; flagellar segments, except first, broader than long.

Thorax about as in male but mesoscutum more rugosopunctate; protrochanter and profemur simple.

Gaster about as described for male except usual sexual differences.

Pilosity about as in male, but everywhere shorter; clypeus with abundant suberect, bristle-like, slightly brownish hairs with attenuate apices. Profemur abundantly hairy on ventral and posterior faces, but without definite fringe.

Markings about as in male, but some black partially replaced by ferruginous, especially on pronotum and gaster; lateral mark on mesoscutum over half of segment length; axilla yellowish; tergum 6 ferruginous. Legs yellowish ferruginous, becoming yellowish externally on tibiae and basitarsi.

TYPE MATERIAL

Holotype, 3 male and 4 female paratypes: Cooper Creek (12°06'S, 133°04'E), 19 km E by S Mt. Borradaile, Northern Territory, 5–6 June 1973 (J.C. Cardale), on flowers of *Borreria exserta* (Rubiaceae). Holotype and most paratypes in ANIC; one paratype pair in LACM.

ETYMOLOGY

Of, or pertaining to, the plant genus *Borreria* on which the type series was collected.

DISCUSSION

Males are easily separable from those of other *Rolandia* species by the elongate flagellum, with the apical segment curved and pointed, and by the narrow profemur base and comparatively large protrochanteral process. Similarly, the female, although superficially similar to *R. angulata* and *R. houstoni*, is characterized by the peculiar, bristle-like hairs of the clypeus. In both of the other species the hairs are slender and flexuous and not notably different from those of the frons except by being shorter. They are whitish in color, rather than brownish yellow, as in *R. borreriae*.

Paragia Shuckard

Paragia Shuckard, 1837:81. Type-species: *Paragia decipiens* Shuckard, 1837; monotypic.

Metaparagia Meade-Waldo, 1911:748. Type-species: *Paragia pictifrons* F. Smith, 1857; original designation. NEW SYNONYMY.

Paragia subg. *Cygnaea* Richards, 1962:53, 60. Type-species:

Paragia vespiiformis F. Smith, 1865; monotypic and original designation. NEW SYNONYMY.

Paragia subg. *Paragiella* Richards, 1962:53, 67. Type-species: *Paragia odyneroides* F. Smith, 1850; original designation. NEW SYNONYMY.

Metaparagia was established for two species, both apparently rare and known from unique female type specimens. These types are in the BMNH and I have examined both. While I agree with Richards that they are distinct species, I do not agree that there is any justification for the separation of *Metaparagia* from *Paragia*.

Several of the features used by Richards to distinguish between *Metaparagia* and *Paragia* are based on the relative expression of a given character. Thus, the development of the ocular sinus, amount of ventral "excavation" of the head, the shape of the pterostigma, the development of the furrow at the base of gastral sternum 2, development of the occipital carinae, the relative size of the hindwing anal lobe, and the development of the tooth of the tarsal claw, all are characters of this type. Their expression is matched by one or more of the more typical species of *Paragia*, and, in any case, none of these characteristics can be readily quantified, and I attach no significance to them.

The structure of the pronotum is not quite like that of other *Paragia*: the pretegular groove and carina are absent, as in the groove of the propleuron. All other *Paragia* do possess a pretegular groove, but it is weak in some species that also lack the pretegular carina. Similarly, the groove across the disc of the propleuron seems always to be present, though it is weak in some species. Again, I believe the character states seen in the two *Metaparagia* are the end point of a continuum and attach to them no significance beyond species level value. Much the same may be said of the lamelliform humeral carina, a conspicuous feature not stressed by Richards.

The only truly distinctive characteristic is the pyriform tegula of *Metaparagia*, contrasted with the subcircular tegula of *Paragia*. In the two species assigned to *Metaparagia*, the inner, posterior angle of the tegula is distinctly produced. The surface of the tegula bears a few irregular rugulae, but is otherwise smooth and shiny. Since variations in tegular shape are not unusual in other vespoid genera, I do not believe this character state to be of value above species-group level.

Metaparagia is therefore to be considered a junior synonym of *Paragia* and its two species, *M. doddi* Meade-Waldo, 1911, and *M. pictifrons* (F. Smith), transferred to that genus as NEW COMBINATIONS.

Richards (1962), in his study, recognized a total of 19 species of *Paragia* in Australia, and added two more in 1968. These he assigned to three subgenera: *Paragia* Shuckard, 1837, and two new subgenera, *Cygnaea* and *Paragiella*.

The most distinctive of these is the subgenus *Cygnaea*, largely because of unusual modifications of the abdominal segments. However, I am philosophically opposed to monotypic subgenera, especially within genera as small as *Paragia*. For this reason I treat *Cygnaea* as a synonym of *Paragia*.

