

A New Genus of the Digger Wasp Tribe Oxybelini (Hymenoptera, Crabroninae) from Cape Province of South Africa

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Abstract—*Gessus capensis* gen. et sp. n. (Hymenoptera, Crabronidae, Oxybelini), a new species and genus of digger wasps, is described from Cape Province of South Africa. The new species belongs to the group of genera with developed metanotal squamae and unmodified abdominal tergites. In the shape of the mandibles, distinct psammophore, and ecarinate pronotum, *Gessus* gen. n. is similar to *Brimocelus* Arnold, 1927, differing from the latter in the convex pronotal collar, distinct sternaulus, not furcated metanotal squamae, and absence of the propodeal mucro. In the structure of the metanotal squamae, *Gessus* gen. n. is most similar to *Enchemicrum* Pate, 1929, differing from this genus in the developed female psammophore, convex and ecarinate pronotal collar, absence of the omaulus, and developed propodeal mucro.

According to the structure of the abdominal tergites, genera of the tribe Oxybelini can be divided into 2 groups. The first group includes forms with developed lateral carinae at least on tergites I–III (and frequently on all tergites) and flattened abdominal sternites [*Belomicrinus* Antropov, 2000, *Belomicrus* A. Costa, 1871 (s. lat.), and *Wojus* Antropov, 1999]; the second group includes genera with the unmodified tergites and convex abdominal sternites [*Belomicroides* Kohl 1899, *Brimocelus* Arnold, 1927, *Enchemicrum* Pate 1929, *Minimicroides* Antropov, 2000, *Oxybelus* Latreille, 1796, and *Pseudomicroides* Antropov, 2001]. The division mentioned is rather conditional: in contrast to the first, probably, monophyletic group, the second group includes two separate and non-sister groups of genera. These groups differ mainly in the absence (*Belomicroides*, *Minimicroides*, and *Pseudomicroides*), or presence (*Brimocelus*, *Enchemicrum*, and *Oxybelus*) of the posterolateral prominences of the metanotum (squamae) and dorsal spine of the propodeum (mucro). The present communication describes one more species of Oxybelini, *Gessus capensis* gen. et sp. n., which is attributed by the author as a species and genus belonging to the latter group of genera.

The study was based on the material provided for examination by courtesy of Dr. Friedrich W. Gess, Albany Museum, Grahamstown, South Africa (AMSA).

GESSUS Antropov gen. n.

Type species *Gessus capensis* Antropov sp. n.

Diagnosis. In both sexes, inner eye orbits somewhat converging in middle of frons; all ommatidia practically similar; ocelli unmodified, forming obtuse-angled triangle; clypeus with roundly projecting margin in female and blunt lateral angles of median lobe in male; frontal fold indistinct; occipital carina not closed, not extending to hypostomal carina; paramandibular prominence moderately elongate, but not reaching clypeus; mandible unmodified at apex, at upper margin with distinct blunt ventral tooth; palpal formula 6–4; antenna 12-segmented and 13-segmented in male and female, respectively, scapes in both sexes unmodified.

Pronotal collar widely convex, without transverse carina dorsally, situated at level of upper margin of mesoscutum; mesoscutum moderately convex, without longitudinal rugae, with fine medial costa in middle; admedial lines fine and running very closely to each other; parapsidial grooves indistinct; adlateral grooves short, inconspicuous; scutellum with fine medial costa, slightly depressed in posterior part, with lateral carinae transforming into blunt teeth ventrally; metanotum with translucent squamae, not furcated apically; mesopleura strongly convex laterally, with developed episternal suture, strongly concave in anterior and lower parts; postspiracular carina, omaulus, acetabular carina, verticillus, and precoxal teeth absent; hypersternaulus in shape of elongate pit; sternaulus developed to form short costa; metapleura weakly broadened in upper part, without distinct dorsal carina; in female, fore trochanter angularly dilating ventrally; in male,

fore trochanter unmodified; middle coxae separated, hind coxae drawn together; fore tarsus with distinct long setae dorsally in female and with weak and irregular setae in male; apical segments of tarsus not enlarged. Wing venation typical of the tribe (Fig. 1, 9); marginal cell of fore wing with truncate apex, accessory cell inconspicuous; *cu-a* antefurcal; hind wing with closed cells and developed jugal lobe. Propodeum with developed lateral carinae and median costa, roundly and triangularly dilated apically.

