

Three New Species of *Masarina* Richards, 1962 from Southern Africa with a Key to all Species of the Genus (Hymenoptera: Vespidae, Masarinae)

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Abstract.—Descriptions are given of the following three new species of *Masarina* Richards, 1962, a genus endemic to southern Africa: *aptosimi* (♀, South Africa), *hermanniae* (♀ and ♂, South Africa), and *roberti* (♀, Namibia). Flower associations are given for all three species. The key to species of *Masarina* given by Gess (1997) is presented in revised form to include the newly described species.

The genus *Masarina* was erected by Richards (1962) as part of his study of the Masarinae of the world. He recognized three species, all from southern Africa to which region the genus appears to be restricted. Since 1962 a further 10 species have been recognized, one by Gess (1988), six by Gess (1997) and three described in the present paper.

The distribution of *Masarina*, as presently known, is shown in Fig. 1. The type localities of the three new species are indicated by the initial letters of their names.

The notation used for expressing geographical co-ordinates is as in the gazetteer of *The Times Atlas of the World* (1981). The figures before the stop are degrees, those after the stop are minutes; the stop is **not** a decimal point.

The acronym AMG = Albany Museum, Grahamstown, South Africa

DESCRIPTIONS OF SPECIES AND COLLECTING DATA

Masarina aptosimi Gess, sp. nov.

Diagnosis.—Female: frons on each side with subtransverse, medially and laterally downcurved carina; sculpture of head and thorax coarse; body without any pale markings; terga I–III reddish-brown; wings very dark brown. *M. aptosimi* shares

with *M. peliostomi* Gess the frontal carinae (absent in all other known species of *Masarina*) but differs most strikingly from it in that the mesoscutum is coarsely reticulate punctate rather than largely impunctate and in that the gaster is partly reddish-brown rather than black with pale posterior bands.

Description.—Female: Black. The following are reddish-brown: mandible (distally); tegula (partially); terga I–III; sterna II and III (partially). Legs and wings very dark brown.

Length 7.8 mm; length of front wing 5.8 mm; hamuli 13.

Head $1.33 \times$ as wide as long (measured across eyes and from vertex to bottom of emargination of clypeus respectively). Clypeus markedly raised from sides, noticeably wide and short ($1.87 \times$ as wide as long, measured between lateral angles and from base to bottom of ventral emargination); disk evenly convex (not depressed or flattened); distal margin lamelliform and somewhat upturned, bilobed; lobes (disto-lateral corners) rounded and median emargination smooth, wide and deep; surface coarsely longitudinally reticulate punctate. Frons on each side in upper half with pronounced smooth transverse carina, the two carinae not meeting medially,