The only included species in *Cygnaea* is *P. vespiiformis* F. Smith, 1865.

The distinctions that Richards attempted to enumerate between the subgenera *Paragia* and *Paragiella* are weak and unconvincing. Even Richards noted these difficulties when he cited species in each of his subgenera that were exceptional to the characterization in one or more features. The several new species described below further weaken the differences between these two groups. No distinctive features were cited by which these two subgenera were to be separated. Most characteristics were cited as "usually" or as "more or less." Others, described in less ambiguous terms, were noted to have exceptions. The two subgenera are thus perceived to be coextensive through continuous series of character state variation.

Richards' key to the species of *Paragiella* is not satisfactory since many of the features are cited in subjective terms and a user without access to a good representative collection will experience difficulty and uncertainty in interpreting the key statements. Since I have not been able to examine all the species, I cannot offer a better key at this time. Similarly, the treatment of previously described species is unsatisfactory since Richards usually commented largely on the color patterns of these species, rather than important morphological characteristics. Color patterns in these masarids are very unreliable since there is a considerable amount of variation in most species. There are also several complexes of mimetic color patterns.

Paragia oligomera, new species

DIAGNOSIS

Separable from all other *Paragia* by the reduced palpal segmentation: three labial and five maxillary palpal segments; in addition: propodeal process obtuse; distance between clypeus and eye equal to diameter of anterior ocellus; mesopleuron rugosopunctate and propodeal disc irregularly rugose between close, coarse punctures; metanotum protuberant and with horizontal basal face.

DESCRIPTION

FEMALE. Measurements. Holotype head width 5.03; head length 4.36; wing length 12.21; total length 22.8 mm. Paratype: head width 4.51; head length 3.85; wing length 11.13; total length 18.4 mm.

Head 1.15–1.17 times as broad as long. Mandibular teeth broad and blunt. Clypeus separated from inner eye margin by about diameter of anterior ocellus; about 1.1 times as wide as long; apical truncation broadly rounded, truncation narrower than distance from its end to lateral angle of clypeus; disc dull, anterior portion subcontiguously, finely punctate, grading to coarsely rugosopunctate over most of disc. A short carina-like ridge present supramesad of each antennal socket. Frons and vertex moderately to coarsely rugosopunctate; preocciput similar but punctures coarser and subcontiguous in some areas, especially laterad. Preoccipital and

postocular carinae both present and well developed. Inter-ocellar distance two times diameter of anterior ocellus; ocellular distance about three times diameter of anterior ocellus; ocelloccipital distance a little greater than ocellular distance. Antennocular distance about twice diameter of antennal socket; interantennal distance more than three times diameter of antennal socket; scape a little longer than interantennal distance and about 1.7 times longer than first flagellar segment; flagellum not clavate, antepenultimate segment a little broader than long.

Humeral angles of pronotum present, obtuse; dorsal face and propleuron above lateral furrow dull to slightly shiny, coarsely rugosopunctate; area anterior to lateral furrow moderately shiny between dense, moderate punctures. Mesoscutum moderately rugosopunctate, with numerous linear interspaces. Scutellum dull, coarsely rugosopunctate to anterior margin; lateral scutellar furrow distinct. Metanotum with both horizontal and vertical faces, their juncture subcarinate, fully visible in dorsal view. Mesopleuron moderately shiny between moderate to coarse, subcontiguous to contiguous punctures. Propodeal angles obtuse; dorsal face slightly shiny between subcontiguous moderate punctures; disc moderately shiny between short irregular rugae and close moderate punctures; side moderately shiny between dense, moderate punctures.

Probasitarsus a little more than twice longer than wide, margins nearly parallel; tibiae each with apical row of short, flattened ferruginous setae, those of metatibia difficult to see under long, dense, reclinate hairs that cover most of outer face; metabasitarsus without paired row of stout ferruginous setae along anterior margin; tarsal claws each with a long tooth.

Anal lobe of hindwing small but distinct; r-m perpendicular to Rs and M.

Gastral terga slightly shiny between moderate, dense punctures that become fine on tergum 5; sterna moderately shiny between close to dense moderate punctures, interspaces densely minutely punctate.

Pilosity abundant on frons and vertex, longest hairs on frons shorter than diameter of anterior ocellus and longest on occiput distinctly longer than diameter of anterior ocellus; long hairs of genal fringe more than twice diameter of anterior ocellus. Pronotal dorsum with a few long hairs across middle one-third, longest about equal to ocellar diameter, hairs otherwise very short and sparse; mesoscutum with a few scattered moderately long hairs, about as long as on frons, but mostly with sparse, very short stiff hairs; sides of thorax with numerous erect, slender hairs, some equal to ocellar diameter, or a little greater. First gastral tergum with sparse, moderately long, erect, slender hairs at sides and across base, hairs short, stiff, scattered on dorsal face; second tergum with scattered very short, stiff hairs; following terga similar, but hairs progressively longer on succeeding segments. Femora and tibiae with dense, stout, bristle-like hairs on all except dorsal faces of femora, some of which are more or less distinctly curled at tips; tarsi with dense, shorter, straight hairs.

