

***Priscomasaris namibiensis* Gess, a New Genus and Species of
Masarinae (Hymenoptera: Vespidae) from Namibia, Southern Africa,
with a Discussion of its Position Within the Subfamily**

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Abstract.—A new genus and species of Masarinae (Vespidae), *Priscomasaris namibiensis* Gess, is described from Namibia. Cladistic analysis of the Masarinae shows that *Priscomasaris* belongs within the tribe Masarini, in which it is the most plesiomorphic member, and that it represents a new subtribe, here named *Priscomasarina*, sister to the subtribes *Paragiina* and *Masarina* combined. The justification by Carpenter (1997) for recognising subtribes, that is to have a group name for the Australian masarines, remains untouched. *P. namibiensis* visits flowers of *Gisekia* and *Limeum* (Moluginaceae) and at pools lands on the water surface to drink.

The subject of this paper, an undescribed species of Masarinae, was discovered by the author and S.K.Gess while they were engaged in field studies in Namibia in March and April 1997. This wasp was widespread and abundant together with a species of *Jugurtia* Saussure of similar size and colouring. Its habit of alighting on water immediately attracted attention and distinguished it from the *Jugurtia* which, like all members of that genus, drinks at the water's edge.

***Priscomasaris* Gess, genus novum**

Type species: *Priscomasaris namibiensis* Gess, sp. n.

Recognition.—*Priscomasaris namibiensis*, the only included species, is immediately recognisable by its very short tongue (glossa), the unique development of the scutellar (= axillary) processes, and the very shiny metasomal integument with a unique pattern of large pale spots situated posterolaterally on terga I-IV and posteromedially on terga II-V.

Description.—Head wider than long in frontal view. Clypeal dorsal margin straight, ventral margin broadly truncate. Eye with inner margin sinuous but

smooth (like that of *Paragia* Shuckard lacking an interior emargination). Postocular and preoccipital carinae fused. Tempora at midheight slightly narrower than eye in lateral view at same level. Antenna in both sexes with ten flagellomeres and no club. Scape (with radicle) narrow and short, in male 2.3× and in female 3× as long as greatest width. Labrum width about half interantennal distance, ventral margin broadly rounded. Female mandible tridentate, that of male quadridentate. Glossa short, neither the section basal to the bifurcation nor the glossal lobes elongate, section basal to bifurcation slightly shorter than glossal lobe; paraglossa extending slightly beyond bifurcation. Length of extended tongue (measured from anterior edge of labrum to end of glossal lobes) equal to 0.07× body length. Acroglossal buttons present. Prementum whole, hypostomal bridge level, glossal sac absent. In both sexes maxillary palpus six-segmented, labial palpus four-segmented.

Propleuron neither grooved nor depressed, nor medially diverging dorso-medially to form a fossa. Pronotum ventro-laterally with an inconspicuous groove, pretegular area non-carinate. Tegula subtriangular, about as wide as long.

Scutellum triangular, roundly pointed posteriorly; antero-lateral angle conspicuously produced backward into an outwardly convex and apically pointed process, superficially reminiscent of the similar looking process (parategula) arising from the postero-lateral mesoscutal angle of some Eumeninae. Propodeum dorso-laterally produced into short, posteriorly directed spine.

Forewing not longitudinally folded when at rest. Marginal cell truncate basally, slightly wider basally than apically, 2r-rs straight basal to insertion of RS, with proximally tubular but distally merely pigmented appendix. Two submarginal cells present. CuA2 and A meeting at a near right angle, a stub of free apical section of A present. First discal cell longer than subbasal cell. Junction of RS and M slightly thickened. Prestigma short, about one quarter length of pterostigma. Cu-a situated shortly distad of fork of M and CuA.

Hindwing CuA diverging from M+CuA basad of insertion of cu-a; cu-a inserting on CuA and aligned with A; free apical section of A absent. Jugal lobe present but only about one quarter length of subbasal cell. Pre-axillary excision evanescent.

Male front trochanter without process; female front tarsal setae straight; middle coxa narrow; middle tibia with two spurs; hind coxa non-carinate; claws of all legs toothed.

