

# The genus *Quartinia* Ed. André, 1884 (Hymenoptera, Vespidae, Masarinae) in Southern Africa. Part VI. New and little known species both with complete and incomplete venation

Friedrich W. Gess<sup>1,†</sup>

<sup>1</sup> *Albany Museum and Rhodes University, Grahamstown, 6140 South Africa*

† [urn:lsid:zoobank.org:author:1C6DF967-9245-4E47-8517-1DE4096D2C66](https://zoobank.org/urn:lsid:zoobank.org:author:1C6DF967-9245-4E47-8517-1DE4096D2C66)

Corresponding author: *Friedrich W. Gess* (f.gess@ru.ac.za)

---

Academic editor: *W. Pulawski* | Received 28 September 2011 | Accepted 21 November 2011 | Published 10 January 2012

---

[urn:lsid:zoobank.org:pub:9A4C13E7-4FF2-4CC7-B81F-3E5A948430CC](https://zoobank.org/pub:9A4C13E7-4FF2-4CC7-B81F-3E5A948430CC)

---

**Citation:** Gess FW (2012) The genus *Quartinia* Ed. André, 1884 (Hymenoptera, Vespidae, Masarinae) in Southern Africa. Part VI. New and little known species both with complete and incomplete venation. *Journal of Hymenoptera Research* 24: 95–115. doi: 10.3897/JHR.24.2155

---

## Abstract

In this publication, the sixth of a projected series revising the Afrotropical species of the genus *Quartinia* Ed. André, 1884 (Hymenoptera: Vespidae: Masarinae), 11 species (8 with complete venation and 3 with incomplete venation) are dealt with.

Two new species, *carpenteri* and *latigena* are described, as are the hitherto unknown males of *artemus* Richards and *luteomandibulata* Gess.

*Quartinia atlantica* Gess, 2011, for which only the female was known, is sunk into synonymy with *Q. namaquensis* Gess, 2007, for which only the male was known, females previously erroneously ascribed to the latter (Gess 2011a) being those of *Q. conchicola* Gess, 2007. Augmented collecting data and, in most instances, flower visiting records are given for *arenaria* Gess, *artemis* Richards, *bonaespei* Gess, *luteomandibulata* Gess, *namaqua* Gess, *namaquensis* Gess, *niveopicta* von Schulthess, *propinqua* von Schulthess and *vagepunctata* von Schulthess.

## Keywords

Southern Africa, taxonomy, floral associations

## Introduction

The background to the present state of knowledge of the taxonomy of the genus *Quartinia* Ed. André, 1884 has been fully stated in Gess (2007).

Desirable as it might be to undertake a complete revision of the genus, this is at present not practicable. Rather than to get bogged down in a study which might never be completed and published, it is intended to publish a series of papers describing new species as well as reviewing some known species. It is envisioned that a new key to species will complete the series. To date Parts I–V have been published as Gess (2007), Gess (2008), Gess (2009) and Gess (2011a and b).

Species of *Quartinia* range in length from a little over 2 mm to 7 mm. In comparison with the great majority of species of other genera of Masarinae even the largest *Quartinia* are relatively small. In view of the considerable range in size shown by species of *Quartinia* and in order to express relative size, categories based on length have been established for species of the genus. These are minute (1.5 – 2.5 mm); small (2.5 – 3.5 mm); medium (3.5 – 4.5 mm); large (4.5 – 5.5 mm); very large (5.5 – 6.5 mm) and gigantic (6.5 – 7.5 mm).

The present paper deals both with species with complete venation (*2m-cu* present and as thick as other veins) and with incomplete venation (*2m-cu* present but attenuate and interrupted).

Acronyms for institutions in which material is housed are: AMG = Albany Museum, Grahamstown, South Africa; AMNH = American Museum of Natural History, New York; BMNH = Natural History Museum, London, England.

## Taxonomy

### A. Species with complete venation

#### *Quartinia arenaria* Gess

[http://species-id.net/wiki/Quartinia\\_arenaria](http://species-id.net/wiki/Quartinia_arenaria)

*Quartinia arenaria* Gess, 2011a: 2, figs 1 – 7. ♀, ♂. Holotype ♂, South Africa: Western Cape: S, of Yserfontein (AMG), geographic distribution, floral associations.

**Additional material examined.** SOUTH AFRICA; WESTERN CAPE: Melkbosstrand, Duynefontein (33.42S, 18.26E), 3 – 16.x.2010 (D. W., G. T. and G. M. Gess), 18 ♀♀, 26 ♂♂ (7 ♀♀, 8 ♂♂ on sand beneath *Trachyandra* sp., Asphodelaceae; 1 ♂ on flower of large pink mesem, Aizoaceae: Mesembryanthema); Koeberg Nature Reserve (33.38S, 18.24E), 9 – 30.x.2010 (D. W., G. T. and G. M. Gess), 74 ♀♀, 106 ♂♂ (28 ♀♀, 82 ♂♂ on sand beneath *Trachyandra* sp., Asphodelaceae; 3 ♀♀ visiting white flowers of *Capnophyllum africanum* (L.) W. D. J. Koch, Apiaceae; 24 ♀♀, 2 ♂♂ on ground); same locality, 29 – 30.x.2010 (F.W. and S. K. Gess), 52 ♀♀, 11 ♂♂ (3

♀♀, 6 ♂♂ visiting purple flowers of *Senecio* cf. *arenarius* Thunb., Asteraceae; 1 ♀, 1 ♂ visiting yellow flowers of *Senecio* sp., Asteraceae; 14 ♀♀, 4 ♂♂ visiting yellow flowers of "helichrysum", Asteraceae; 5 ♀♀ visiting yellow flowers of *Carpobrotus* sp., Aizoaceae:Mesembryanthema; 7 ♀♀ visiting white flowers of *Capnophyllum africanum*; 22 ♀♀ on ground) – [all AMG].

**Augmented floral associations.** To the previously recorded Aizoaceae: Mesembryanthema (*Conocosia* sp. and *Drosanthemum* sp.) are added *Carpobrotus* sp. and "large pink mesem"; Apiaceae (*Capnophyllum africanum* (L.) W. D. J. Koch) and Asteraceae (*Senecio* spp. and "helichrysum")

### ***Quartinia artemis* Richards**

[http://species-id.net/wiki/Quartinia\\_artemis](http://species-id.net/wiki/Quartinia_artemis)

Figs 1–6

*Quartinia artemis* Richards, 1962: 156, ♀. Holotype: ♀, South Africa: Calvinia (BMNH); Gess, S. K. 1996: 245 (flower visiting); Carpenter, 2001: 23 (listed); Gess and Gess, 2003: 58 (flower visiting).

**Diagnosis.** Medium sized (3.6 – 4.3mm) but large on the basis of Richards' measurement (♀ about 5.0 mm). Fore wing with Cu1a and 2*m-cu* complete and as thick as other veins. Tegula with inner posterior corner inwardly produced, acute. Angle of propodeum very markedly posteriorly produced into thick, non-translucent lamella. Posterior face of propodeum with ventral third shiny, contrasting markedly with closely punctured upper two thirds; shiny part laterally covering inner surface of lamella and passing upwards into a well marked pit.

**Description.** *Female* (previously adequately described) (Figs 1, 3, 5). The present material agrees well with the description but some of the specimens, less melanistic than the type, differ in having the pale markings (yellow, usually suffused with ferruginous at the edges) slightly more extensive. Thus the pronotum may have a pair of small transverse streaks antero-medially in addition to the minute spot at the postero-dorsal angle; the scutellum may have the lamella pale in addition to the marking (present in some specimens only) at the centre of the posterior margin; and the gaster has posterior bands on all the terga.