Black, the following yellowish: clypeus, except margins and large, bifurcate mark on median lobe; stripe mesad to antennal socket; large irregular blotch on inner orbit at ocular sinus; large outer orbital spot; broad band across pronotal collar, extended posteriorly at each end, and on posterior corner in front of tegula; most of tegula; small posterolateral spot on mesoscutum; band across posterior scutellar disc, sharply narrowed in middle; large mesopleural spot; propodeal angles; broad posterior bands on gastric terga 1–4, slightly broadened on each side; large median spot on tergum 6; broad marginal bands on sterna 2–4, that on sternum 3 broadest. Legs black, apices of femora and tibial stripe yellow. Wings brownish, with dark brown veins; most of marginal cell and parts of first submarginal, radial, and first discoidal cells clouded.

The paratype is similar in color to the holotype, but the mandibles are ferruginous, the clypeus does not have a black preapical spot, a dull reddish interantennal spot is present; the pronotal dorsum is almost wholly yellow with an obscure, reddish area anterior to tegula, mesoscutum has a large posteromedian yellow spot, disc of scutellum largely yellow, and legs are largely yellow.

TYPE MATERIAL (All Western Australia)

Holotype female: 10 km NE Wanneroo, 4 Jan. 1982 (T.F. Houston, no. 418-3), on flowers of *Regelia ciliata* (Bromeliaceae). Paratype: ♀, Mogumber, no date (A. Douglas, no. 53-3310). Both in WAM.

ETYMOLOGY

Combines the Greek *oligos* (few) with *meros* (part), in reference to the reduced palpal segmentation.

DISCUSSION

This species differs from all other *Paragia* in the reduced number of palpal segments: all others have four labial and six maxillary palpal segments. This is a member of the subgenus *Paragiella* as defined by Richards (1962) and in his key to the species will fail at the third couplet because it does not accord with either alternative. The three species in that section of the key (*P. venusta* F. Smith, 1865, *P. generosa* Richards, 1962, and *P. australis* Saussure, 1853) are all smaller, less than 15 mm long, and are more finely and less closely punctate; in none are the head and thorax rugosopunctate.

Paragia magdalena Turner

Paragia magdalena Turner, 1908:89. ♀. Richards, 1962:67, 68–69.

This species is still known only from the type in the BMNH, from Mackay, Queensland. It is separable from all species of *Paragiella*, except *P. confluens*, by the lack of a propodeal process; for differences between these two species, see the description of *P. confluens*. Richards noted that the whole body is covered with pubescence; in particular, the discs of the gastric terga bear abundant suberect hairs, the longest

hairs on the third segment longer than the diameter of the anterior ocellus. Conspicuously longer hairs are present on the first tergum and on the propodeum. Surface sculpture tends to be coarsely and contiguously punctate to rugosopunctate, but the clypeus is shiny between contiguous to subcontiguous punctures and the frons is roughened between moderate to coarse, mostly subcontiguous punctures. The second tergum is likewise dull, the punctures fine to moderate and subcontiguous to dense. Total length is 16.7 mm. The wings are too badly frayed to be accurately measured, but Richards gives wing length as 10.5 mm. The color pattern has been described by Richards.