Abdomen distinctly punctate; tergites without lateral costae, roundly bending ventrally; in male, tergites without basal pubescent pits; tergite I flattened, with medial groove; female abdominal tergite VI with triangular pygidial area, bordered by distinct costae; sternite VI unmodified; in male, tergite VII triangular, with rounded apex and developed pygidial area.

Distribution. This is the only species recorded from Cape Province of South Africa and, according to a series of simultaneously collected specimens of both sexes, is, probably, a locally distributed, rather than rare species.

Biology. Biology is unknown, but, taking into account a level of development of the psammophore and digging comb on the fore tarsus, one may assume that females of the genus *Gessus* gen. n. make nests in friable soil, like most of species of the tribe Oxybelini.

Etymology. The new genus is named for a well-known South African specialist in aculeates, Dr. Friedrich Wolfgang Gess.

Taxonomy. At present, relations between *Gessus* gen. n. and other genera of the tribe Oxybelini are not established exactly. Evidently, it can be included into the group of genera with developed metanotal squamae and unmodified abdominal segments, together with *Brimocelus*, *Enchemicrum*, and *Oxybelus*. Of these genera, *Gessus* gen. n. is similar to *Enchemicrum* in the structure of the metanotal squamae, differing in the developed female psammophore, convex ecarinate pronotal collar, and absence of the omaulus and developed propodeal suture. At the same time, in the presence of the ventral prominence of the mandibles of both sexes, the developed psammophore on the temple, and medial costae on the mesoscutum and scutellum, *Gessus* gen. n. is most closely related to *Brimocelus*, differing from the latter in the presence of the unmodified scape, strongly convex pronotal collar, distinct sternaulus, squamae, which are not furcated apically and are distinctly separated from the medial part of the metanotum, and absence of the mucro. In

the author's opinion, *Gessus* gen. n. and *Brimocelus* form a separate group, probably, a sister group in relation to the group formed by *Enchemicrum* and *Oxybelus*. The following key demonstrates not only main differences between genera of Oxybelini with the developed metanotal squamae, but also, in the author's opinion, their probable phylogenetic relationships.

1. Metanotal squamae inconspicuous; propodeum without developed mucro; in both sexes, mandible with developed psammophore; in female, fore trochanter angularly dilated basally; pronotal collar widely convex, without transverse carina dorsally, situated at level of upper margin of mesoscutum; sternaulus developed *Gessus* gen. n.
- Metanotal squamae usually strongly developed; propodeum with developed mucro; mandible without psammophore or with sparse psammophore in female; fore trochanter unmodified; pronotal collar short, with sharp transverse carina or situated significantly lower than upper level of mesoscutum; sternaulus indistinct 2.
2. Upper margin of pronotal collar without transverse carina, situated significantly lower than upper margin of strongly convex mesoscutum; clypeus without medial costa or tooth; in both sexes, mandible with developed tooth on lower margin, and sparse but distinct psammophore in female; scape more or less depressed before apex; mesopleura without carinae, only with episternal suture; postscutellar squamae with two posterior prominences; propodeum with fine sculpture *Brimocelus* Arnold, 1927.
- Pronotal collar narrow, with sharp transverse carina, situated somewhat lower than upper margin mesoscutum; clypeus with medial costa or tooth; in females, mandible without lower tooth and psammophore (with lower tooth in males of *Enchemicrum*); scape unmodified; at least omaulus and acetabular carina developed; propodeum with coarse sculpture 3.
3. Metanotal squamae rather short, lamellar, solid; verticaulus absent; acetabular carina not connected with omaulus; scutellum and metanotum without median carina *Enchemicrum* Pate, 1929.
- Metanotal squamae triangular, elongate, frequently bifurcated apically; verticaulus developed; acetabular carina connected with omaulus; scutellum and metanotum with medial carina *Oxybelus* Latreille, 1796.