*Male* (hitherto undescribed) (Figs 2, 4, 6): Easily associated with the female on account of the uniquely developed propodeal angles. Pale markings are more extensive than those of females from the same localities. Black. The following are yellowish-white: small spot submarginally on each side of clypeus (in one specimen only); underside of more proximal flagellomeres of club; narrow transverse band (entire or narrowly interrupted) medially on anterior margin of pronotum; streak on humeral angle and spot on postero-dorsal angle; tegula (except for ferruginous median area); transverse mark postero-medially on scutellum; scutellar lamella (usually medially suffused with ferruginous); posterior bands on terga I – VI (that of T I markedly wider than progres-



**Figures 1–6.** *Quartinia artemis* **1** ♀, lateral view (× 9) **2** ♂, lateral view (× 12) **3** ♀, dorsal view (× 10) **4** ♂, dorsal view (× 11) **5** ♀, head, front view (× 32) **6** ♂, head, front view (× 30).

sively narrower bands of terga II – VI). Various shades of ferruginous are: mandibles distally; labrum; upper surface of antennae; upper and outer lateral surfaces of propodeal lamella (to variable degree); terga I – V laterally; in most specimens tergum VI medially and tergum VII entirely; posterior bands on sterna. Legs as described for female.

Tergum VII with disk noticeably convex; apical margin with a V-shaped slit; lobes flanking slit rounded. Fore legs unmodified; sterna atuberculate.

Mesosoma more closely and finely punctured than that of female.

Length 3.6 – 4.0 mm; length of fore wing 2.6 mm.

**Material examined.** SOUTH AFRICA: NORTHERN CAPE: Carnarvon (30.59S, 22.07E), 24.ix.2009 (F. W. and S. K. Gess), 4 ♀♀ (visiting yellow flowers of blue/violet

rayed capitula of *Felicia dubia* Cass., Asteraceae); 15 km N[orth] of Nieuwoudtville on road to Loeriesfontein [Skuinshoogte Pass] (31.16S, 19.08E), 3-8.x.1989 (F. W. and S. K. Gess), 1 ♀ (visiting flowers of *Leysera tenella* DC., Asteraceae); Sutherland District, Bo-Visrivier road (32.25S, 20.39E), 6.x.2009 (F. W. and S. K. Gess), 4 ♀♀ (visiting yellow flowers of *Chrysocoma* sp., Asteraceae); Sutherland District, W[est] of Ouberg Pass (32.26S, 20.19E), 28.ix.2009 (F. W. and S. K. Gess), 1 ♀, 4 ♂♂ (1 ♀, 1 ♂ visiting yellow flowers of blue/violet rayed capitula of *Felicia dubia* Cass., Asteraceae; 3 ♂♂ visiting yellow flowers of "button" capitula, Asteraceae); Sutherland District, Rooikloof Farm (32.26S, 20.39E), 10.x.2009 (D. W. Gess), 1 ♀ (visiting yellow flowers of *Chrysocoma* sp., Asteraceae); between Sutherland and Matjiesfontein (33.04S, 20.35E), 2.x.2009 (F. W. and S. K. Gess), 1 ♀ (visiting yellow flowers of *Chrysocoma* sp., Asteraceae); WESTERN CAPE: 10 km E[ast] of Laingsburg, Geelbeksbrug Farm (33.09S, 20.59E), 13.x.2009 (F. W. and S. K. Gess), 2 ♀♀ (1 ♀ visiting yellow flowers of *Leysera tenella*, Asteraceae; 1 ♀ visiting yellow flowers of *Chrysocoma* sp., Asteraceae) – [all AMG].

**Geographic distribution.** Known from the seven localities in the Northern Cape and one in the Western Cape, all being in the western part of the Great Karoo. The southernmost locality for *Q. artemis* is separated by the Klein Swartberg from the localities in the Little Karoo recorded below for *Q. carpenteri*.

**Floral associations.** Asteraceae (*Chrysocoma*, *Felicia*, *Leysera*, "button" capitula).

**Nesting.** Unknown.

### *Quartinia bonaespei* Gess

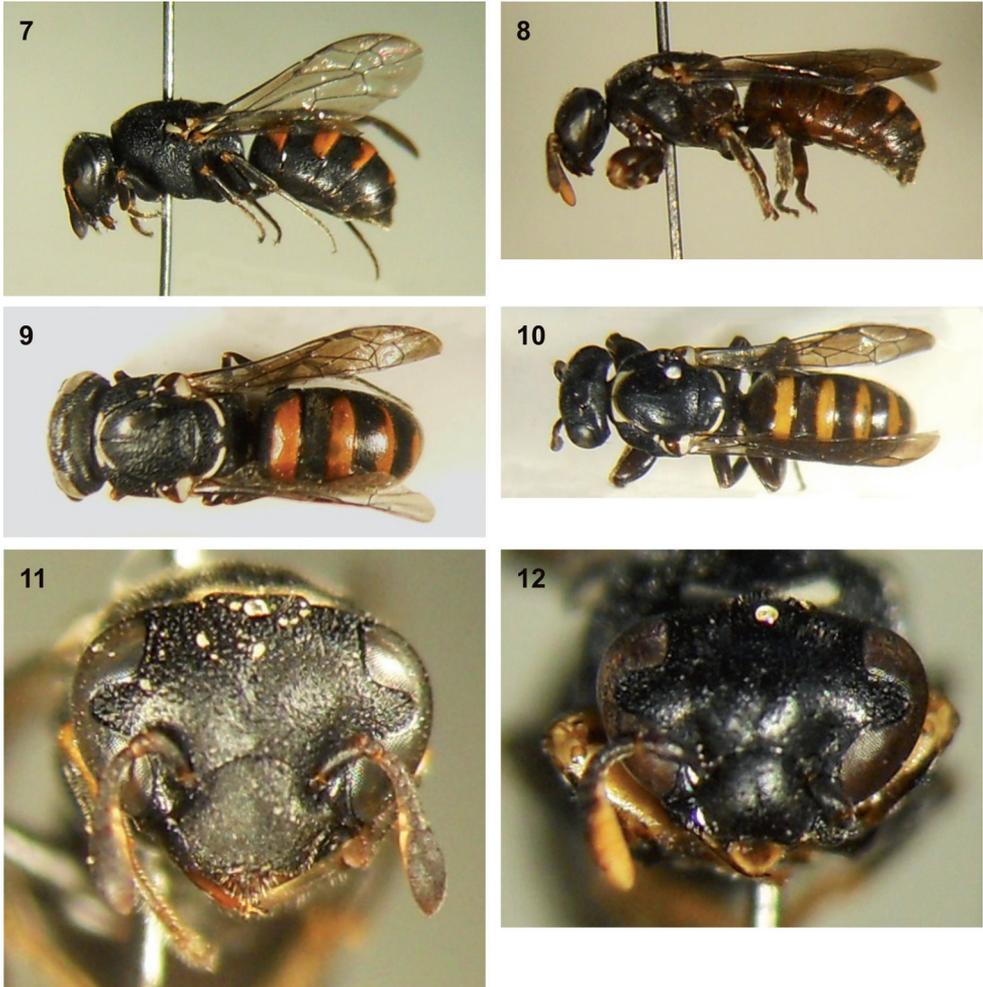
[http://species-id.net/wiki/Quartinia\\_bonaespei](http://species-id.net/wiki/Quartinia_bonaespei)

Figs 7–12

*Quartinia bonaespei* Gess, 2007: 213, figs 1, 7, ♀, ♂. Holotype: ♂, South Africa: Western Cape: on coast 4 km north of Bloubergstrand (AMG), geographic distribution, floral associations, nesting; Gess, 2009: 279 (additional material examined).

**Additional material examined.** SOUTH AFRICA; WESTERN CAPE: Koeberg Nature Reserve (33.38S, 18.24E), 9 – 30.x.2010 (D. W., G. T. and G. M. Gess), 7 ♀♀ (2 ♀♀ on sand beneath *Trachyandra* sp., Asphodelaceae; 3 ♀♀ on ground); same locality, 29.x.2010 (F. W. and S. K. Gess), 5 ♀♀ (4 ♀♀ visiting purple flowers of *Senecio* cf. *arenarius* Thunb., Asteraceae); Melkbosstrand, Duynfontein (33.42S, 18.26E), 3 – 16.x.2010 (D. W., G. T. and G. M. Gess), 32 ♀♀, 4 ♂♂ (1 ♂ on flowers of *Trachyandra* sp.; 1 ♀ on flowers of "purple daisy with yellow centre" [probably *Senecio* cf. *arenarius*]), 26 ♀♀, 2 ♂♂ on sand beneath *Trachyandra* sp.); Melkbosstrand, Holgat to Kreefbaai (33.46S, 18.27E), 24 – 28.ix.2010 (D. W., G. T. and G. M. Gess), 38 ♀♀ (7 ♀♀ on flowers of *Trachyandra* sp.; 31 ♀♀ on sand beneath *Trachyandra* sp.) [all AMG].