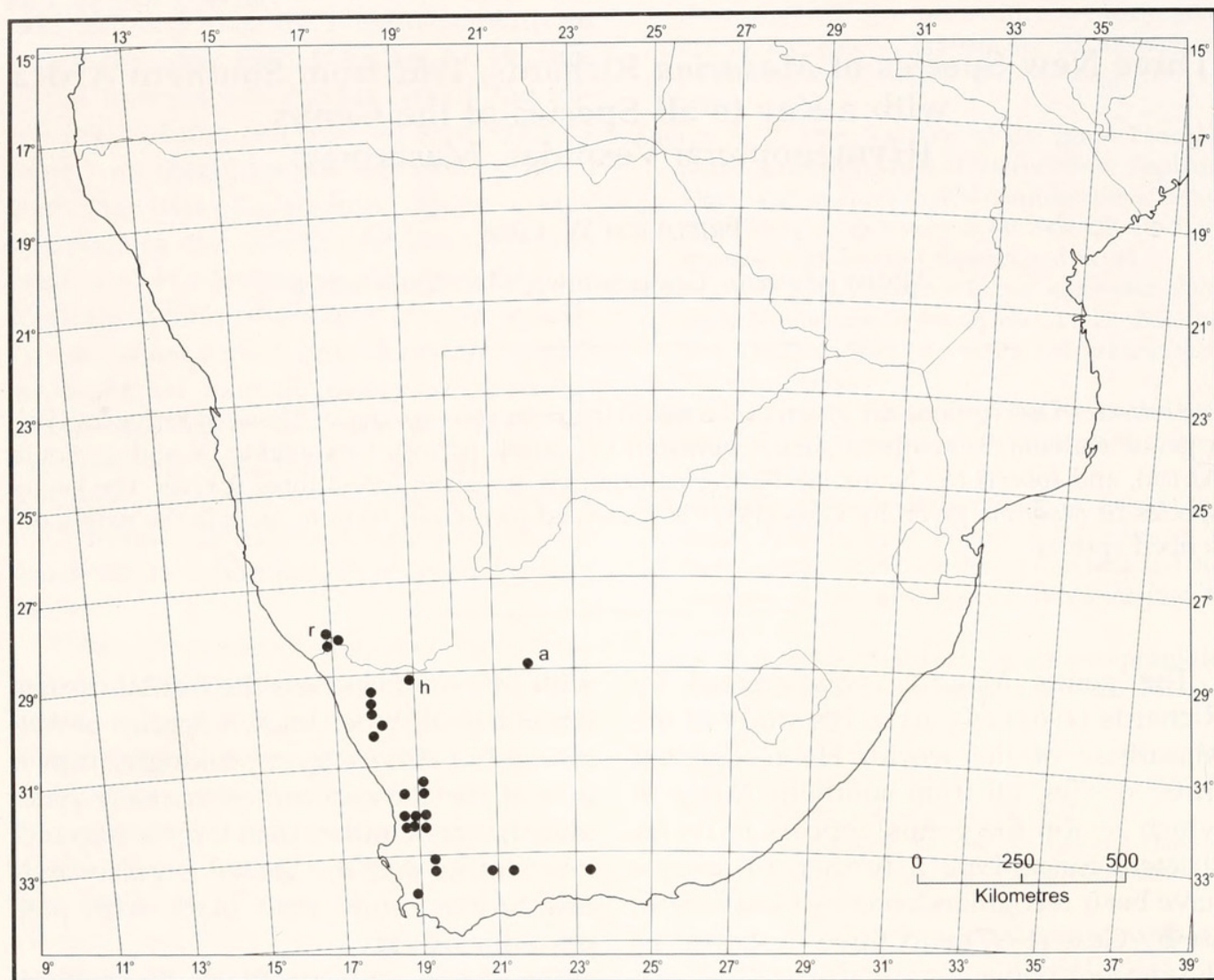


Fig. 1. Distribution of *Masarina* Richards, indicating the type localities of the three new species: a = *aptosimi*; h = *hermanniae*; r = *roberti*.

each laterally downcurved before reaching middle of upper part of eye and ending near bottom of ocular sinus; on each side in lower half with wider but less distinct carina originating medial to antennal insertion and curving upwards and outwards to end in ocular sinus; carinae very similar to those of *M. peliostomi* (illustrated in Gess 1997, Fig. 35); surface sculpturing in area below upper carinae like that of clypeus—coarsely longitudinally reticulate punctate, above carinae somewhat less coarse and progressively grading into finer sculpture of vertex and occiput.

Pronotum, mesoscutum, and scutellum coarsely reticulate punctate (mesoscutum postero-medially and scutellum longitudinally so); pleura less coarsely sculptured;

propodeum angled laterally, finely and closely punctured; terga I–VI with fine shallow punctures and microsculptured interstices.

Setae short and sparse everywhere.

Tegula 1.6 × as long as wide, basally widened, laterally smoothly curved to narrowed and incurved apex.