Metasomal tergum I and sternum I separate. Metasomal segments after II non-retractile. Male genitalia with sharply pointed parameral spines, volsella separate from paramere.

Relationships.—The determination of the phylogenetic position of *Priscomasaris* would have been greatly facilitated had it been possible to add its character states to the data matrix used by Carpenter to generate his cladogram of the masarine genera (Carpenter 1993: Fig. 7.4). This was not possible to do as the characters and data

matrix used in generating the cladogram have not been published.

As *Priscomasaris* has many plesiomorphic characters, the present analysis confines comparison to the basal taxa of Carpenter's cladogram. [See also cladogram of Australian Masarinae (Carpenter 1997: Fig. 17).] These taxa are the Gayellini (only characters common to *Gayella* Spinola and *Paramasaris* Cameron are used), *Paragia* Shuckard, the basal member of the Australian Masarini (= subtribe Paragiina (Carpenter 1997)) and *Ceramius* Latreille, the basal representative of the remaining Masarini (*sensu* Carpenter) (= subtribe Masarina, the sister-group of the Paragiina (Carpenter 1997)). The use of *Paragia* and *Ceramius* is adequately justified as these two genera exhibit all the groundplan conditions for each of their respective subtribes for all of the characters considered in the analysis. *Euparagia* Cresson is included as the outgroup.

The characters considered, mostly drawn from Carpenter (1982, 1993 and 1997), some with modification, are:

Forewing

1. Marginal cell: not narrower basally than apically (0); 2r-rs curving basal to insertion of RS so that it is narrower (1). The basally sinuously narrowed marginal cell is a synapomorphy of Paragiina (Carpenter 1997).
2. Submarginal cell number: three (0); two (1). Two submarginal cells is a synapomorphy of Masarini (Carpenter 1982).
3. CuA2 and A: angled where meeting (0); rounded together (1). The apically smoothly rounded subdiscal cell is a synapomorphy of Paragiina (Carpenter 1997).
4. First discal cell: shorter than subbasal cell (0); as long or longer than subbasal cell (1). The short discal cell in Gayellini is considered a reversion from the state

of an elongate discal cell in other Vespidae and is thus an autapomorphy of Gayellini (Carpenter 1989).

Hindwing

5. CuA: diverging from M+CuA slightly distad of the insertion of cu-a or at the insertion of cu-a (0); distal to the insertion of cu-a at a distance much greater than the length of cu-a (1); basad to the insertion of cu-a (2). Nonadditive.

Divergence slightly distad of the insertion of cu-a or at the insertion of cu-a, as in *Euparagia*, is considered to be the plesiomorphic condition for Vespidae; divergence distal to the insertion of cu-a as in Gayellini appears to be a reversion to the plesiomorphic condition for aculeates and is an autapomorphy of Gayellini; and divergence basad to the insertion of cu-a is a synapomorphy of Masarini (Carpenter 1982).

6. Cu-a: transverse (0); inserted on CuA and aligned with A (1).

In the primitive state for aculeates, cu-a is transverse as in *Euparagia* and Gayellini. Derived states are to have cu-a inserted on CuA and either aligned with A (as in Masarini) or strongly angled with A (as for example in Eumeninae) (Carpenter 1982).

7. Free apical section of A: present (0); absent (1).

Loss of the apical section of A is synapomorphic for Masarini (Carpenter 1982).

Head

8. Clypeal dorsal margin: straight (0); bisinuate (1).

The dorsally bisinuate clypeus is an autapomorphy of Gayellini (Carpenter 1982).

9. Ocular emargination: present (0); absent (1).

Though relatively uncommon in aculeates, emarginate eyes are characteristic of Vespidae and absence of emargination within the Masarinae is interpreted as de-

rived (Carpenter 1997). Loss of eye emargination, stated by Carpenter to be a fundamental autapomorphy of *Paragia*, is shared with *Priscomasaris*.

10. Number of male antennal articles: 13 (0); 12 (1).

Primitively, aculeate male antennae are composed of 13 articles. Reduction to 12 articles, as in Masarini, is apomorphic (Carpenter 1982).