**Augmented floral associations.** To the previously recorded Asphodelaceae (*Trachyandra divaricata* (Jacq.) Kunth., for which eight more records are added), and Aizoaceae: Mesembrianthemata (including *Conicosia* and *Drosanthemum*), are added five



**Figures 7–12.** *Quartinia bonaespei* **7** ♀, lateral view (× 7) **8** ♂, lateral view (× 7) **9** ♀, dorsal view (× 7) **10** ♂, dorsal view (× 7) **11** ♀, head, front view (× 21) **12** ♂, head, front view (× 19).

records for Asteraceae (*Senecio* cf. *arenarius* Thunb.). It would appear that *Trachyandra* is a favoured forage flower and it is for this reason that so many specimens, both females and males, of the wasp have been caught resting on the sand beneath these plants.

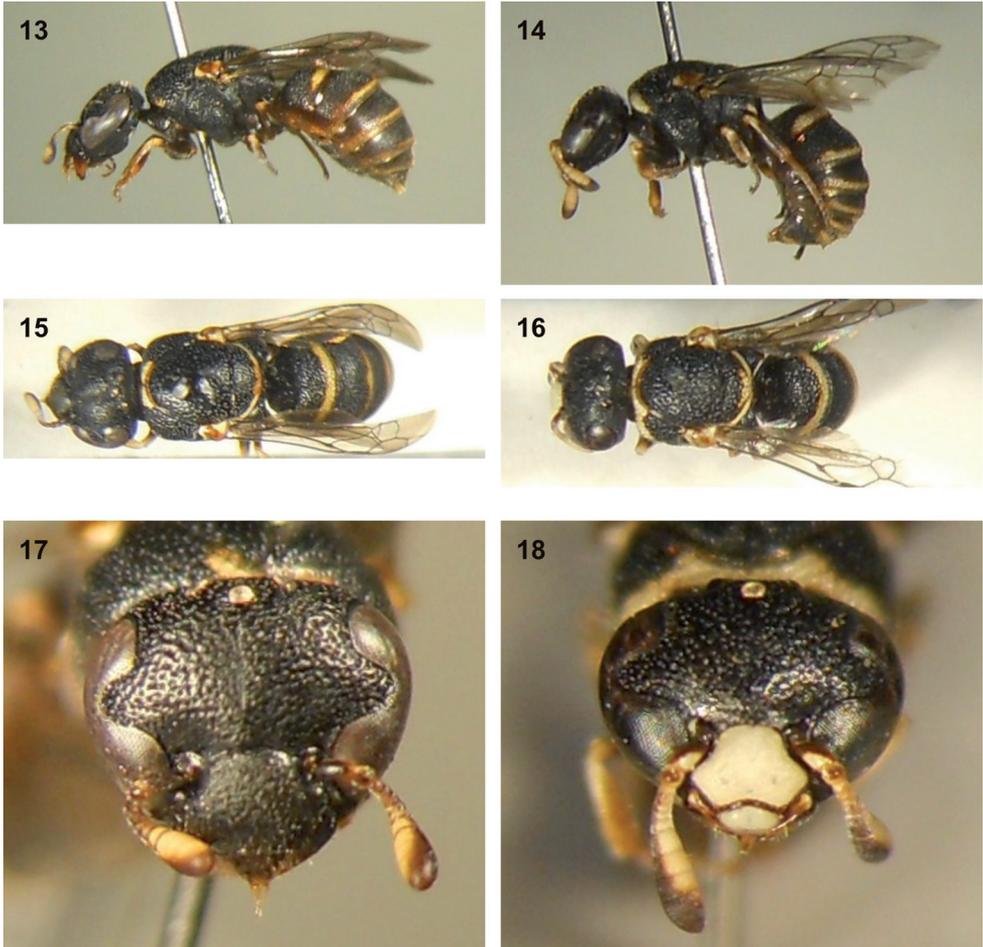
***Quartinia carpenteri* sp. n.**

[urn:lsid:zoobank.org:act:AA57E93C-7846-4A55-8041-8B1BB8458316](http://urn:lsid:zoobank.org:act:AA57E93C-7846-4A55-8041-8B1BB8458316)

[http://species-id.net/wiki/Quartinia\\_carpenteri](http://species-id.net/wiki/Quartinia_carpenteri)

Figs 13–18

**Holotype.** ♂, SOUTH AFRICA: WESTERN CAPE: Bergendal Farm (33.30S, 21.19E), 4 km E[ast] of Ladismith, 2.xi.2010 (F. W and S. K. Gess), (visiting yel-



**Figures 13–18.** *Quartinia carpenteri* **13** ♀, lateral view (× 8) **14** ♂, lateral view (× 9) **15** ♀, dorsal view (× 8) **16** ♂, dorsal view (× 9) **17** ♀, head, front view (× 23) **18** ♂, head, front view (× 23).

low flowers of semi-prostrate mesem, *Malephora* sp., Aizoaceae: Mesembryanthema) [AMG].

**Paratypes.** SOUTH AFRICA: WESTERN CAPE: same data as holotype, 12 ♀♀, 2 ♂♂; 5 km S[outh] of Ladismith on R62 (33.32S, 21.15E), 9.xi.2010 (F. W. and S. K. Gess), 2 ♀♀ (visiting yellow flowers of semi-prostrate mesem, *Malephora* sp. Aizoaceae: Mesembryanthema) [AMG]; 3 km S[outh] of Meiringspoort (33°28'S, 22°32'E) (500m), 11.xii.1996 (J. Carpenter & A. Davidson), 4 ♀♀ [AMNH].

**Diagnosis.** Large (4.8–5.4 mm). Fore wing with *Cu*<sub>1a</sub> and *2m-cu* complete and as thick as other veins. Tegula with inner posterior corner inwardly produced, acute. Angle of propodeum postero-ventrally produced into rounded, marginally translucent lamella. Posterior face of propodeum with ventral third shiny, contrasting markedly with closely punctured upper two thirds; shiny part laterally covering inner surface of lamella but smoothly concave and **not** passing upwards into a well marked pit as in

*Q. artemis*. Male with clypeus and labrum yellowish-white; with posterior margin of tergum VII shallowly emarginate and with sterna atuberculate.

**Description.** *Female* (Figs 13, 15, 17): Black. The following are yellowish-white: underside of antenna; short transverse band medially on anterior margin of pronotum, small mark (effaced in one specimen) on humeral angle, minute spot at postero-dorsal angle; tegula (except for ferruginous median area); scutellar lamella (usually medially suffused with ferruginous); posterior bands, not attaining sides and progressively narrower and shorter on terga I – V; apex of femur and streak on dorsal aspect of tibia of fore leg; apex of femur and base of tibia of middle and hind legs. Various shades of ferruginous are: distal half of mandible; upper aspect of antenna; translucent posterior margin of propodeal lamella; terga laterally; diffuse posterior bands on sterna; most of femur, tibia and tarsomeres of all legs. Wings lightly browned; veins brown.

Length 5.0 – 5.4 mm; length of fore wing 3.5 mm (average of 3); hamuli 5.

Head in front view 1.23 × as wide as long; POL: OOL = 1: 0.8. Clypeus 1.3 × as wide as long; anterior margin shallowly emarginate; antero-lateral angle rounded.

Clypeus, frons and vertex moderately coarsely and closely punctured with microsculptured (shagreened) interstices; punctures on pronotum, mesonotum, scutellum and dorsum of propodeum larger than those on head, discrete, on mesonotum separated variously by less than their diameter to about four times their diameter. Gaster closely punctured; terga I and II coarsely so, remaining terga progressively more finely punctured.

Angle of propodeum postero-ventrally produced into rounded, marginally translucent lamella. Posterior face of propodeum with ventral third shiny, contrasting markedly with closely punctured upper two thirds; shiny part laterally covering inner surface of lamella but smoothly concave and not passing upwards into a well marked pit as in *Q. artemis*.