Front tarsomeres II–IV produced into inwardly directed lobes, that of II short, those of III and IV much longer, flattened, narrow and sub-parallel sided, that of IV reaching middle of V; middle tibia with two spurs; hind tibia with shorter (outer) spur simple and longer (inner) spur bifid.

Etymology.—The name *aptosimi*, genitive singular, is formed from the generic name of the plant, *Aptosimum* sp. (Scrophulari-

aceae), in the flowers of which the wasp was found foraging for nectar or nectar and pollen.

Material examined.—Holotype: ♀, SOUTH AFRICA: NORTHERN CAPE: 5 km NW of Groblershoop (28.52S 21.55E), 19.iv.1998 (F. W. and S. K. Gess) (visiting purple/violet flowers of *Aptosimum albo-marginatum* Marloth & Engl., Scrophulariaceae) [AMG].

Discussion.—*M. aptosimi* and *M. pelios-tomi* Gess, both with frontal carinae, have as their forage flowers species of the very closely related genera *Aptosimum* and *Peliostomum* (Scrophulariaceae) which are not known to be visited by other species of *Masarina* but are typically visited by several species of another masarine genus, *Celonites* Latreille, 1802.

Masarina hermanniae Gess, sp. nov.

Diagnosis.—Both sexes: small (♂ 5.8 mm, ♀ 6.8 mm); terga predominantly reddish-brown (♀) or reddish-brown with black basal bands and yellowish-white posterior bands (♂); clypeus shallowly longitudinally depressed and aciculate; tegula yellowish-white, elongate and posteriorly acute. *M. hermanniae* shares with *M. familiaris* Richards, *M. hyalinipennis* Richards and *M. strucki* Gess the longitudinally depressed clypeus. It is most closely allied to *M. strucki* with which it has in common the marked longitudinal aciculation of the clypeus and the adjacent area of the frons but from which it is distinguished *inter alia* in size (in *strucki*, ♂ 6.6 mm, ♀ 7.5 mm) and colour pattern (in *strucki*, gaster of both ♂ and ♀ black with yellowish-white posterior bands; labrum, clypeus and frons of ♂ black, without yellowish-white markings).

Description.—*Female*: Black. The following are yellowish-white: small mark at bottom of ocular sinus; short streak behind upper part of eye; dorsal margin and humeral angle of pronotum; minute spot on mesopleuron below tegula; tegula (other than for medial testaceous area); apex

of scutellar disk; scutellar lamella; small marking postero-laterally on gastral tergum I. The following are various shades of reddish-brown: underside of flagellomeres II–VII (rest of flagellomeres dark brown); mandible (other than extreme base); entire gaster (other than for above detailed yellowish-white markings), with somewhat lighter diffuse transverse band between pale markings on tergum I and very narrow transverse posterior bands on terga II and III; distal part of femur, tibia and tarsus of all legs. Wings almost hyaline.

Length 6.8 mm; length of front wing 4.4 mm; length of extended tongue 3.3 mm; hamuli 9.

Head $1.15 \times$ as wide as long (measured across eyes and from vertex to bottom of median lobe of clypeus respectively).

Clypeus markedly raised from sides, $1.5 \times$ as broad as long (measured between lateral angles and along midline), widely and shallowly longitudinally depressed medially; distal margin trilobed; lateral lobes (disto-lateral corners) rounded and lamelliform; median lobe gently convex, raised above level of flanking lobes. Frons with lower third raised laterally, widely and very shallowly depressed medially to match form of clypeus; clypeus and frons both with scattered punctures and with surface markedly longitudinally aciculate; vertex behind eyes finely and closely reticulate punctate.

Pronotum, mesoscutum, mesopleuron and scutellum with punctures larger than on head, with smooth, shiny interstices; mesoscutum anteriorly with slightly impressed median longitudinal line; scutellum rounded, moderately raised above mesoscutum and anteriorly falling gently onto it; scuto-scutellar groove narrow, deep; propodeum very slightly angled laterally; terga I–VI progressively more closely and finely punctured.