Paragia confluens, new species

Figure 28

DIAGNOSIS

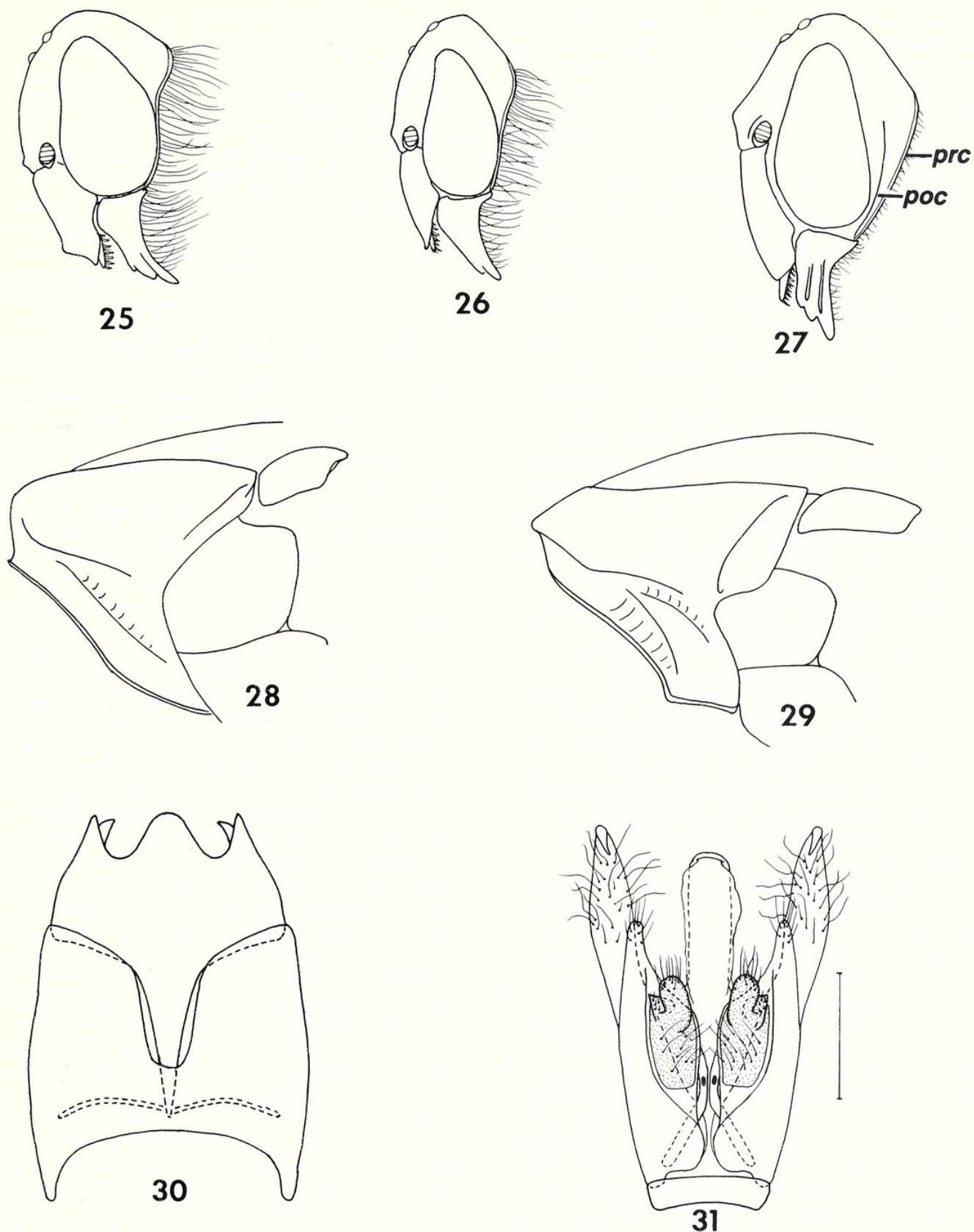
Belongs to *Paragiella* as defined by Richards (1962); differs from other species (except *P. magdalena*) in lacking lateral processes on propodeum; differs from *P. magdalena* in possessing anal lobe on hindwing and entire posterior face of propodeum without obvious punctures. This species is further characterized by the short, broad clypeus, asymmetrical protarsal segments 2–4, possessing only a single ferruginous seta at apex of meso- and metatibiae, and there are few or no erect, apically hooked, hairs on the ventral femoral surfaces.

DESCRIPTION

FEMALE. Measurements. Holotype head width 2.65; head length 2.35; wing length 7.28; total length 10.8 mm. Paratype: head width 2.42; head width 2.19; wing length 6.77; total length 9.9 mm.

Head 1.10–1.12 times as broad as long; mandibular teeth broad and blunt. Clypeus nearly touching inner eye margin; about 1.6 times as broad as long; apical truncation straight, wider than distance from its end to lateral angle of clypeus; disc slightly shiny, finely lineolate between dense, fine, elongate punctures, becoming subrugose in apical area. Frons slightly shiny, interspaces distinctly roughened between subcontiguous, fine punctures; vertex and preocciput similar, but with some larger punctures. Preoccipital and postocular carinae congruent. Interocellar distance about two times diameter of anterior ocellus; ocellocular distance about three times diameter of anterior ocellus; ocelloccipital distance subequal to ocellocular distance. Antennocular distance less than diameter of antennal socket; interantennal distance more than six times diameter of antennal socket; scape about two-thirds as long as interantennal distance and a little more than twice as long as first flagellar segment; flagellum stout and clavate, antepenultimate segment about twice as wide as long.