*Male* (Figs 14, 16, 18): Black. The following are yellowish-white: variably sized spot (effaced in one specimen) on base of mandible; labrum; clypeus (except immediately below antennal socket); scape and pedicel (except dorsally); underside of intermediate flagellomeres and of proximal flagellomeres of club; transverse band on anterior margin of pronotum, either fused with marking on humeral angle or narrowly separated from it; minute spot at postero-dorsal angle; two minute dots at top of mesopleuron (in one specimen only); tegula (except for ferruginous median area); transverse mark of variable length posteriorly on scutellum; scutellar lamella (medially suffused with ferruginous); small streak edging upper part of propodeal lamella; posterior bands, not attaining sides and progressively narrower and shorter on terga I – VI and small crescent-shaped band margining emargination on VII; apex of femur and base of tibia of all legs. Various shades of ferruginous are: distal half of mandible; upper aspect of antenna; translucent posterior margin of propodeal lamella; terga laterally; diffuse posterior bands on sterna; most of femur, tibia and tarsomeres of all legs. Wings lightly browned; veins brown.

Length circa 4.8 mm; length of fore wing 3.0 mm; hamuli 5.

Head in front view 1.36 × as wide as long; POL: OOL = 1: 0.8. Clypeus 1.45 × as wide as long; anterior margin shallowly emarginate; antero-lateral angles rounded.

Punctuation similar to that of female except that on mesoscutum and scutellum it is courser and closer.

Angles of propodeum and posterior face of the latter identical with that of female. Posterior margin of tergum VII shallowly emarginate, not slit-like. Sterna atuberculate.

**Etymology.** Named after James Carpenter of the American Museum of Natural History, New York, co-collector with Amy Davidson of the first specimens of the present species, cladist of the Masarinae, and much esteemed colleague and friend.

**Geographic distribution.** Known from three localities, not very far distant from each other, in the Little Karoo of the Western Cape. Its close congener, *Q. artemis*, appears, from the available records (see above), to be a species of the western Great Karoo.

**Floral associations.** Aizoaceae: Mesembryanthema (*Malephora* sp.).

**Nesting.** Unknown.

### ***Quartinia luteomandibulata* Gess**

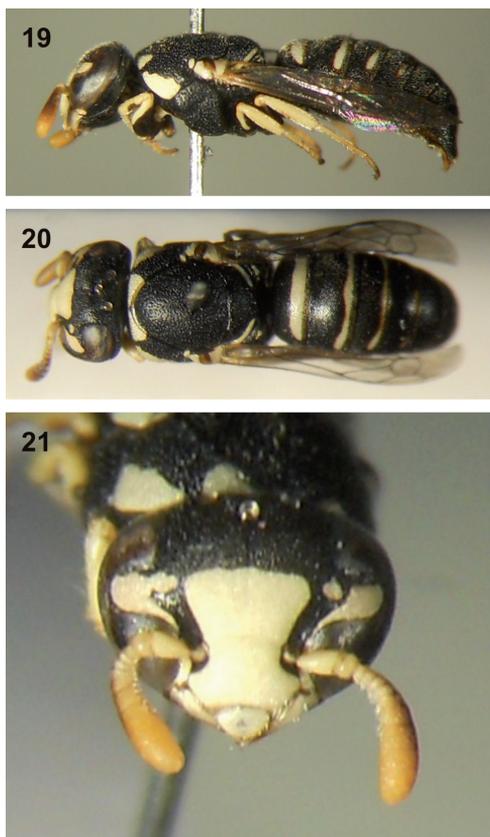
[http://species-id.net/wiki/Quartinia\\_luteomandibulata](http://species-id.net/wiki/Quartinia_luteomandibulata)

Figs 19–21

*Quartinia luteomandibulata* Gess, 2011a: 12, figs 25 – 27, ♀. Holotype ♀, South Africa: Western Cape: Lamberts Bay (AMG).

**Diagnosis.** – Large (4.7 – 5.6 mm). Fore wing with Cu1a and 2*m-cu* complete and as thick as other veins. Tegula with posterior inner corner inwardly produced. Female with mandible at least in part pale yellow, contrasting strikingly with totally black clypeus. Male with mandible, labrum, clypeus, large dorsally widened supra-clypeal marking (in some specimens extended laterally to fuse with streak at bottom of ocular sinus), para-ocular streak, yellow.

**Description.** *Male* (hitherto undescribed) (Figs 19, 20, 21): Black. The following are pale yellow: mandible (except ferruginous apex); scape, pedicel, underside of proximal flagellomeres; labrum; clypeus (except beneath antennal socket); large dorsally widened supra-clypeal marking on lower half of frons (this marking in some specimens widened and extended laterally to fuse with streak at bottom of ocular sinus, in which case entire ocular sinus is filled; in a few specimens an intermediate condition is present in which one or more spots of variable size are present between the dorso-lateral corners of the supra-clypeal mark and the streak at the bottom of the ocular sinus); narrow paraocular streak (in specimens with unexpanded supra-clypeal marking confined to lower orbit; in specimens with supra-clypeal marking



**Figures 19–21.** *Quartinia luteomandibulata* **19** ♂, lateral view (× 9) **20** ♂, dorsal view (× 9) **21** ♂, head, front view (× 22).

extended into ocular sinus narrowly fused with infilling of sinus, leaving a narrow outwardly curved black streak above antennal socket); streak (in some specimens effaced) of variable length on temple behind top of eye; pair of wedge-shaped markings (meeting or very narrowly separated medially) on anterior margin of pronotum and extreme postero-dorsal angle of same; large mark on humeral angle (in some specimens fused with marking on anterior margin); mark of variable extent (large or broken up into a number of small spots or totally effaced) on mesopleuron; tegula (except for ferruginous median area); spot basally on each side of scutellum (in a minority of specimens only); scutellar lamella (interrupted posteriorly); marking on propodeal angle (varying from most of dorsal and lateral surfaces to small spot on dorsum to total effacement); posterior bands not or almost reaching sides on terga I, II, III, IV, V or VI (depending on degree of melanism); band on tergum I widest, those on subsequent terga progressively narrower but all bands (particularly if well developed) medially and laterally anteriorly produced; streak on apical half of femur, most of tibia and in some specimens most of tarsomeres of legs. Light ferrugi-

nous are: apex of mandible; antennal club (dorsally a little darker); tarsomeres (if not pale yellow). Darker ferruginous are: median area of tegula; parameres; claws. Wings very lightly browned, almost hyaline; veins brown.

Length 4.7 – 5.3 mm (average of 3: 5.1 mm); length of fore wing 3.2 mm (average of 3); hamuli 6.

Head in front view 1.4 × as wide as long; POL: OOL = 1: 0.6. Clypeus 1.6 × as wide as long; anterior margin widely and shallowly emarginate; antero-lateral corners obtusely rounded.

Punctuation similar to that of female but microreticulation (shagreening) of mesosoma less obvious and integument consequently somewhat more shiny.

Tergum VII with disk slightly depressed medially; apical margin with a median V-shaped slit; lobes flanking slit wide, smoothly rounded. Sterna atuberculate.

*Melanistic females.* In comparison with some females of the type series from further north along the west coast and in particular with sympatric females from Koeberg, several females from this latter locality exhibit some degree of melanism affecting the pale yellow markings of the head and mesosoma. Thus the markings on the lower half of the frons and in the ocular sinus may be greatly reduced or even totally effaced. Also, the streak on the temple may be greatly reduced or totally absent (though it may be absent also in specimens with well developed markings on the frons). The spot basally on each side of the scutellum may be reduced or effaced (as in the paratype from Lamberts Bay) and the marking on the propodeal angle may be reduced (as in the paratype from Lamberts Bay) or may be effaced. All these specimens, however, exhibit the characteristic pale yellow (at least in part) mandible contrasting strikingly with the totally black clypeus, the large pale yellow marking on the humeral angle, and the pale yellow apex of the femur and most of the tibia of all legs.