Setae on clypeus and frons long, semi-erect, directed inwards towards midline, those on pronotum and mesoscutum

shorter, semi-erect, those on gaster short, sub-decumbent, posteriorly directed.

Tegula with lateral margin smoothly and evenly curved, inner posterior angle acute.

Front tarsomeres II–IV slightly produced but not forming inwardly directed lobes; middle tibia with one spur; hind tibia with shorter (outer) spur simple and longer (inner) spur bifid.

Male.—Black. The following are yellowish-white: clypeus (except narrow testaceous lateral and distal margins); large bilobed marking on lower half of frons; mark filling ocular sinus and variously extending upwards along inner margin of eye; streak behind upper part of eye; spot on underside of scape and (in one specimen) spot on underside of pedicel; dorsal surface of pronotum except variably sized postero-lateral area; variably sized spot on mesopleuron below tegula; tegula (other than for medial testaceous area); small spot on axilla; apex of scutellar disk; scutellar lamella; metanotum medially; propodeum dorso-laterally; posterior bands, not reaching lateral margins, on terga I–VI; that on I wide and only slightly expanded laterally and those on II–VI narrow but medially and laterally expanded. The following are various shades of reddish-brown: underside of flagellomeres; mandible (other than extreme base); diffuse transverse medial bands, reaching lateral margins, on terga I–VI; posterior half of tergum VII (in one specimen only); sterna generally; distal half of femur, tibia and tarsus of all legs. Wings almost hyaline.

Length 5.8 mm; length of front wing 4.2 mm; hamuli 7–9.

Structurally similar to female but differing in the following respects. Setae on clypeus and frons finer, less obvious; propodeum distinctly angled laterally, almost tuberculate; tergum VII with hind margin subtruncate (unlike rounded hindmargin of tergum VI of female).

Etymology.—The name *hermanniae*, gen-

itive singular, is formed from the generic name of the plant, *Hermannia* sp. (Malvaceae: Sterculioideae), in the flowers of which the wasp was found foraging for nectar or nectar and pollen.

Material examined.—Holotype: ♀, SOUTH AFRICA: NORTHERN CAPE: Aggeneys (29.14S 18.51E), 29.ix.2003 (F. W. and S. K. Gess) (visiting orange flowers of *Hermannia* sp., Malvaceae: Sterculioideae) [AMG]. Paratypes: 3 ♂♂, same data as holotype [AMG].

Discussion.—*M. hermanniae* like *M. strucki* forages in the flowers of species of *Hermannia*, a floral association different from that of other species of *Masarina*.

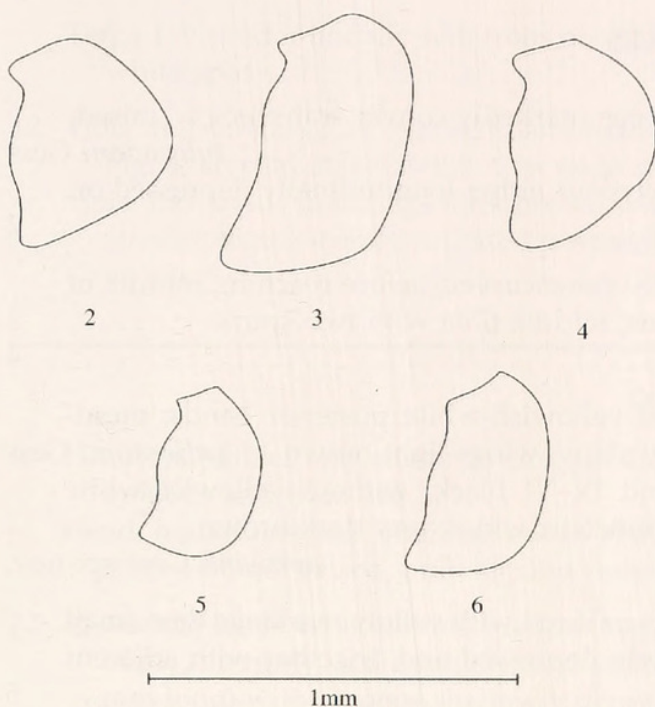
Masarina roberti Gess, sp. nov.