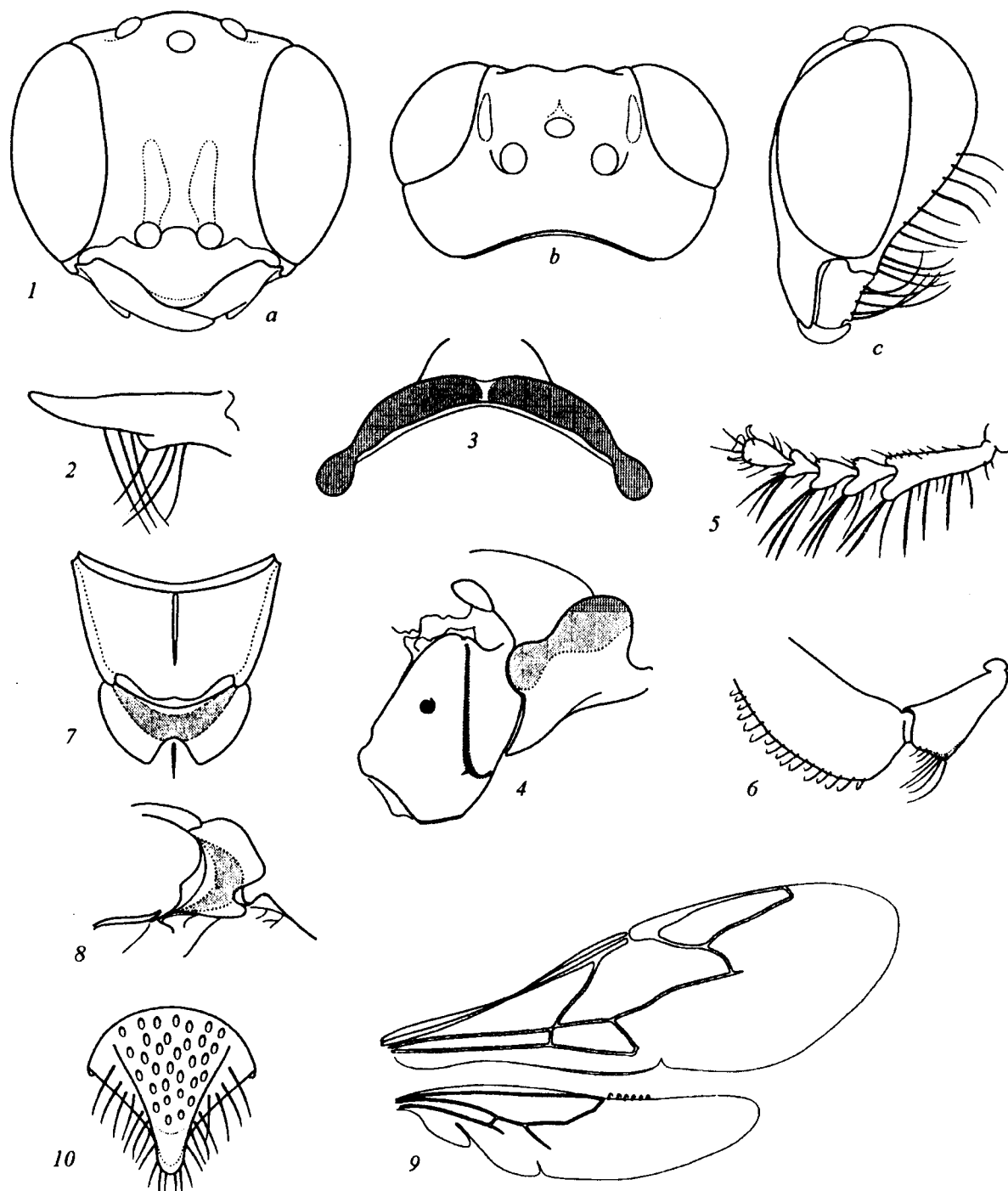


Fig. 1. *Gessus capensis* gen. et sp. n., female: (1) head [(a) frontal, (b) dorsal, and (c) lateral view]; (2) mandible, view from the outside; (3) pronotal collar, dorsal view; (4) thorax, lateral view; (5) fore tarsus, view from the outside; (6) fore trochanter and base of fore femur, ventral view; (7) scutellum and metanotum, dorsal view; (8) metanotum and upper part of propodeum, posterior-lateral view; (9) wings; (10) abdominal tergite VI, dorsal view.