Mouthparts

11. Labrum: narrow (0); broad (1).

A narrow labrum represents the ground-plan condition of Vespidae, while a broad labrum, resembling the plesiomorphic aculeate condition, is derived (Carpenter 1982).

12. Female mandibles: quadridentate (0); tridentate (1); bidentate (2). Nonadditive.

13. Distal section of glossal lobes: without processes (0); each with two rows of processes but these not together forming a tube (1); each with two rows of flattened overlapping (imbricate) processes curved such that their tips come together forming a tube (2). Nonadditive.

14. Unbranched basal section of glossa: shorter than paraglossae (0); longer than paraglossae (1).

Elongation of the unbranched basal section of the glossa beyond the level of the tips of the paraglossae is a synapomorphy for Masarina (Carpenter 1997).

Mesosoma

15. Pretegular carina: present (0); absent (1).

Polarity as in Carpenter (1997, character 17).

16. Propodeal spiracle: lateral (0); more or less dorsal (1).

Polarity as in Carpenter (1997, character 24).

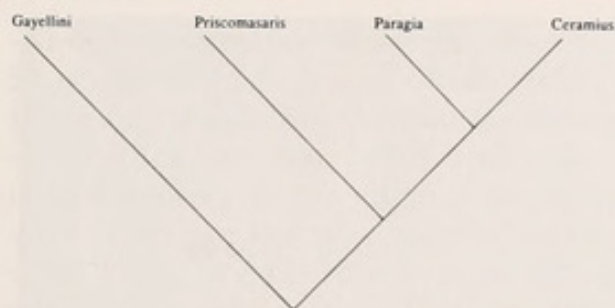


Fig. 1. Cladogram showing the position of *Priscomasaritis* relative to *Gayellini*, and to *Paragia* and *Ceramius*, the basal members respectively of Carpenter's subtribes Paragiina and Masarina of the Masarini.

17. Male foretrochanter: without process (0); with process (1).

Polarity as in Carpenter (1997, character 27).

The distribution of the 17 polarized characters is given below:

<i>Euparagia</i>	00010	00000	02000	00
<i>Gayellini</i>	00001	00100	00001	00
<i>Priscomasaritis</i>	01012	11011	11101	00
<i>Paragia</i>	11112	11011	11200	11
<i>Ceramius</i>	01012	11001	11210	01

A cladistic analysis using Hennig86 computer program (Ferris 1988) produces one cladogram with a length of 22 steps, consistency index of 0.90 and retention index of 0.81 (Fig. 1).

This analysis demonstrates that *Priscomasaritis* belongs to the Masarini as it has the characters identified by Carpenter (1982, 1993) as supporting the monophyly of this tribe: forewing with two submarginal cells; hindwing with cu-a inserting on CuA and aligned with A; CuA diverging from M+CuA basad of insertion of cu-a; loss of free abscissa of A; labrum broad; male antennae 12-segmented. It, however, shows that *Priscomasaritis* does not belong within either Paragiina, as represented by *Paragia*, or Masarina, as represented by *Ceramius*, being more primitive than either. The glossa is very short and exhibits no elongation of either the glossal lobes or the section basal to their bifurcation. These two means of elongating the tongue have

been shown by Carpenter (1996: 390) to define major lineages, of *Paragia* (and *Metaparagia* Meade-Waldo), and of *Ceramius* (and the remaining Masarini). Whereas the difference between *Priscomasaritis* and *Paragia* with regard to glossal length may not be very obvious, differences in the distal section of the glossal lobes are very apparent. In *Priscomasaritis* each glossal lobe has two rows of flattened processes forming a sponge-like extension; in *Paragia* and *Ceramius* the flattened processes are overlapping (imbricate) and are curved such that their tips come together to form a tube.