Diagnosis.—Female: small (6.0 mm); clypeus slightly flattened but not medially depressed; terga I–IV light reddish brown with pale postero-lateral streaks; terga V and VI dark brown; frons immaculate; tegula yellowish-white. In size and general facies closest to *M. parvula* Gess but differs from it in absence of frontal spots but in presence of pale markings on pronotum and terga and in yellowish-white rather than reddish-brown to black tegula.

Description.—Female: Black. The following are yellowish-white: narrow streak behind upper part of eye; humeral angle and postero-dorsal angle of pronotum; tegula (except for large median testaceous area); progressively reduced postero-lateral markings on terga I–IV; streaks of varying length on tibiae of all legs. The following are various shades of light reddish brown: mandible (except extreme base); underside of flagellomeres IV–IX and part of X; terga I–IV and sterna I–III (in part); apex of femur, tibia and tarsi of all legs (in part). The following are dark brown: terga V and VI and sterna III (in part) and IV–VI; femur (other than apex) of all legs.

Wings almost hyaline; veins light brown.

Length 6.0 mm; length of front wing 4.0



Figs. 2–6. Right tegula. 2. *Masarina mixta*, 3. *Masarina mixtoides*, 4. *Masarina namaqua*, 5. *Masarina parvula*, 6. *Masarina roberti*.

mm; length of extended tongue 3.0 mm; hamuli 7.

Head $1.25 \times$ as wide as long (measured across eyes and from vertex to bottom of emargination of clypeus respectively). Clypeus steeply raised from sides, disk $1.7 \times$ as broad as long (measured between lateral angles and from base to bottom of ventral emargination), flattened but not depressed medially; ventro-lateral corners rounded, lamellate and slightly upturned; ventral margin deeply emarginate, edentate; integument with moderately sized coarse punctures and longitudinal striae. Frons finely and closely punctured with punctures tending to run longitudinally. Mandibles long, narrow, evenly curved, tridentate. Eyes minutely setose.

Pronotum, most of mesoscutum, and pleura with moderately sized close punctures and scattered larger punctures; mesoscutum postero-medially, scutellum, and propodeum with somewhat finer punctures. Scutellum with disk bun-shaped, smoothly convex, anteriorly falling smoothly to meet mesoscutum, posteriorly falling smoothly but steeply and slightly overhanging metanotum; scutellar flange produced, overhanging and therefore covering metanotum laterally; hind margin of scutellum concave. Angles of propodeum tuberculate above. Terga similarly punctured to mesoscutum.

Tegula $1.9 \times$ as long as wide, laterally smoothly curved, posteriorly slightly narrowed and incurved (Fig. 6).

Front tarsomeres II–IV produced into inwardly directed lobes, that of II short, those of III and IV much longer, flattened, narrow and sub-parallel sided, that of IV reaching middle of V; middle tibia with one spur, hind tibia with shorter (outer) spur simple and longer (inner) spur bifid; claws of all legs minutely toothed.

Male.—Unknown.

Etymology.—The name, in the genitive singular, is formed from the name of the collector of the present specimen, Robert W. Gess, in recognition of the many years of his enthusiastic and perceptive assistance in the field.

Material examined.—Holotype: ♀, NAMIBIA: 12.8 km S of Rosh Pinah (28.03S 16.51E), 11.ix.1996 (F. W., S. K. and R. W. Gess) (on yellow flowers of *Osteospermum* sp., Asteraceae) [AMG].

Discussion.—*M. roberti* is the first species of *Masarina* recorded in association with Asteraceae.