(= *Notoglossa* Dahlbom 1845; *Alepidaspis* A. Costa, 1882; *Anoxybelus* Kohl, 1923; *Gonioxybelus* Pate, 1937; *Orthoxybelus* Pate, 1937; *Latroxybelus* Noskiewicz et Chudoba, 1950).

Gessus capensis Antropov sp. n.

Material. Holotype ♀: "CAPE PROVINCE: Namaqualand, Anenous 29°14'30"S, 17°34'45"E, 11-13.X.

1988 (D.W. Gess); on flowers of *Wahlenbergia* sp. (Campanulaceae)" (AMSA). Paratypes: 1 ♀, 2 ♂, same locality (AMSA).

Description. Female. Head rounded in front view (Fig. 1, 1a); inner eye orbits converging in middle of frons, diverging upward and downward; ommatidia virtually similar (somewhat larger in the most convex part of eye); frons flat on lower part and convex in upper part, with median depression deep at center and smoothed in upper part; vertex convex between and behind lateral ocelli, without tubercles behind eyes; vertex plates near inner eye orbits large, oval, and smooth (Fig. 1, 1b); ocelli forming obtuse-angled triangle; temple not enlarged, bearing row of long bent setae (Fig. 1, 1c); median lobe of clypeus convex, rounded, without median carina or tooth, not bordered by lateral teeth; mandible pointed at apex, bearing blunt tooth and long setae (2.5–3.0 times as long as their maximum width) on lower margin (Fig. 1, 2); antennae unmodified; segments of flagellum, except apical segment, shorter than their maximum width.

Pronotal collar situated practically at level of upper margin of pronotum, strongly convex, with distinct median depression, without transverse carina (Fig. 1, 3, 4); posterior outer angles of flattened propleura with tuft of 4–5 long setae pointed ventrally. Mesoscutum flat-convex; in anterior part, with strongly converged admedial lines forming medial groove reaching the middle of mesoscutum, without parapsidial grooves, with fine and short adlateral grooves; on posterior part, with weak median costa. Scutellum flat-convex, with fine median ridge and bent lateral margins transformed in posterior part into apically rounded teeth; posterior part of scutellum steeply depressed (Fig. 1, 7). Metanotum short, bearing lamellar squamae, divided medially, bent dorsally, and distinctly separated from convex median part (Fig. 1, 7, 8). Mesopleura depressed on lower and anteroventral parts, with short longitudinal costa in posterior part at place of precoxal tubercle (Fig. 1, 4). Metapleura flat, somewhat convex in upper part, without distinct dorsal carina. Legs weakly modified; fore trochanter rectangularly projecting in ventral view, bearing tuft of long setae bent forward (Fig. 1, 6); fore and middle femora flattened on lower surface; hind femur narrowed toward apex, with blunt longitudinal carina situated on upper surface before apex; outer margin of fore femur bearing row of setae directed inwards; fore tibia with rows of long setae on outer and inner surfaces; middle and

hind tibiae with 3 rows of long and coarse spines on outer surface; setae of digging comb on fore tarsus more than twice as long as corresponding tarsal segments (Fig. 1, 5). Propodeum with developed lateral carinae and rounded median pit on posterior surface, dorsally with fine median costa ovaly-triangularly dilated near metanotum (Fig. 1, 8).

Abdominal tergite I slightly depressed along median line in anterior part; apical fringes of tergite I slightly, and of tergites II–V distinctly separated from main convex part; tergite VI with median area, bordered by costae laterally and slightly compressed on apical part (Fig. 1, 10); abdominal sternites II and III somewhat flattened medially, with convex lateral tubercles; sternites IV and V uniformly convex; sternite VI unmodified.