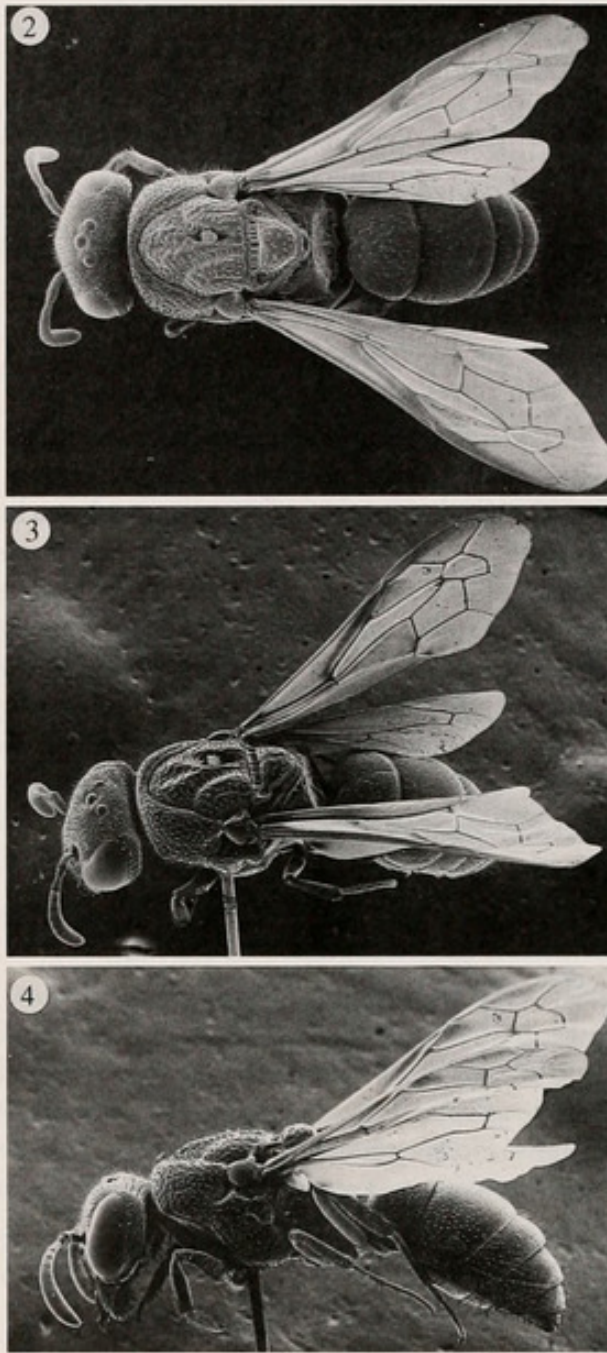
Priscomasaritis shares with Carpenter's subtribe Masarina a plesiomorphic forewing venation: a basally truncate marginal cell with 2r-rs straight basal to insertion of RS, and CuA2 and A angled where meeting, clearly distinguishing it from the genera of Carpenter's subtribe Paragiina which show a derived, synapomorphic condition (see Carpenter 1996: 393).

The absence of a pretegular carina, an apomorphy according to Carpenter, distinguishes *Priscomasaritis* from both *Paragia* and *Ceramius*.

The unique scutellar (= axillary) processes constitute an autapomorphy of *Priscomasaritis*.

Clearly, if subtribes are to be maintained, the discovery of *Priscomasaritis* necessitates the recognition of a third subtribe, the sister-group of Paragiina and Masarina combined. This subtribe can appropriately be named *Priscomasarina*. The justification by Carpenter (1997) for recognising subtribes, that is to have a group name for the Australian masarines, remains untouched.

Etymology.—The name *Priscomasaritis* is derived from the Latin adjective *priscus* meaning ancient, antique, belonging to old times, and *Masaritis*, the type genus of the subfamily Masarinae. It is intended to indicate its primitive nature.



Figs. 2-4. *Priscomasaris namibiensis*, female habitus. 2, dorsal; 3, dorso-lateral; and 4, lateral views ($\times 7.5$).