Pronotum without humeral angles, broadly rounded onto side; pretegular groove absent, but with a distinct pretegular carina; propleural furrow distinct; pronotal dorsum and propleuron above furrow dull, finely, contiguously punctate; propleuron below furrow moderately shiny, roughened between dense to close, fine punctures. Mesoscutum slightly shiny,



Figures 25–31. *Rolandia* and *Paragia* spp. 25–27, lateral view of head of female, *R. maculata*, *R. houstoni*, and *P. monocesta*. 28, 29, lateral view of pronotum, *P. confluens*, and *R. houstoni*. 30, 31, *P. monocesta*, male gastric apex and genitalia, ventral view; scale line = 0.50. Abbreviations: poc = postocular carina, prc = preoccipital carina.

finely rugosopunctate anteriorly, becoming finely, contiguously punctate; a pair of raised, impunctate submedian welts at level of anterior margins of tegulae. Scutellum dull, disc contiguously minutely punctate; no furrow between disc and side of scutellum. Metanotum dull, middle portion vertical, roughened but without distinct punctures. Upper plate of mesopleuron dull, moderately rugosopunctate; lower plate slightly shiny and sharply roughened between close, fine punctures. Metapleuron slightly shiny, contiguously micropunctate. Propodeal angles absent; posterior face slightly shiny, subcontiguously micropunctate and with a few fine oblique rugules in center of disc; side similar, but punctures tending to be aligned so surface appears to be finely obliquely striate near juncture of lateral and posterior surfaces.

Protibia with two or three stout, ferruginous spine-like setae at apex; probasitarsus slightly more than twice wider than long; protarsal segments 2–4 with anterior distal corner produced so that segments are asymmetrical; meso- and metatibiae each with a single stout, ferruginous, spine-like seta on outer side of apex; metabasitarsus about four-fifths as long as metatibia; tarsal claws each with minute erect tooth.

Hindwing with distinct anal lobe.

Gastral terga slightly shiny and roughened between subcontiguous to contiguous minute punctures; sterna similar but punctures a little coarser.

Pilosity abundant on head and thorax, especially on frons, mostly about as long as, or slightly longer than, diameter of anterior ocellus; hairs mostly slender and slightly curled at tips; side posterior face of propodeum and side of first gastric tergum with numerous longer hairs of variable length; remainder of gaster with hairs mostly short, stiff, and reclinate and with abundant fine, appressed pubescence, especially distad and on sterna. Femora and tibiae with abundant fine, appressed pubescence and scattered short erect hairs, specifically lacking dense cover of fully erect, fine, hairs with curled apices.

Black, the following orange-yellow: mandible, except margins and teeth; clypeus, except margins; supraclypeal area + frons, extending nearly to top of eye on each side, but in middle only a little over midpoint between clypeus and anterior ocellus, and not extended ventrad along inner eye margin; large blotch on upper gena; dorsum and side, down to furrow, of pronotum; tegula; axillar spot; disc of scutellum; median portion of metanotum; upper plate of mesopleuron; large spot on each side of propodeal disc; dorsal face of first gastral tergum; second tergum, except narrow basal band and small, obscure, sublateral, preapical spots; small transverse, preapical median blotch and lateral band on third tergum; fourth and fifth terga except very narrow basal band; legs, except coxae. Second to fourth gastral sterna wholly yellowish-orange. Wings transparent, light brown and with dark brown veins and stigma.

Markings of the paratype are similar to those of the holotype but the apical one-third of the clypeus is black, the propleuron is wholly black, the median spot on tergum 3 is larger and triangular in shape and sterna 2–4 are yellowish-orange in the middle one-half only.

TYPE MATERIAL (All Western Australia)

Holotype female: 36 km ESE Minnie Creek Homestead, 24°38'S, 115°42'E, 2 Sept. 1980 (C.A. Howard and T.F. Houston, no. 349-2), at pool in creek. Paratype: 1 ♀, 16 km WSW Lyons River Homestead, 24°38'S, 115°20'E, 30 Aug.–1 Sept. 1980 (C.A. Howard and T.F. Houston, no. 344-9), on *Goodenia berardiana* (Goodeniaceae). Both in the collection of the Western Australian Museum.

ETYMOLOGY

The specific name is Latin and refers to the confluence of the preoccipital and postocular carinae.

DISCUSSION

This is an unusually distinctive species. Especially noteworthy is the confluence of the postocular and preoccipital carinae. In other species of *Paragia*, when they do possess occipital carinae, the postocular carina remains close to the outer eye margin, while the preoccipital carina passes behind it along the margin of the gena. In *P. confluens* the postocular carina follows the genal margin also, so that the two carinae merge. Another interpretation may be that the postocular carina is, in fact, wholly absent and that its position along the lower genal margin is taken over by the greatly extended preoccipital carina. The effect is the same.