KEY TO SPECIES OF MASARINA RICHARDS

The key to species of *Masarina* given by Gess (1997) is here presented in revised form to include the newly described species. As in the earlier key the as yet unknown female of *ceres* has been included using presumed characters for which reason it is given in []. On the other hand, the unknown males of *aptosimi* and *roberti* have been omitted.

FEMALES

1. Head, mandibles and antennae elongated; clypeus markedly convex transversely, raised, bulbous and nose-like *tylecodoni* Gess
- Head, mandibles and antennae not as above; clypeus either longitudinally depressed or, if convex, not raised, bulbous and nose-like 2
2. Frons with subtransverse carinae, each laterally downcurved before reaching middle of upper part of eye and ending in ocular sinus; middle tibia with two spurs 3
- Frons lacking carinae 4
3. Metasoma black; terga I–V with narrow, pale yellowish-white posterior bands; mesoscutum in greater part impunctate and very shiny; wings light brown *peliosomi* Gess
- Metasoma with terga I–III reddish-brown and IV–VI black, without yellowish-white markings; mesoscutum coarsely reticulate-punctate; wings very dark brown *aptosimi* Gess sp. nov.
4. Metasoma black with white or yellow markings *or* if red with yellow markings then small species (5.8 mm long) with clypeus shallowly depressed and, together with adjacent part of frons, longitudinally aciculate 5
- Metasoma partially or wholly red, with or without white or yellow markings (if small species then clypeus convex and not longitudinally aciculate) 7
5. Clypeus and adjacent part of frons markedly longitudinally aciculate; middle tibia with one spur 6
- [Clypeus and adjacent part of frons moderately coarsely punctured; middle tibia with two spurs] *ceres* Gess
6. Metasoma black with yellowish-white markings *strucki* Gess
- Metasoma red with yellowish white markings *hermanniae* Gess sp. nov.
7. Large (8.5–11.5 mm long) species with longitudinally depressed clypeus and with red pyriform tegulae 8
- Small to medium (5.8–8.2 mm long) species with convex clypeus and variously shaped white, red or black tegulae (if clypeus is slightly longitudinally depressed then tegula is black, broad and triangular) 9
8. Frons on each side above ocular sinus with large yellow spot; metasoma with yellow markings in addition to reddish ones; puncturation of head, thorax and metasoma coarse; propodeal angles tuberculate; scutellum with narrow, smooth, anterior furrow *familiaris* Richards
- Frons on each side above ocular sinus with small to minute reddish spot; metasoma with reddish markings only; puncturation of head, thorax and metasoma moderate; propodeal angles almost rounded; scutellum with wide, coarsely crenulate, anterior furrow *hyalinipennis* Richards
9. Terga I and II (and in some specimens III) predominantly red, contrasting with predominantly black terga III (or IV)–VI; frons immaculate 10
- Terga I–VI or I–V predominantly red; frons immaculate or maculate 11
10. Terga II–IV without any yellowish-white markings; tegula short and broad, as in Fig. 2 *mixta* Richards
- Terga II–IV with variously developed yellowish-white posterior bands; tegula elongate, as in Fig. 3 *mixtoides* Gess
11. Terga I–IV predominantly red with progressively reduced postero-lateral yellowish-white markings; frons immaculate; tegula posteriorly slightly narrowed and incurved, as in Fig. 6 *roberti* Gess sp. nov.