Priscomasaris namibiensis

Gess, species nova

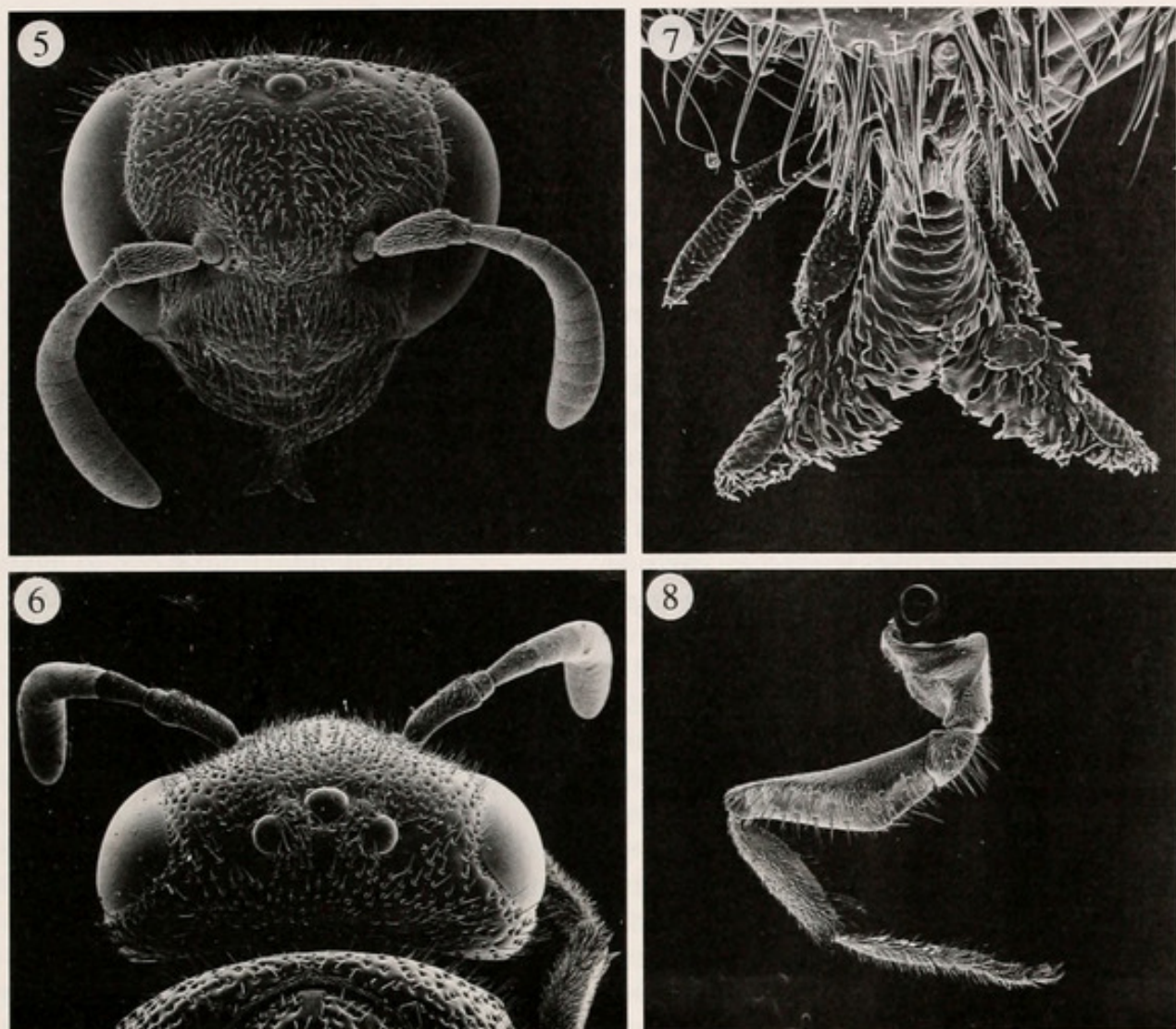
(Figs. 2-9)