Females of other species of *Paragia* have densely hairy legs. Typically, many or most of the hairs are fully erect, somewhat stiff and bristle-like, and are distinctly curved at their tips. Hairs of this type are present on the meso- and metalegs as well, especially on the femora and tibiae. Such hairs are not present on the legs of *P. confluens*.

Other unusual features of *P. confluens* include the short, broad clypeus, the presence of only a single spine-like seta at the apex of the outer face of the meso- and metatibiae, and the lack of propodeal angles. The latter characteristic is shared with *P. magdalena* Turner, in which the anal lobe is lacking, the posterior face of the propodeum is punctured throughout, the entire body is densely hairy, the legs possess the usual curled hairs, and the color pattern is very different; this species is apparently known only from the type from Queensland (Mackay).

Paragia monocesta, new species

Figures 27, 30, 31

DIAGNOSIS

Runs to *P. nasuta* in key by Richards (1962) but differs in color pattern, especially much more extensive orange marks, particularly of face and abdomen, the latter with tergum 2 mostly black, with a basal orange band.

DESCRIPTION

FEMALE. Measurements. Holotype head width 3.23; head length 2.87; wing length 8.77; total length 12.8 mm. Para-

types: head width 3.03–3.49; head length 2.62–3.03; wing length 8.10–9.18; total length 12.0–13.8 mm.

Head 1.12–1.20 times as broad as long. Mandibular teeth broad and blunt, inner tooth subacute. Clypeus separated from eye margin by more than one-half diameter of anterior ocellus; about 1.2 times as wide as long; broadly convex truncation wider than distance from end of truncation to lateral angle of clypeus; disc slightly shiny between subcontiguous fine to moderate punctures, becoming subrugose toward apical margin. Supraclypeal area broadly elevated between antennal sockets, shiny and with punctures separated by up to a puncture diameter in middle; a raised carina-like ridge adjacent to each antennal socket and extending well above socket; frons slightly shiny, moderately to coarsely rugosopunctate, becoming contiguously, moderately punctate on vertex and preocciput. Preoccipital and postocular carinae present. Interocellar distance about two times diameter of anterior ocellus; ocellocular distance about three times diameter of anterior ocellus; ocelloccipital distance subequal to ocellocular distance. Antennocular distance distinctly greater than antennal socket diameter; interantennal distance about 4.5 times antennal socket diameter; scape about as long as interantennal distance and about twice as long as first flagellar segment; flagellum gradually thickened distad, antepenultimate segment about 1.3 times as broad as long.

Humeral angles of pronotum weak, rounded; pretegular groove distinct; dorsal face dull, contiguously moderately punctate; propleuron above furrow dull between subcontiguous moderate punctures, surface below furrow slightly shiny, punctures fine to moderate, irregularly spaced up to two diameters apart; furrow distinct, but anterior edge blunt. Mesoscutum slightly shiny, subrugose to contiguously, moderately punctate, with a pair of submedian, mostly impunctate, welts anteriorly; notauli distinct to posterior margin. Disc of scutellum slightly shiny between very coarse, subcontiguous punctures, narrow anterior margin of disc nearly impunctate, but distinctly sculptured; side separated from disc sharply defined crenate furrow and without longitudinal ridges. Middle portion of metanotum slightly convex and visible in dorsal view. Upper plate of mesopleuron slightly shiny between moderate to coarse, subcontiguous, elongate punctures; lower plate with punctures dense to subcontiguous, mostly moderate, some interspaces with minute to fine punctures. Metapleuron a little shinier, punctures very irregularly spaced, many minute punctures in interspaces between fine punctures. Propodeal angles prominent but broadly obtuse; posterior face slightly shiny and distinctly roughened between dense, fine punctures; lateral face similar, but spacing variable, sparse along anterior margin, becoming close to dense distad. Probasitarsus about three times longer than wide, segments 2–4 symmetrical; metabasitarsus about 0.8 times length of metatibia; tarsal claws each with a large, oblique tooth.

Anal lobe of hindwing small but distinct; r-s perpendicular to Rs and M.

Second gastral tergum distinctly constricted at base; dorsum of tergum 1 dull, appearing velvety, and roughened be-

tween dense, moderate punctures; remaining terga similar but punctures a little smaller, but still moderate, spacing variably close to dense; sterna distinctly shinier, punctures similar, a little smaller, but still moderate, spacing variably close to dense; sterna distinctly shinier, punctures similar but variably sparse to close.

Erect hairs short and sparse on clypeus, hairs longer and denser on frons, longest hairs of vertex distinctly longer than diameter of anterior ocellus; hairs on thoracic dorsum sparse, longest on mesoscutum about as long as diameter of anterior ocellus; hairs more abundant on sides of posterior face of propodeum; first tergum with numerous erect hairs, longest slightly longer than diameter of anterior ocellus; second tergum with a few short, erect hairs basad at side, otherwise second and third with scattered very short, stiff, reclinate hairs; following segments with sparse, short erect hairs, longer distad.