Body sculpture formed by dense and more or less uniform punctures over shining background. Median lobe of clypeus shining, with solitary punctures at base; lower part of frons with pair of polished stripes running laterally to median line; rest of frons finely punctate; diameter of puncture equal to, or greater than distances between punctures; vertex with similar fine punctures, but with intervals between punctures twice as long as puncture diameter; posterior part of head polished ventrally. Pronotum very finely punctate, intervals between punctures approximately equal to puncture diameter; mesoscutum with very fine and dense punctation anteriorly and with coarser and sparser punctation medially; posteriorly punctures merging into longitudinal rugae; scutellum longitudinally rugose and densely punctate on anterior part; in posterior part, scutellum smooth, with sparse punctures, intervals between punctures constituting 3–4 times puncture diameter; metanotum smooth, without distinct punctation; mesopleura in the middle of mesoscutum and before episternal suture with punctation similar to that and in middle of mesonotum; on lower part, mesopleura covered with sparse punctures as far as sternaulus (intervals between punctures 3–5 times diameter of punctures); lower part of mesopleura with dense micropunctures at bases of semi-erect hairs. Propodeum irregularly rugose on the submatte background formed by micro-reticular sculpture on posterior surface and above lateral carinae; laterally, propodeum regularly and finely longitudinally costate. Abdominal tergites densely punctate (nearly as mesoscutum); in basal part, tergite VI very coarsely punctate, diameter of these punctures greater than intervals between punctures; abdominal sternites with fine and dense punctation on preapical areas.