**Additional material examined.** SOUTH AFRICA: WESTERN CAPE: Koeberg Nature Reserve (33.38S, 18.24E), 9.x.2010, 4 ♂♂ (on sand beneath *Trachyandra* sp., Asphodelaceae); same locality, 17.x.2010, 9 ♀♀, 12 ♂♂; same locality, 24.x.2010, 7 ♀♀, 19 ♂♂ (1 ♂ visiting white flowers of Apiaceae); same locality, 30.x.2010, 10 ♀♀, 6 ♂♂ (1 ♀ visiting flowers of large white mesem, Aizoaceae: Mesembryanthema; all other specimens on ground) – (all D. W., G. T. and G. M. Gess); same locality, 29.x.2010, 3 ♀♀, 3 ♂♂ (1 ♂ visiting flowers of purple *Senecio* cf. *arenarius* Thunb., Asteraceae; other specimens on ground); same locality, 30.x.2010, 4 ♀♀, 4 ♂♂ (1 ♀, 3 ♂♂ visiting white flowers of *Capnophyllum africanum* (L.) W. D. J. Koch, Apiaceae; other specimens on ground) – (all F. W. and S. K. Gess) [all AMG].

**Extended geographic distribution.** The present material from the Koeberg Nature Reserve (33.38S, 18.24E) establishes a southward extension of the hitherto known distribution of *Q. luteomandibulata*. Previously the species was known from the Koingnaas Mines (30.10S, 17.14E) in the Northern Cape and from Lamberts Bay (32.05S, 18.19E) in the Western Cape. All three localities are in the Strandveld of the West Coast of Acocks (1953).

**Augmented floral associations.** To the previously recorded Aizoaceae: Mesembryanthema (*Conicosia* sp.) (Gess 2011a: 12) may be added: Aizoaceae: Mesembryan-

thema (large white mesem); Asteraceae (*Senecio* cf. *arenarius* Thunb.); Apiaceae (*Capnophyllum africanum* (L.) W. D. J. Koch).

**Nesting.** Unknown.

### *Quartinia namaqua* Gess

[http://species-id.net/wiki/Quartinia\\_namaqua](http://species-id.net/wiki/Quartinia_namaqua)

*Quartinia namaqua* Gess, 2007: 219, ♀, ♂. Holotype: ♂, South Africa: Northern Cape: Inland of Hondeklip Bay (30.19S, 17.17E) (AMG), geographic distribution, floral associations, nesting.

**Additional material examined.** SOUTH AFRICA: Northern Cape: Koingnaas Mines (30.14S, 17.15E), ix.2007 (from pan trap) (C. Lyons & J. Mingo), 1 ♂ [AMG]. The above record, for the second male known, is from slightly north of the type locality.

### *Quartinia namaquensis* Gess

[http://species-id.net/wiki/Quartinia\\_namaquensis](http://species-id.net/wiki/Quartinia_namaquensis)

*Quartinia namaquensis* Gess, 2007: 222, figs 3, 9. ♂. Holotype ♂, South Africa: Northern Cape: Leliefontein (AMG), geographic distribution, nesting; Gess, 2011a (additional material: ♂; not ♀♀ = *Q. conchicola* Gess).

*Quartinia atlantica* Gess, 2011a: 5, figs 8 – 10. ♀. Holotype ♀, South Africa: Western Cape: Blaauwberg – Melkbosstrand (AMG), geographic distribution. syn. n.

**Notes.** *Quartinia atlantica* Gess, 2011 was described from the holotype ♀ from Blaauwberg – Melkbosstrand, collected on 5.x.2005 by F. W. and S. K. Gess and from an assemblage of a further 57 ♀♀ from the Koeberg Nature Reserve, the latter obtained by S. van Noort from yellow pan traps during the period 13. vi. – 28.xi.1997.

Subsequent collecting at Koeberg Nature Reserve by D. W., G. T. and G. M. Gess during the period 9 – 30.x.2010 and by F. W. and S. K. Gess during the period 29 – 30.x.2010 yielded a further 64 ♀♀ and 25 ♀♀ respectively. A total of 147 ♀♀ was therefore collected, however no males which could be ascribed to the species were found.

Persistent and diligent collecting by D. W., G. T. and G. M. Gess at the Koeberg Nature Reserve at the beginning of following season, on 30 and 31 July 2011, was rewarded with the capture of both females of *Q. atlantica* and of associated clearly conspecific males.

Examination of these males showed them to be conspecific, though showing some degree of melanism, with the type material of *Q. namaquensis* Gess, 2007, described from Leliefontein and from west of Wallekraal as also with the single male recorded (Gess 2011a) from Sutherland.

In the light of the present association of males and females from Koeberg, it is clear that the females recorded (Gess 2011a) from Sutherland as also those from Leliefontein and Remhoogte were erroneously assigned to *namaquensis* and described as such and that they are *conchicola* (Gess, 2007). As stated (Gess 2011a) these specimens are "virtually indistinguishable from the female of *Q. conchicola* Gess, the differences being subtle". Re-examination of the material suggests that rather than subtle the differences are illusory!

Establishment of the present synonymy means that for *Q. namaquensis* both male and true female are now known, as are an extended distribution down the west coast, floral associations and nesting.

**Description.** *Male* (previously adequately described from Leliefontein and from west of Wallekraal: see Gess, 2007: 222, figs 3, 9; further illustrated in Gess, 2011a, figs 29, 31, 33 and 34).

The recently collected males from Koeberg share with the type material and with the subsequently recorded male from Sutherland the following diagnostic characters: fore femur greatly swollen, its posterior surface in proximal half markedly concavely excavate, smooth and very shiny, its baso-ventral region angulate and sublamellate; tergum VII drawn out apico-medially into robust, pointed, dorsally flattened and apically narrowly pointed process; antennae noticeably attenuated.

In comparison with the type material, the specimens are to some degree melanistic in so far that the posterior bands on terga I–V are reduced, being narrower and not reaching sides; that the band on tergum VI is absent; that the middle and hind femora and tibiae (except at the "knees") are predominantly black and that the tarsomeres of these legs are dark brown.

*Female* (previously adequately described from Koeberg as *Quartinia atlantica*

Gess (see Gess, 2011a: 5, figs 8 – 10), here sunk into synonymy.

If the females from Koeberg follow the same tendency towards melanism as shown by the males from that locality in comparison with those from further north, then they may likewise in the north have more extensive pale markings and pale legs.

**Additional material examined.** SOUTH AFRICA; WESTERN CAPE: Koeberg Nature Reserve (33.38S, 18.24E), 9 – 30.x.2010 (D. W., G. T. and G. M. Gess), 64 ♀♀ (10 ♀♀ on sand beneath *Trachyandra* sp., Asphodelaceae; 23 ♀♀ on ground; 3 ♀♀ visiting white flowers of *Capnophyllum africanum* (L.) W. D. J. Koch, Apiaceae); same locality, 29 – 30.x.2010 (F. W. and S. K. Gess), 25 ♀♀ (14 ♀♀ visiting purple flowers of *Senecio* cf. *arenarius* Thunb., Asteraceae; 2 ♀♀ visiting yellow flowers of "helichrysum", Asteraceae; 4 ♀♀ visiting yellow flowers of *Carpobrotus* sp., Aizoaceae: Mesembryanthema; 2 ♀♀ visiting white flowers of *Capnophyllum africanum*; 3 ♀♀ on ground); same locality, 30 & 31.vii.2011 (D. W., G. T. and G. M. Gess), 7 ♀♀, 9 ♂♂ (on ground) – [all AMG].

**Floral associations.** Aizoaceae: Mesembryanthema (*Carpobrotus* sp.); Apiaceae (*Capnophyllum africanum* (L.) W. D. J. Koch.); Asteraceae (*Senecio* sp. and "helichrysum"). To these may be added the record for the male from Sutherland: Cam-

panulaceae (*Wahlenbergia* near *polyclada* A.DC.). [The records for the females from Sutherland, erroneously assigned to *Q. namaquensis*, pertain to *Q. conchicola*.]

**Nesting.** West of Wallekraal one specimen, a male, freshly eclosed and with wings not yet fully hardened, was extracted from a cell of a nest in a sand-filled shell of the desert snail *Trigonephrus* sp. (Mollusca: Gasteropoda; Pulmonata: Dorcasidae) (Gess 2007: 221). Such sand-filled shells occur also at Koeberg and it is likely that there too *Q. namaquensis* utilises them for nesting.