Prolegs with normal complement of short, stiff, erect, apically curled hairs; mesofemur with similar hairs (except on upper face), mesotibia with similar hairs on inner face and some along anterior margin of outer face.

Black, the following orange: clypeus, except dark margins; frons from clypeus to over one-half of distance to anterior ocellus, but extending nearly to top of eye at side; narrow stripe along inner eye margin to lateral angle of clypeus; most of gena, including narrow stripe almost to base of mandible; antennal scape; pronotum; short lateral stripe and postero-median spot on mesoscutum; scutellar disc and side, except along lateral furrow; most of upper mesopleural plate; propodeum except anterolaterad and large quadrate blotch on posteromedian portion of disc; legs; entire first, third, fourth (except small basomedian spot), narrow apical band on fifth, and all of sixth terga; second tergum with broad basal band, narrowed in middle; second (except large triangular patch on each side), third, and sixth sterna.

Forewings transparent, yellowish brown at base, becoming brown distad; apical portion of costal cell, most of first submarginal cell, marginal cell, all dark brown; veins yellow-orange to about level of prestigma, brown beyond.

MALE. Measurements. Head width 2.72–2.97; head length 2.44–2.56; wing length 7.54–8.41; total length 10.1–11.4 mm.

Head 1.12–1.18 times as broad as long. Mandibular teeth acute. Clypeus separated from eye margin by about 0.5 times diameter of anterior ocellus; about 1.1 times as wide as long, apical truncation gently convex and slightly longer than distance from end of truncation to lateral angle of clypeus; disc shiny between dense to subcontiguous fine to moderate punctures. Interantennal tubercle obtuse, shiny, nearly impunctate on lower facet. Frons, vertex, and preocciput slightly shiny between contiguous to subcontiguous, fine to moderate punctures. Interocellar distance about two times diameter of anterior ocellus; ocellocular distance about 2.5 times diameter of anterior ocellus; ocelloccipital distance about two times diameter of anterior ocellus. Antennocular distance less than antennal socket diameter; interantennal distance about 2.0 times antennal socket diameter; scape about 1.6 times longer than either interantennal distance or first flagellar segment, latter about three times as long as wide at apex; flagellum

moderately thickened distad, antepenultimate segment slightly broader than long.

Thorax about as in female, but posterior face of propodeum with distinct short rugulae extending laterad from median groove.

Process of protrochanter somewhat quadrate in anterior view, not extending over base of femur; in profile, thin and with anterior face slightly concave, lower edge subcarinate.

Gaster as described for female; sterna without tubercles.

Apical sterna and genitalia as in Figures 30 and 31.

Pilosity similar to that of female but hairs longer, longest on vertex and dorsum of pronotum about twice as long as diameter of anterior ocellus, those of mesoscutum not quite so long; propodeum, pleura, and first tergum also with numerous long hairs. Legs with numerous, but not dense, short, erect hairs, none curled at tips.

Black, the following yellowish: mandibular spot; clypeus; vertical bar on frons extending more than halfway between base of clypeus and anterior ocellus; narrow stripe along inner orbit from lateral angle of clypeus to level of upper end of frontal bar; antennal scape; large postocular spot (somewhat orange). The following orange: pronotum, except spiracular lobe; minute posterolateral spot on mesoscutum; posterior two-thirds of scutellar disc; large spot below wing base; angles of propodeum; legs, except coxae in large part; gastral terga as in female, but segments 5–7 black. Second sternum wholly yellowish, and following segments dark.

TYPE MATERIAL (All Western Australia)

Holotype female, 10 female and four male paratypes: 10 km ESE Meedo Homestead, 25°40'S, 114°37'E, 23–26 Aug. 1980 (C.A. Howard and T.F. Houston, no. 336-19), on *Calythrix oldfieldii* (Myrtaceae). Additional paratypes: 1 ♀, 7 km N Booloogooro Homestead, 24°39'S, 113°42'E, 27–29 Aug. 1980 (C.A. Howard and T.F. Houston, no. 338-5), on *Verticordia forrestii* (Myrtaceae); 1 ♀, Gascoyne Junction, 2 Sept. 1968 (F.H.U. Baker) (this locality is about 150 km E Carnarvon at 25°03'S, 115°13'E; T. Houston, pers. comm.). Holotype and most paratypes in WAM; 2 ♀♀, 1 ♂ in LACM.

ETYMOLOGY

The specific name is Greek (one band or girdle) and refers to the single black band on metasomal tergum 2.