- Terga I–V predominantly red; frons on each side above ocular sinus with small yellowish-white spot 12
- 12. Tibia and tarsus of all legs reddish-brown; tegula markedly narrowed posteriorly; as in Fig. 4; clypeal disk 1.3–1.4 × as wide as long *namaqua* Gess
- Tibia and tarsus of all legs dark brown with variously developed yellowish-white dorsal streaks; tegula evenly rounded posteriorly, as in Fig. 5; clypeal disk 1.6–1.7 × as wide as long *parvula* Gess

MALES

- 1. Head, mandibles and antennae elongated; clypeus markedly convex transversely, raised, bulbous and nose-like *tylocodoni* Gess
- Head, mandibles and antennae not as above; clypeus either longitudinally depressed or, if convex, not raised, bulbous and nose-like 2
- 2. Metasoma black with white or yellow markings *or* if terga roughly transversely banded, black anteriorly, red medially, and yellowish-white posteriorly then small species (5.8 mm long) with clypeus shallowly depressed and, together with adjacent part of frons, longitudinally aciculate 3
- Metasoma partially or wholly red, with (*familiaris* only) or without white or yellow markings 6
- 3. Clypeus and adjacent part of frons convex; mesoscutum shiny, sparsely punctate; tegula black; middle tibia with two spurs *peliosomi* Gess
- Clypeus and adjacent part of frons longitudinally depressed; mesoscutum closely punctate; tegula yellow or yellowish-white; middle tibia with one or two spurs 4
- 4. Clypeus and adjacent part of frons markedly longitudinally aciculate; middle tibia with one spur 5
- Clypeus and adjacent part of frons moderately coarsely punctured; scape, mandible, labrum, clypeus, supraclypeal marking and ocular sinus yellow; middle tibia with two spurs *ceres* Gess
- 5. Metasoma black with yellowish-white markings; scape, mandible, labrum, clypeus and face black *strucki* Gess
- Metasoma with terga roughly transversely banded, black anteriorly, red medially, and yellowish-white posteriorly; scape, mandible, labrum, clypeus, supraclypeal marking and ocular sinus yellowish-white *hermanniae* Gess sp. nov.
- 6. Large (8.5–11.5 mm long) species with longitudinally depressed clypeus and with red, pyriform tegulae 7
- Small to medium (5.8–8.2 mm long) species with convex clypeus and variously shaped red or black tegulae (if clypeus is slightly longitudinally depressed then tegula is black, broad and triangular) 8
- 7. Frons on each side above ocular sinus with large yellow spot; clypeal disk and supraclypeal marking yellow; metasoma with yellow markings in addition to reddish ones; puncturation of head, thorax and metasoma coarse; propodeal angles tuberculate; scutellum with narrow, smooth, anterior furrow; sternum II unmodified; tergum VII emarginate apically *familiaris* Richards
- Frons on each side above ocular sinus immaculate; clypeal disk and supraclypeal marking pure white; metasoma with reddish markings only; puncturation of head, thorax and metasoma moderate; propodeal angles almost rounded; scutellum with coarsely crenulate anterior furrow; sternum II with a bituberculate prominence; tergum VII rounded apically *hyalinipennis* Richards

8. Terga I, II (and in some specimens III) predominantly red, contrasting with predominantly black terga III (or IV)–VII scape entirely black; mandible, labrum and clypeal disk either black or yellowish-white 9
 - Terga I–IV (at least) predominantly red, not contrasting with terga V–VII but rather gradually changing from red to reddish-brown to blackish; scape with yellow mark; mandible, labrum and clypeal disk always yellowish-white 10
9. Mandible, labrum, clypeal disk and broad supraclypeal marking yellowish-white; tegula short and broad, as in Fig. 2 *mixta* Richards
 - Mandible, labrum, clypeal disk and supraclypeus black; tegula elongate, as in Fig. 3 ...
..... *mixtoides* Gess
10. Frons with large, sub-quadrate, yellowish-white supraclypeal marking; entire hind tibia and basitarsus pale; tegula markedly narrowed posteriorly, as in Fig. 4; clypeal disk $1.2\text{--}1.3 \times$ as wide as long *namaqua* Gess
 - Frons with at most narrow, transverse, yellowish-white supraclypeal marking; only proximal half of hind tibia pale; tegula evenly rounded posteriorly, as in Fig. 5; clypeal disk $1.4\text{--}1.5 \times$ as wide as long *parvula* Gess

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