**Discussion.** In the key to species of *Quartinia* nesting in sand-filled snail shells (Gess 2007: 227–228) the then unknown female of *namaquensis* was not included.

In the key the missing female of *namaquensis* (as now identified from Koeberg) runs down to *australis* Gess, the characters given in the key being common to the females of both species, which indeed bear a close resemblance to one another though the relevant males are very different. The females may be distinguished, however, by the following characters. Though the tegulae are similarly marked and both have the inner posterior corner inwardly produced, that of *namaquensis* is relatively longer (1.5 × longer than wide) and more acutely pointed posteriorly than that of *australis* (1.3 × longer than wide). The mesoscutum of *namaquensis* is very obviously and finely microsculptured (shagreened) with fine, discrete punctures; that of *australis* less obviously shagreened with moderately coarse, close, at times subconfluent punctures. As far as is known, the areas of distribution of *namaquensis* and of *australis* are well separated.

### *Quartinia vagepunctata* von Schulthess

[http://species-id.net/wiki/Quartinia\\_vagepunctata](http://species-id.net/wiki/Quartinia_vagepunctata)

*Quartinia vagepunctata* von Schulthess 1929: 504 (key), ♀. Holotype ♀: South Africa: Little Karroo (*sic*), 38 m [iles] E of Ceres (BMNH). – von Schulthess 1935: 386 (key); Richards 1962: 132 (key), 169 (redescription of female); Gess and Gess 1992 (nesting); Gess, S. K. 1996 (nesting, flower visiting); Carpenter 2001: 29 (listed); Gess and Gess 2003: 64 (flower visiting); Gess 2011a: 32, figs 84–90 (description of male, key, flower visiting).

**Additional material examined.** SOUTH AFRICA: Northern Cape: NW of Pampoenpoort, near Natuurskoon Farm (30.57S, 22.29E), 23.ix.2009 (F. W. & S. K. Gess), 4 ♀♀, 1 ♂ (3♀♀, 1 ♂ visiting yellow flowers of blue rayed capitula of *Felicia* sp., Asteraceae; 1 ♀ visiting flowers of *Felicia filifolia* (Vent.) Burt Davy, Asteraceae); Carnarvon (30.59S, 22.07E), 24.ix.2009 (F. W. & S. K. Gess), 1 ♂ (visiting yellow flowers of blue/violet rayed capitula of *Felicia dubia* Cass., Asteraceae); Sutherland district, Bo-Visrivier road (32.25S, 20.39E), 7.x.2009 (F. W. & S. K. Gess), 1 ♀ (visiting yellow flowers of *Leysera tenella* DC, Asteraceae) – [all AMG].

**Augmented floral associations.** To the previously recorded very marked association with Asteraceae (Gess 2011a: 36) may be added *Felicia* spp.

## B. Species the with incomplete venation

### *Quartinia latigena* sp. n.

[urn:lsid:zoobank.org:act:E1DC02A8-81DB-47D4-8A2C-6D909171EDDD](http://urn:lsid:zoobank.org:act:E1DC02A8-81DB-47D4-8A2C-6D909171EDDD)

[http://species-id.net/wiki/Quartinia\\_latigena](http://species-id.net/wiki/Quartinia_latigena)

Figs 22–27

**Holotype.** ♂, SOUTH AFRICA: NORTHERN CAPE: Nuwerus (31.08S, 18.22E), 17.x.2000 (F. W. and S. K. Gess) (visiting yellow flowers of *Pteronia* sp., Asteraceae) [AMG].

**Paratypes.** SOUTH AFRICA: NORTHERN CAPE: same data as holotype, 5 ♀♀, 2 ♂♂ [AMG].

**Diagnosis.** Small to medium sized (3.2 – 3.6 mm long). Fore wing with *Cu*<sub>1</sub> and *2m-cu* thin, the latter interrupted before reaching *M*. Tegula with posterior inner corner inwardly produced, anteriorly and posteriorly yellowish-white, medially usually dark ferruginous. POL: OOL= 1: ≥ 1. Temple unusually wide. Male with clypeus markedly contrasting and set off from frons by striking juxtaposition and sharp separation at suture of yellowish-white (of clypeus) and black (of frons); with broad paraocular streak carried upwards and narrowing to join (in some specimens) with crescent at bottom of ocular sinus. Sterna atuberculate.

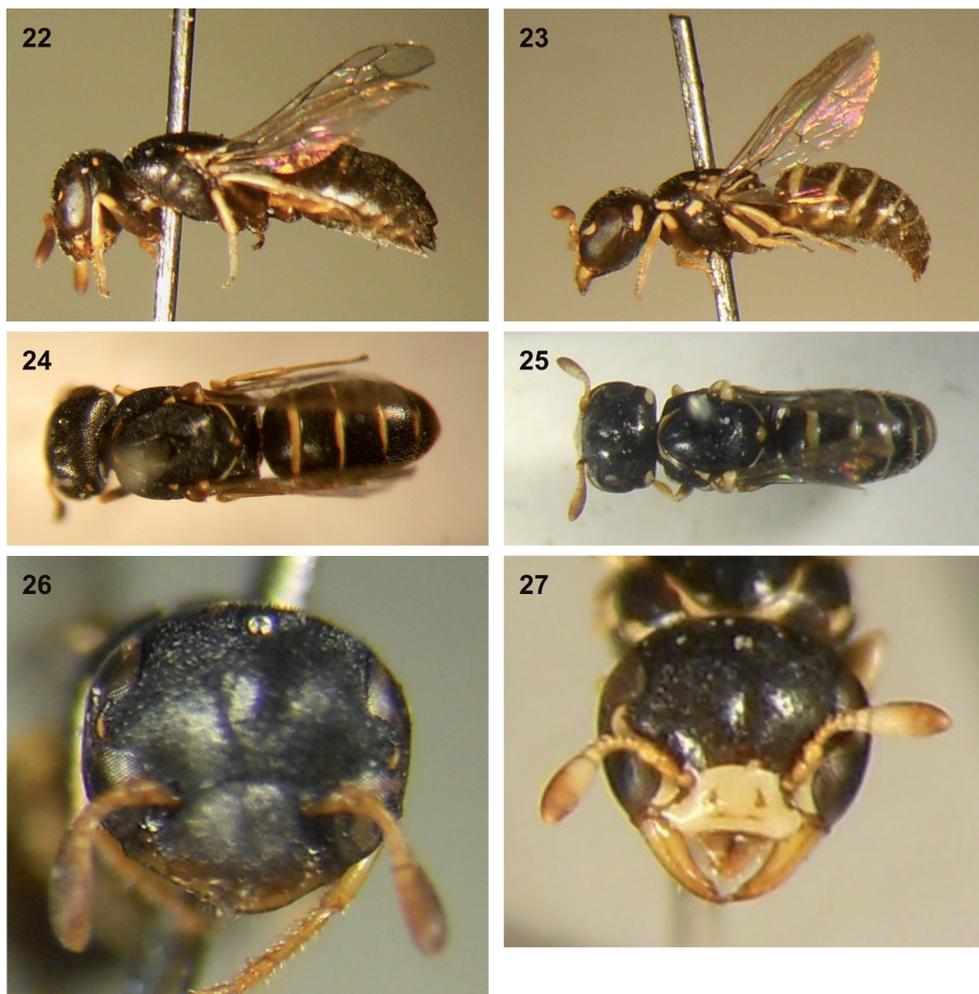
**Description.** *Female* (Figs 22, 24, 26): Black. Yellowish-white (tending to be suffused with ferruginous) are: basi-lateral area of mandible; narrow crescent at bottom of ocular sinus; streak of variable size (almost effaced in one specimen) on temple; pair of variably sized streaks (almost effaced in two specimens) anteriorly on pronotum; postero-dorsal angle of pronotum; minute spot at top of mesopleuron (in two specimens only); tegula (except medially where ferruginous); postero-medial spot on scutellum; medially interrupted scutellar lamella; posterior bands, medially anteriorly produced and progressively narrower, on terga I – IV; apex of femur, most of tibia and basal four tarsomeres of all legs. Various shades of ferruginous are: mandibles (other than basi-lateral area); labrum; anterior border of clypeus (in some specimens only); antennae (dark above, light beneath); tegula medially; markings on femur, fifth tarsomere and claws of all legs.