Female.—(Figs. 2-8). Black. The following are white: rarely small spot on each side of frons near top of inner orbit; rarely small spot dorsally behind eye; usually short transverse marking medially on pronotum; usually small spot on humeral angle; large oval spot on prepectus; rarely

small streak medially on mesoscutum between notauli; usually part or whole of scutellar processes; propodeal spines and area at their base; large suboval posterolateral spots on terga I-IV; postero-medial spot (of varying size and present in only ca. 40% of individuals) on tergum I; large postero-medial spots on terga II-V. The following are reddish: mandible (except extreme base and apical teeth); clypeus along ventral margin; labrum; labial and maxillary palpi; most of pronotum (except for black ventral margin and, if present, white markings); variously developed diffuse markings on mesoscutum—small streak (if not yellow) medially between notauli and two pairs of spots flanking the notauli antero-laterally and postero-laterally; tegula; scutellar processes (if not yellow); scutellar disk; rarely diffuse area next to yellow markings at base of propodeal spines; most of terga I and II (other than white spots); rarely diffuse transverse posterior bands (between white spots) on terga III-V; tergum VI; most of sternum II (other than anterior transverse groove); diffuse transverse posterior bands on sternum III-V; apex of sternum VI; diffuse areas on all coxae and trochanters, distal half to three-quarters of femora, and entire tibiae and tarsi. Wings lightly infuscated, anterior half of marginal cell somewhat darker.

Pilosity pale; moderately dense, fine and semidecumbent on clypeus and lower half of frons; sparse, coarse and erect on upper half of frons, vertex, dorsal surface of pronotum, mesoscutum and scutellum; sparse, fine and erect on metasoma (especially on terga I and II).

Punctures of central part of clypeal disk, most of frons and all of vertex coarse, separated by shiny, unsculptured interstices; widest interstices, subequal to puncture diameter, on upper frons and vertex; punctures at base and sides of clypeus and between and around antennal sockets finer and closer. Punctures on dorsal surface of pronotum, mesoscutum, mesopleuron



Figs. 5–8. *Priscomasaris namibiensis*. 5, Frontal view of head of female ($\times 25$). 6, Dorsal view of head of female ($\times 25$). 7, Glossa of female ($\times 150$). 8, Front leg of female ($\times 25$).

and scutellum similar to those on vertex or coarser (particularly on mesoscutum), separated by shiny unsculptured interstices subequal to puncture diameter or wider (on mesopleuron). Punctures of metasoma smaller and more widely separated (particularly on tergum II), interspaces unsculptured, strikingly shiny.

Length 7.8–8.2 mm (average of 5: 7.9 mm); length of front wing 5.6–5.9 mm (average of 5: 5.7 mm); hamuli 9–12.

Head (Figs. 5 and 6) noticeably wider ($1.25\times$) than long in frontal view. Eye in frontal view markedly convex; inner margin smoothly sinuous, non-emarginate. Clypeus evenly convex, wider ($1.4\times$) than

long; ventral margin broad, subtruncate, minimally curved; junction of ventral and lateral margins rounded. Antennal sockets separated by $3\times$ their diameter; interocular distance at level of sockets $2.25\times$ length of scape (with radicle); length of scape (with radicle) $3\times$ greatest width, equal to $1.5\times$ of combined length of pedicel and flagellomere I; flagellomeres I–X, respectively, with the following relative lengths (and breadths) [length of flagellomere I = 1.0]: 1.0 (0.50), 0.64 (0.54), 0.50 (0.57), 0.50 (0.71), 0.50 (0.79), 0.50 (0.86), 0.54 (0.86), 0.50 (0.86), 0.54 (0.86), 0.86 (tapering and end of segment narrowly rounded). POL: OOL = 1:1.1. Vertex be-

hind ocelli shallowly depressed in front of preoccipital carina. Glossa (Fig. 7).