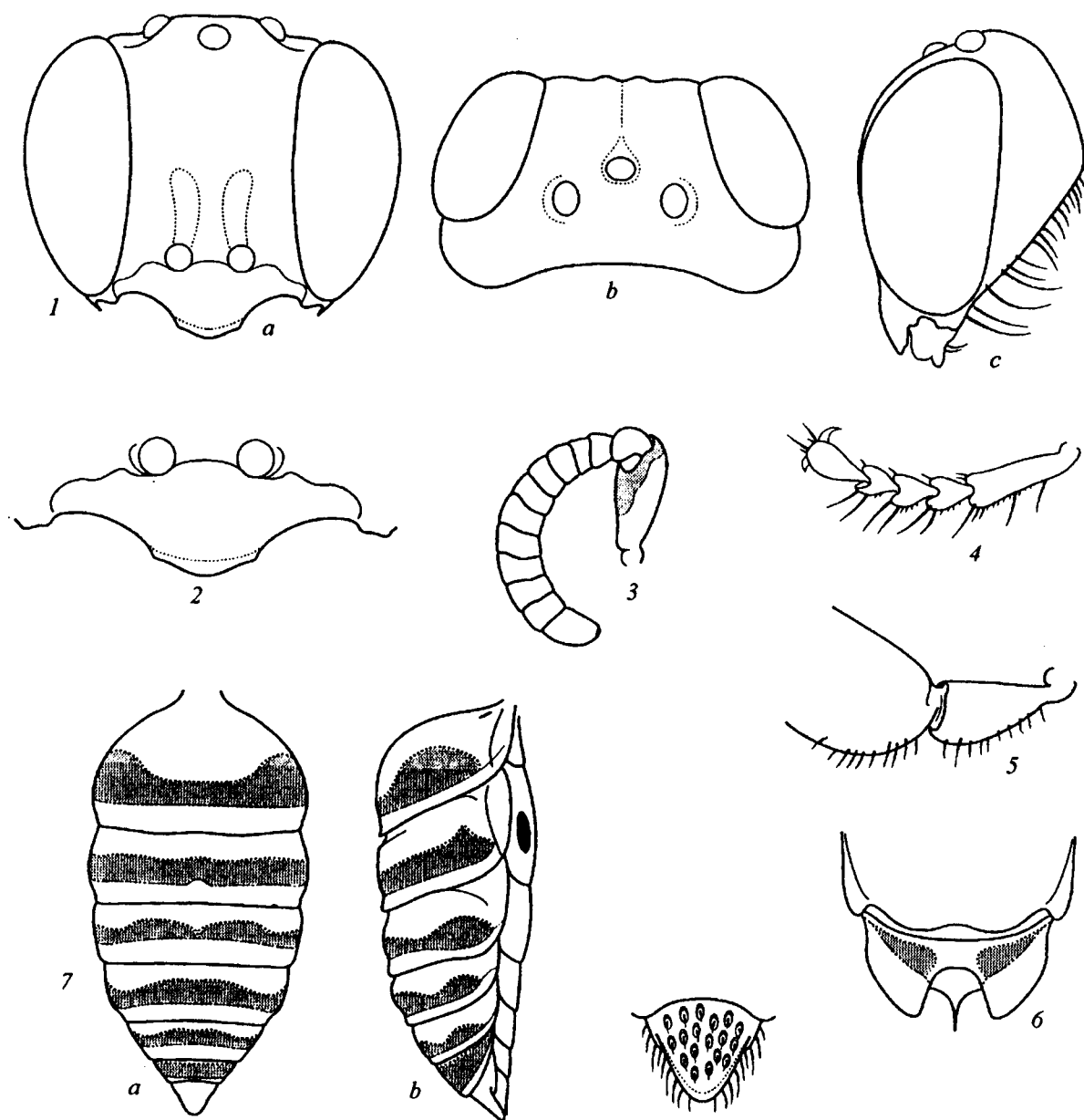


Fig. 2. *Gessus capensis* gen. et sp. n., male: (1) head [(a) frontal, (b) dorsal, and (c) lateral view]; (2) clypeus, frontal view; (3) antennae, frontal view; (4) fore tarsus, view from the outside; (5) fore trochanter and base of fore femur, ventral view; (6) posterior margin of scutellum and metanotum, dorsal view; (7) abdomen [(a) dorsal and (b) lateral view]; (8) abdominal tergite VII, dorsal view.

Body pubescence silvery, mainly short; on lateral lobes of clypeus and along inner eye orbits as far as middle of frons, pubescence formed by appressed hairs concealing sculpture; on rest of body, pubescence erect or semi-erect, not concealing surface sculpture; abdominal tergites with appressed hairs, better developed on apical-lateral parts; abdominal tergite VI with longer and coarser lateral setae; abdominal sternites nearly glabrous, with sparse appressed hairs, more distinct on lateral parts.

Body coloration combined. Head and thorax mainly black; basal 2/3 of mandible, preapical stripe on median lobe of clypeus, lower side of scape, pronotal collar and humeral calli entirely, wing plates in general and wing scales entirely, all tibiae mainly, fore and middle femora on outer surface and hind femur before apex, apical fringes on sides of scutellum and metanotum and medial part of metanotum between squamae, all whitish yellow; all trochanters, fore and middle femora on inner side and hind femur almost

entirely, small ventral spots on tibiae, and tarsi, all rufous; apical fringe of median lobe of clypeus, upper side of scape, 2nd antennal segment at apex, entire flagellum on lower side, wing plates at base and lateral fringes of scutellum, all fuscous rufous; upper part of median lobe of clypeus, apical third of mandible, upper side of antennal flagellum, and spots in middle of lateral carinae of propodeum, all fuscous. Abdomen mainly rufous; lateral spots on tergite I, adjoining in middle and dilated laterally; narrowly divided lateral spots on tergites II–IV; apical fringe of tergite V; and basal spot on tergite VI, all yellow; abdominal sternites mainly rufous; sternites II–III fuscous rufous laterally; sternite VI yellow.

Body length 5.0–5.3 mm.

Male. In sculpture, pubescence, and coloration, similar to female, except for nearly fuscous antennal flagellum (Fig. 2, 3) and metanotum bearing divided yellow spots (Fig. 2, 6); abdominal tergite I with laterally dilated yellow preapical band; tergites II and III

with lateral spots or medially narrowed continuous bands; tergites IV and VI with continuous bands; tergite VII rufous, rounded at apex (Fig. 2, 7, 8); sternite II with 2 dark fuscous lateral spots.

Other characters distinguishing male from female, evidently, associated with sex: face narrower (Fig. 2, 1a); temple more strongly developed (Fig. 2, 1b, 1c); median lobe of clypeus bordered by lateral angles (Fig. 2, 2); ventral part of frons with denser appressed pubescence concealing surface sculpture; pubescence on vertex 1.5–2.0 times as long as pubescence on lower part of frons; setae on lower part of mandible indistinct; on temple, setae shorter and sparser than in female (Fig. 2, 1c); posterior outer angles of propleura bearing short setae; fore trochanter unmodified, without tuft of setae (Fig. 2, 5); fore femur without row of long setae; fore tarsus without distinct digging comb (Fig. 2, 4).

Body length 4.4–4.7 mm.

Etymology. The species name is a toponym.