Length 3.5 – 3.6 mm; length of fore wing 2.1 mm.

Head in front view 1.1 × as wide as long. POL: OOL = 1: 1.03. Temple unusually wide. Clypeus 1.68 × as wide as long; distal margin shallowly emarginate.

Head, mesosoma and gaster microsculptured (shagreened), moderately shiny; frons and vertex with small, well separated, inconspicuous punctures; pronotum and mesoscutum with punctures slightly larger and more conspicuous than those on head; gaster with small, inconspicuous punctures.

*Male* (Figs 23, 25, 27): Black. Yellowish-white are: basi-lateral area of mandible; underside of first two flagellomeres of antennal club and basal part of third; clypeus (except small area below antennal socket, pair of indefinite ferruginous spots on up-



**Figures 22–27.** *Quartinia latigena* **22** ♀, lateral view (× 14) **23** ♂, lateral view (× 13) **24** ♀, dorsal view (× 14) **25** ♂, dorsal view (× 13) **26** ♀, head, front view (× 39) **27** ♂, head, front view (× 33).

per half of disk and narrow broken transverse ferruginous line on lower half of disk [clypeus markedly set off from frons by striking juxtaposition of yellowish-white and black at suture]; broad paraocular streak carried upwards and narrowing to join (in two specimens) with crescent at bottom of ocular sinus; large streak on temple; short, transverse anterior band drawn back along posterior margin of pronotum to postero-dorsal angle; streak on humeral angle; spot at top of mesopleuron; tegula (except medially where testaceous to ferruginous); postero-medial spot on scutellum; medially interrupted scutellar lamella; small spot to elongate streak on propodeal angle; posterior bands, laterally and medially anteriorly produced and progressively narrower, on terga I – VI; poorly defined posterior bands on most of sterna; apex of femur, most of tibia and basal four tarsomeres of all legs. Various shades of ferruginous are: mandibles (other than

basi-lateral area); labrum; antennae (other than parts listed above); tegula medially; markings on femor, fifth tarsomere and claws of all legs. Ground colour of gaster varying from black to dark brown with ferruginous last tergum, sternum and parameres.

Length 3.2 mm; length of fore wing 2.0 mm.

Head in front view 1.26 × as wide as long. POL: OOL = 1: 1.15. Temple unusually wide. Clypeus 1.9 × as wide as long; distal margin slightly down turned and narrowly lamellate, very widely and shallowly emarginate. Labrum without any indication of median carina, pointed apically.

Tergum VII with disk evenly convex; with V-shaped apical incision and the lobes defining it rounded. Sterna atuberculate.

Surface sculpture as in female.

**Etymology.** The name *latigena* serves to draw attention to the unusually wide temple in both the male and the female.

**Geographic distribution.** Known only from the type locality in southern Namaqualand, in the Succulent Karoo of Acocks (1953).

**Floral associations.** Asteraceae (*Pteronia*).

**Nesting.** Unknown.

### ***Quartinia niveopicta* von Schulthess**

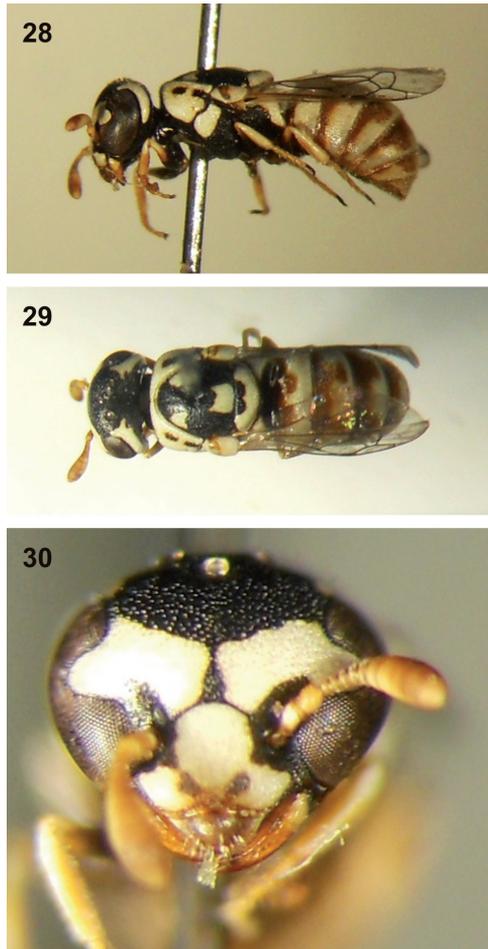
[http://species-id.net/wiki/Quartinia\\_niveopicta](http://species-id.net/wiki/Quartinia_niveopicta)

Figs 28–30

*Quartinia niveopicta* von Schulthess, 1930: 327, 329–380, ♀. Holotype: ♀, South Africa: Matjesfontein (BMNH); Turner, 1939: 1 (flower visiting); Carpenter, 2001: 26 (listed); Gess and Gess, 2003: 61 (flower visiting).

*Quartinioides niveopicta* (von Schulthess): Richards, 1962: 176, 177 (key), 198 (redescription of ♀; description of ♂); Gess, S. K. 1996: 253 (flower visiting).

**Diagnosis.** Small to medium sized (presently studied females 3.2 – 3.6 mm). Fore wing with *Cu1a* and *2m-cu* present but attenuate, much thinner than other veins, and with *2m-cu* interrupted before reaching M. Tegula with posterior inner corner absolutely rounded. Female (Figs 28, 29, 30) with ground colour of head and mesosoma black, that of gaster reddish. Yellowish-white markings extensive, distributed as follows: on mandible (basally); on clypeus (apico-laterally and baso-medially); on frons (a spot in each ocular sinus and two more medially between latter; spots fused in most specimens to form a medially interrupted or even complete transverse band); on temple; on pronotum (anterior transverse band carried down to humeral angle; hind margin to postero-dorsal angle); on mesopleuron; on mesoscutum (two small antero-lateral spots and a larger postero-medial spot); on most of tegula; on scutellum (trilobed posterior band); on scutellar lamella; on propodeal angle; on gaster (posterior bands anteriorly produced medially and laterally); and on apex of femur, on tibia and on proximal tarsomeres of all legs. Male (unknown to present author;



**Figures 28–30.** *Quartinia niveopicta* **28** ♀, lateral view (× 12) **29** ♀, dorsal view (× 12) **30** ♀, head, front view (× 36).

characters here given from Richards, 1962: 199) with trochanters and proximal half of femora with dense, rather long, “woolly” setae; tergum VII with a well marked angular emargination; sterna 7 + 8 flat, ending in a narrow black central process. Coloured similarly to female but labrum, entire clypeus yellowish-white.

**Material examined.** SOUTH AFRICA: NORTHERN CAPE: Williston (31°20'S, 20°54'E) (1078m), 3.II.2006 (Carpenter & Davidson), 3 ♀♀ [AMNH]; WESTERN CAPE: 43 km ENE of Ceres on road to Sutherland [= Karooport] (33.12S, 19.44E), 2 – 3.xii.1989 (S. K. Gess), 1 ♀ (on flowers of *Limonium* sp., Plumbaginaceae); SSE of Calitzdorp at bridge over Remhoogte River (33.34S, 21.43E), 8.xi.2010 (F.W. and S. K. Gess), 1 ♀ (visiting flowers of *Peliostomum leucorrhizum* E. Mey. ex Benth., Scrophulariaceae); EASTERN CAPE: Fullerton, [33.11S, 23.50E], 30.x.1967 (C. Jacot-Guillamod), 3 ♀♀ – [all AMG].

**Provenance of material examined by Richards (1962).** WESTERN CAPE: Matjesfontein [33.14S, 20.35E]; EASTERN CAPE: Willowmore [33.18S, 23.30E].

**Geographic distribution.** Known from a limited number of localities, all in the karroid areas of the Northern Cape, the Western Cape and Eastern Cape.