Pronotum with carina running posteriorly from humeral angle and clearly separating dorso-lateral and ventro-lateral faces; with shallow groove ventro-laterally; pretegular area with no carina or groove, lobe slightly depressed. Mesoscutum with median line in anterior half and notauli deeply and widely depressed; notauli subtransversely carinate, especially posteriorly where concurrent; parapsidal lines distinct. Tegula subtriangular, about as wide as long. Mesopleuron anteriorly divided by sinuous carina into anteriorly and laterally facing surfaces; carinae prominent antero-ventrally, joining each other in front of coxae in wide, subtransverse curve; episternal scrobe unusually conspicuous. Scutellum triangular, posteriorly roundly pointed; antero-lateral angle conspicuously backwardly produced into outwardly convex and apically pointed process; pair of processes bracketing the basal three-eighths of the scutellum; basal quarter of scutellum a wide transverse furrow crossed by about twelve longitudinal carinae; posterior three-quarters of scutellum raised, markedly convex. Metanotum fully exposed over entire width, medially subvertical and slightly overhung by scutellum, laterally widened and excavated. Propodeum dorso-laterally produced into short, posteriorly directed spine.

Metasoma slightly constricted between terga I and II, widest across middle of tergum II and progressively narrowing posteriorly to rounded tergum VI. Tergum I $2.4\times$ as wide as long; tergum II $1.6\times$ as long as tergum I and $1.7\times$ as wide as long; tergum I in posterior half with fine, impressed median line; terga I and II with fine but well defined longitudinal line above their lateral margins. Sternum II transversely grooved basally.

Front leg (Fig. 8); hind coxa non-carinate; tibiae of middle and hind legs on the exterior surface with scattered, small red-

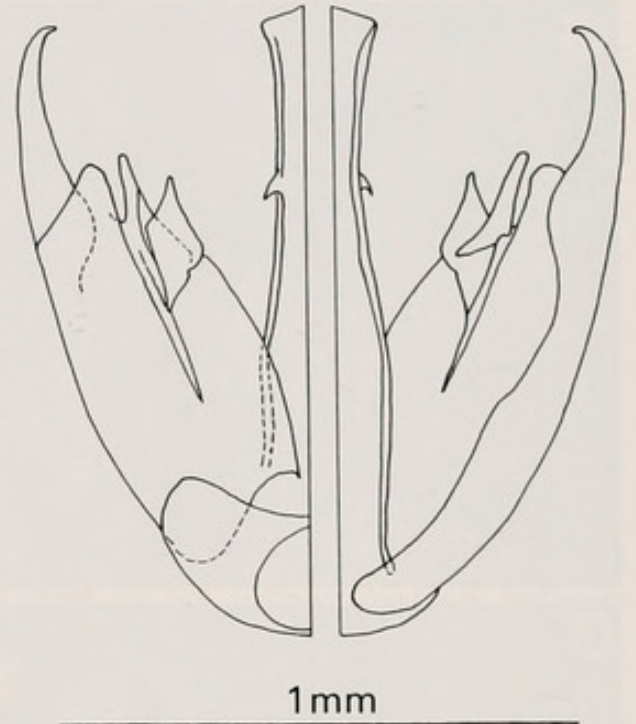


Fig. 9. *Priscomasaris namibiensis*. Male genitalia, ventral view on left, dorsal view on right.

dish peg-like setae (difficult to see amongst the longer pale hairs); middle tibia with two spurs; claws of all legs toothed.

Male.—(Fig. 9). Black. The following are yellowish-white: clypeal disk; large marking on mandible; small spot dorsally behind eye; broad transverse band on anterior aspect of pronotum; large suboval spot on prepectus; small streak medially on mesoscutum between notauli; rarely greater part of tegula; entire scutellar processes; in some individuals posterior half or less of scutellar disk; in some individuals a small medial spot on metanotum; propodeal spines and area at their base; large suboval postero-lateral spots on terga I-IV and usually also on V and postero-medial spots on tergum I (usually), on terga II-V (always) and on terga VI and VII (usually); generally a complete or partially complete dorsal streak on front tibia and rarely diffuse dorsal markings on middle and hind tibiae. The following are reddish: mandible subapically; narrow streak along ventral margin of clypeus; labial

and maxillary palpi; side of pronotum; tegula; anterior half to entire scutellar disk; usually diffuse area next to yellow markings at base of propodeal spines; most of terga I and II (other than for yellowish-white spots); usually diffuse transverse posterior bands (between yellowish-white spots) on terga III or IV-VI; most if not all of tergum VII; most of sternum II (other than for anterior transverse groove); diffuse posterior bands on sterna III-VII; entire sternum VIII; legs as in female.