DISCUSSION

Although this will run to *P. nasuta* in the key by Richards (1962) it does not resemble that species; *P. nasuta* is a primarily black wasp with limited orange marks, while *P. monocesta* is largely orange. In addition to being larger (total length 13.4–16.5 mm), females of *P. nasuta* have a largely rugosopunctate clypeus, the humeral carina reaches the posterior margin of the pronotum, and the fine to moderate punctures on the disc of the second gastral tergum are mostly separated by three or more times a puncture diameter.

Males of the two species, except in the clypeal sculpturing, differ from one another in the same characteristics as do their

females. Additionally, males of *P. nasuta* have the median lobe of the eighth gastric sternite a little longer than broad and narrower than the emargination between it and the lateral lobes. In males of *P. monocesta* the median lobe is much broader than long and much broader than the emargination between it and the lateral lobes.

Paragia nasuta F. Smith

Paragia nasuta F. Smith, 1868:252. ♂, ♀. Richards, 1962:68, 76–77. ♂, ♀.

Richards has described the color pattern of both sexes and recorded specimens from Queensland and Western Australia.

New records of this species in Western Australia are as follows: 5 ♀♀, 4 ♂♂, 70–75 km ENE Norseman, 10–16 Nov. 1978 (T.F. Houston et al., no. 220-18), on flowers of *Melaleuca fulgens* (Myrtaceae); 1 ♂, 3.5–5.5 km S Yellowdine, 31°18'S, 119°39'E, 27 Oct. 1978 (T.F. Houston, no. 216-15), on flowers of *Grevillea paradoxa* (Proteaceae) (all in WAM).

Paragia sobrina F. Smith

Paragia excellens F. Smith, 1869:309. ♂, ♀.

Paragia sobrina F. Smith, 1869:309. ♀. Richards, 1962:75–76. ♂, ♀.

Paragia excellens and *P. sobrina* were described on the same page, with *P. excellens* appearing first and the more completely described of the two. The description of *P. sobrina* is based on those characteristics by which it differs from *P. excellens*. Richards (1962) correctly recognized that the two forms were conspecific, but for unknown reasons chose to use *P. sobrina* as the name for this species.

Smith (1869) cited the type locality for both names as “Champion Bay,” in Western Australia. According to Bequaert (1928) the female types of both are labelled “Swan River.” Richards (1962), however, cited Champion Bay as the type locality for *P. sobrina*. I have examined both types and confirm Bequaert’s statement: the types of both *P. excellens* and *P. sobrina* are clearly labelled “Swan River.”

Two additional specimens of *P. sobrina* from Western Australia were examined; 2 ♀♀, near Emu Rock, 53 km E Hyden, 32°27'S, 119°25'E, 8–10 Nov. 1979 (T.F. Houston, no. 280-1), on flowers of *Beaufortia bracteosa* (Myrtaceae) (WAM).

These have been compared with the types of both *P. excellens* and *P. sobrina*. In both types, the propodeum is mostly orange; the propodeum is black in the Emu Rock females, with the lateral processes orange and, in one specimen, there is a narrow orange mark in the middle of the posterior face. The pronotum is entirely orange in the types, but in the Emu Rock specimens it is largely black below the humeral carina and with an extension of black in front of the posterior lobe. The second tergum of the *P. sobrina* type is wholly black. Broad orange bands are present across the second tergum in the type of *P. excellens* and the two Emu Rock specimens, though narrower in the latter two. These two specimens also bear small orange marks on the third tergum, which is black in the two types.

The most characteristic morphological feature of *P. sobrina* is the shape of the propodeal process. Specialized, hooked hairs are abundant on the prolegs and mesofemur and the protarsal segments are robust and are weakly asymmetrical; the last protarsal segment is especially stout, about two-thirds as broad as long.

Paragia walkeri Meade-Waldo

Paragia walkeri Meade-Waldo, 1910:32. ♂. Richards, 1962: 68, 72–73. ♂, ♀.

A single female, although not associated with males, probably belongs to this species. It shares with the described males the peculiarly colored wings ("yellow with dark tips"), the velvety appearance of the black areas of the body, the bluntly spine-like propodeal process, the sparsely punctate gastral terga, and the large size. The specimen is 25.6 mm long; the forewing is 18.0 mm long.

This is a very attractively marked specimen. The head (except around the ocelli), pronotum, scutellum, metanotum, most of the propodeum, prepectus, all of gastral tergum 1 and sternum 1, a narrow basal band on tergum 2, and two small basolateral spots on sternum 2, are dull yellowish. The mandible, antenna legs, and fourth to sixth abdominal segments are reddish yellow, except that tergum 4 is blackish across the base.

The specimen was collected 9 km N by E Mudginberry Homestead, 12°31'S, 132°54'E, Northern Territory, 10–11 June 1973 (J.C. Cardale; ANIC).

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