**Floral associations.** Plumbaginaceae (*Limonium*) and Scrophulariaceae (*Peliostomum*). Turner (1939) recorded the species from Aizoaceae: *Mesembryanthema* ("*Mesembryanthemum*").

### ***Quartinia propinqua* von Schulthess**

[http://species-id.net/wiki/Quartinia\\_propinqua](http://species-id.net/wiki/Quartinia_propinqua)

*Quartinia propinqua* von Schulthess, 1932: 526, figs 2, 3, 4. ♀, ♂. Lectotype: ♀, Namibia: Aus (BMNH) designated by von Schulthess; Carpenter, 2001: 27 (listed); Gess and Gess, 2003: 62 (flower visiting); Gess, 2009: 265 (diagnosis, geographic distribution, floral associations).

*Quartinioides propinqua* (von Schulthess): Richards, 1962: 199; Gess and Gess, 1989: 128 (flower visiting); Gess, S. K. 1996: Appendices 1 and 2 (flower visiting).

*Quartinioides* sp. G: Gess and Gess, 1989: 128 (flower visiting); Gess, S. K. 1996: Appendices 1 and 2 (flower visiting).

**Diagnosis.** See Gess (2009: 265).

**Additional material examined.** SOUTH AFRICA: NORTHERN CAPE: Richtersveld National Park, Koeroegabvlakte (28.11S, 17.03E), 17–21& 24.ix.1995 (F. W., S. K. and R. W. Gess), 1 ♂ (on yellow flowers of *Gorteria* sp., Asteraceae); Augrabies (28.36S, 20.21E), 26.ii.2000 (F. W. and S. K. Gess), 10 ♀♀ (visiting yellow flowers, Asteraceae); 25 km N[orth] of Kamieskroon (30.01S, 17.53E), 17.x.2000 (F. W. and S. K. Gess), 1 ♀ (visiting yellow flowers of "gazania", Asteraceae) – [all AMG]; Williston (31°20'S, 20°54'E) (1078m), 6.ii.2006 (Carpenter & Davidson), 1 ♀; Calvinia (31°28'S, 19°46'E) (981m), 5.ii.2006 (Carpenter & Davidson), 17 ♀♀, 1 ♂; WESTERN CAPE: Vanrhynsdorp (31°36'S, 18°45'E) (112m), 4.ii.2006 (Carpenter & Davidson), 1 ♀ – [all AMNH].

**Discussion.** The data associated with the additional specimens slightly augment the known wide distribution of the species and reinforce the already demonstrated very strong association with Asteraceae.

### **Acknowledgments**

The following individuals are thanked for much appreciated assistance as specified: Sarah Gess of the Albany Museum, Grahamstown, co-collector of most of the Albany Museum's *Quartinia* material, for thirty nine years of happy, productive and synergistic field-work, for valuable discussion and encouragement; David Gess for valuable field assistance

on an expedition in 1989; David, Gaby and Gaby Maria Gess for enthusiastic collecting on my behalf at Sutherland in 2009, at sites on the seaboard north of Cape Town during 2010 and particularly 2011; Robert Gess for assistance in the field in 1995 and, in 2010, together with the other partners of Bergendal Farm, for access to their land and for permission to collect insects there; James Carpenter of the American Museum of Natural History for letting me study the *Quartinia* material collected in South Africa by himself in 1985 and by himself and Amy Davidson in 1996; Estelle Brink of the Schonland Herbarium, Grahamstown for determining the *Wahlenbergia* species from Sutherland; Anthony Magee of SANBI for determining *Capnophyllum africanum* (L.) W. D. J. Koch (Apiaceae) from the Koeberg Nature Reserve; and Bronwyn McLean of the Graphics Services Unit of Rhodes University, Grahamstown for help in the production of the figures.

Grateful thanks are expressed to those bodies which issued permits for the collection of insects and plant samples, namely: the Department of Nature and Environmental Conservation, Northern Cape; Cape Nature (of the Western Cape Province); Eskom Holdings Limited (Environmental Officer, Jurina le Roux) for the Koeberg Nature Reserve.

The South African Foundation for Research Development (FRD) and the South African National Research Foundation (NRF) are thanked for running expenses grants awarded to either myself and Sarah Gess or to Sarah Gess and myself for field work during the course of which some of the present material was collected. The Board of Trustees of the Albany Museum is thanked for the Research Contracts granted to myself and Sarah Gess since 2003, which have given us continued use of the museum's facilities since our retirements.

## References

- Acocks JPH (1953) Veld types of South Africa. *Memoirs of the Botanical Survey of South Africa* 29: i–iv, 1–192.
- André Ed (1884) *Spécies des Hyménoptères d'Europe et Algérie*. Vol. 2. André and André, Beaune.
- Carpenter JM (2001) Checklist of the subfamily Masarinae (Hymenoptera: Vespidae). *American Museum Novitates* 3325: 1–39. doi: 10.1206/0003-0082(2001)325<0001:COSOTS>2.0.CO;2
- Gess FW (2007) The genus *Quartinia* Ed. André, 1884 (Hymenoptera: Vespidae: Masarinae) in southern Africa. Part I. Description of new species with complete venation. *Journal of Hymenoptera Research* 16: 211–233.
- Gess FW (2008) The genus *Quartinia* Ed. André, 1884 (Hymenoptera: Vespidae: Masarinae) in southern Africa. Part II. A new species with complete venation and with a deeply excised antennal club in the male. *Journal of Hymenoptera Research* 17: 83–5.
- Gess FW (2009) The genus *Quartinia* Ed. André, 1884 (Hymenoptera: Vespidae: Masarinae) in southern Africa. Part III. New and little known species with incomplete venation. *Journal of Hymenoptera Research* 18: 244–281.
- Gess FW (2011a) The genus *Quartinia* Ed. André, 1884 (Hymenoptera, Vespidae, Masarinae) in southern Africa. Part IV. New and little known species with complete venation. *Journal of Hymenoptera Research* 21: 1–39. doi: 10.3897/JHR.21.870

- Gess FW (2011b) The genus *Quartinia* Ed. André, 1884 (Hymenoptera, Vespidae, Masarinae) in southern Africa. Part V. New and little known species with incomplete venation. *Journal of Hymenoptera Research* 22: 29–43. doi: 10.3897/jhr.22.871
- Gess FW, Gess SK (1992) Ethology of three southern African ground nesting Masarinae, two *Celonites* species and a silk spinning *Quartinia* species, with a discussion of nesting by the sub-family as a whole (Hymenoptera: Vespidae). *Journal of Hymenoptera Research* 1: 145–155.
- Gess SK (1996) *The Pollen Wasps: Ecology and Natural History of the Masarinae*. Harvard University Press, Cambridge, Massachusetts, 340 pp.
- Gess SK, Gess FW (1989) Flower visiting by masarid wasps in southern Africa (Hymenoptera: Vespoidea: Masaridae). *Annals of the Cape Provincial Museums (Natural History)* 18: 95–134.
- Gess SK, Gess FW (2003) A catalogue of flower visiting records for aculeate wasps and bees in the semi-arid to arid areas of southern Africa. Department of Entomology, Albany Museum, Grahamstown, 529 pp.
- Richards OW (1962) A revisional study of the masarid wasps (Hymenoptera, Vespoidea). *British Museum (Natural History)*, London, 294 pp.
- Schulthess A von (1929) Contribution to the knowledge of African Masaridae (Vespoidea). *Annals and Magazine of Natural History* (10) 3: 498–511. doi: 10.1080/00222932908673003
- Schulthess A von (1930) Some more South African Masaridae (Vespoidea). *Annals and Magazine of Natural History* (10) 5: 326–330. doi: 10.1080/00222933008673140
- Schulthess A von (1935) Some more South African Masaridae (Vespoidea). *Annals and Magazine of Natural History* (10) 16: 383–390. doi: 10.1080/00222933508655058
- Schulthess A von, Scott H (1932) Some more South African Masaridae (Vespoidea), with notes on the mouthparts of the genera *Quartinia* and *Quartiniella*. *Annals and Magazine of Natural History* (10) 10: 525–536. doi: 10.1080/00222933208673605
- Turner RE (1939) Notes on the Masarid Wasps of the Genus *Quartinia*. *Annals of the Transvaal Museum* 20: 1–4.