Length 6.9–7.8 mm (average of 5: 7.3 mm); length of front wing 5.3–5.9 mm (average of 5: 5.6 mm); hamuli 10–11.

In general facies similar to the female, the chief differences being as follow. Head width relative to head length even greater (1.33×). Mandible quadridentate. Antennal sockets separated by 1.9× their diameter; interocular distance at level of sockets 1.85× length of scape (with radicle). Antenna longer; scape (with radicle) 2.3× as long as greatest width and 1.4× as long as combined length of pedicel and flagellomere I; flagellomeres I–X, respectively, with the following relative lengths (and breadths) [length of flagellomere I = 1.0]: 1.0 (0.5), 0.69 (0.59), 0.66 (0.66), 0.63 (0.75), 0.63 (0.81), 0.56 (0.81), 0.56 (0.81), 0.56 (0.81), 0.56 (0.78), 0.86 (tapering and end of segment narrowly rounded). Tergum VII subtruncate with hind margin rounded laterally. Apical sternum with hind margin truncate, deeply, narrowly emarginate medially.

Front trochanter and metasomal sterna without any processes.

Genitalia (Fig. 9).

Material examined.—Holotype: female, Namibia: between Palm and Khorixas (20.17S 14.05E), 31.iii.1997 (F. W. and S. K. Gess) (on pink flowers of *Gisekia africana* (Lour.) Kuntze, Moluginaceae) [Albany Museum, Grahamstown]. Paratypes (216 females, 7 males): Namibia: between Palm and Khorixas (20.17S 14.05E), 31.iii.1997 (F. W. and S. K. Gess), 3 females, 5 males

(2 males on pink flowers of *Gisekia africana* (Lour.) Kuntze, Moluginaceae, 3 females and 3 males on white flowers of *Limeum argute-carinatum* Wawra & Peyr., Moluginaceae); 15.5 km W Khorixas (20.26S 14.54E), 1.iv.1997 (F. W. and S. K. Gess), 8 females (on water); between Khorixas and Uis (20.31S 14.56E), 1.iv.1997 (F. W. and S. K. Gess), 2 males (on small white flowers of *Limeum myosotis* H. Walter, Moluginaceae); 43 km S Mariental (24.58S 17.55E), 4.iv.1997 (F. W. and S. K. Gess), 154 females (on water and flying about above water of pool); 97 km S Mariental (25.24S 17.54E), 4.iv.1997 (F. W. and S. K. Gess), 47 females (on water and flying about above water of pool); 161 km S Mariental, Tses (25.53S 18.07E), 4.iv.1997 (F. W. and S. K. Gess), 3 females (on water); same locality, 17.iv.1998 (F. W. and S. K. Gess), 1 female (on water) [Albany Museum, Grahamstown; Namibian National Insect Collection, Windhoek; South African Museum, Cape Town; American Museum of Natural History, New York; California Academy of Sciences, San Francisco; and Natural History Museum, London].

Distribution.—The species appears to be widely distributed in Namibia, the present records covering six degrees of latitude (20–26S).

Behaviour.—Females visit pools of water in drainage channels and river beds in order to obtain water, presumably for use in nest construction. When filling their crops they alight on the water surface in the manner of some species of *Ceramius*, *Paragia*, *Metaparagia confluens* (Snelling), and *M. nocatunga* (Richards) (see Gess 1996: 67–76). When observed at pools, this behaviour, together with the habit of holding the wings erect whilst imbibing water, immediately distinguishes *P. namibiensis* from similarly sized and coloured species of *Jugurtia* Saussure, which alight on the saturated soil at the water's edge and lower their wings. Where common, females "swarm" in the air above water.

Both sexes forage on the small shallow

flowers of species of *Gisekia* and *Limeum* (Moluginaceae), for which their short tongues are adequate.

Nesting has not been observed.

Etymology.—The name *namibiensis*, an adjective, is derived from Namibia and refers to the provenance of the species.

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