

# A new species of the *Paragus serratus*-group from Yemen (Diptera: Syrphidae)

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Key words: *Paragus binominalis*; new species; Yemen; *Paragus serratus*-group; checklist.

*Paragus binominalis* spec. nov. is described from Yemen. The *Paragus serratus*-group is redefined and a checklist of all species in this group is given.

## Introduction

The knowledge of the arthropod fauna of Yemen has increased significantly in the past years thanks to recent collecting by Antoni van Harten. Results of this long-term study have been published in a series of papers; for a bibliography see Van Harten et al. (2003). Among the material collected there are nearly 600 specimens of hoverflies, including several of a peculiar new species of *Paragus* Latreille, 1804. This new species belongs to the *P. serratus*-group, which is clearly defined within the genus by the serrate hind margin of the scutellum. The species is described here as *Paragus binominalis* spec. nov. and a checklist of all nine species of this group is given. A checklist of the syrphids of Yemen is in preparation for a separate paper.

## Material and methods

The material has been collected by A. van Harten (AvH) assisted by a team of Yemeni colleagues for the operation of Malaise and light-traps, as follows A.S. Al Absi, A. Awad, A. Drews, A.M. Hager, S. Al Haruri, M. Hubaishan, M. Mahyoub, H.M. Naser, A. Sallam and A.R. Al Yarimi. All specimens are deposited in the collection of the first author (JTS), except for the holotype and some additional paratypes, which have been deposited in the National Museum of Natural History, Naturalis, Leiden, The Netherlands (RMNH).

## The *Paragus serratus*-group

This species-group was defined by Stuckenberg (1954), who provided a key for all species of this group. Additionally, one species was described from Turkey (De Weyer, 2000). The species-group can be recognized within the genus by the following combination of characters (Stuckenberg, 1954): (i) Scutellum with hind margin deeply serrated, (ii) First abdominal tergite with a distinct, elevated, transverse ridge across the

middle of the anterior half, (iii) Second abdominal segment shorter than the first segment, (iv) Third and fourth abdominal segments carinate, (v) Ventral surface of scutellum covered with dense white pubescence, (vi) facial stripe present in the male, (vii) Mesonotum with distinct tomentum (a covering of microscopic microtrichia, also referred to as pruinescence) in all species visible as clear longitudinal stripes, except in *P. binominalis* spec. nov. which has nearly the entire mesonotum covered in tomentum, (viii) Characteristic shape of the male genitalia.

The terminology of morphological characters used in this paper follows Stuckenberg (1954), but is supplemented in the genitalia by the terms used by Vujić et al. (1999), given in brackets, in order to update to modern terminology.

*Paragus* (s. str.) *binominalis* spec. nov.  
(figs 1-5)

Type material.— Holotype: ♂, (RMNH): **Yemen**, 12 km NW of Manakhah, 15°05'N 43°42'E, 1500 m. asl., 3.vii-21.viii.2001, A. van Harten. Paratypes: 4 ♂, 4 ♀, same locality as holotype, 3.vii-21.vii.2001, 21.viii-28.x.2002, 24.vi-4.viii.2003, AvH; 1 ♂, al-Lahima, 15°24'N 43°32'E, 1200 m. asl., 16.x-31.xii.2000, AvH; 2 ♂, 2 ♀, Suq Bani Mansour, 15°06'N 43°50'E, 1500 m. asl., 14.xi-28.xii.2001, AvH.

Holotype ♂ (fig. 1)

Head.— (fig. 2). Face cream-yellow, with a faint indistinct darker median line, running from the oral margin to just above facial tubercle. Oral margin for the greater part black, except the narrower frontal part. Face and frons entirely light haired. Antenna long, third antennal segment elongated and pointed, nearly twice as long as first two segments together. Antenna brown, arista lighter orange-yellow. Eyes contiguous over a distance a little more than ocellar triangle. Eyes with three clearly visible stripes of white hairs, characteristic of the genus *sensu stricto*. Vertex dusted in front of frontal ocellus, where it is also light haired, rest of vertex black-haired. Postocular orbit dusted and light-haired, white in lower parts, turning orange-yellow in upper parts.

Thorax.— Entirely golden-yellow dusted, except for lateral margins, which are brightly shining, more or less golden-metallic; dusting reaching scutellum. Mesonotum entirely short orange-yellow haired, hairs longer on postalar calli and anterior lateral margins, where a band of long white hairs descends to the upper corner of the



Fig. 1. Holotype of *Paragus binominalis* spec. nov. – a. Dorsal view. b. Lateral view.



Fig. 2. Head of holotype of *Paragus binominalis* spec. nov. in frontal view.

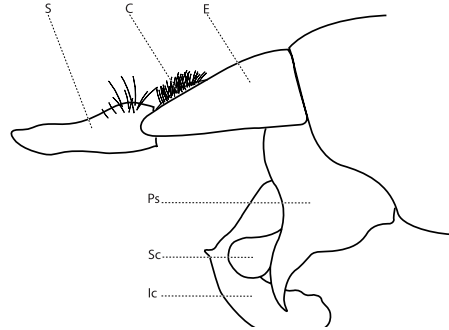


Fig. 3. Genitalia of holotype *Paragus binominalis* spec. nov. in lateral view. Abbreviations: C, Cerci; E, Epandrium; Ic, Inferior clasper (= lateral lobe of aedeagus); Ps, Penis sheath (= hypandrium); S, Stylus (= surstylus); Sc, Superior clasper (= paramere).

katepisternum. Pleurae dusted and light-haired, except for the mesepimeral sclerite, which is shining black. Scutellum black in frontal half, posterior half orange-yellow, with deeply serrate margin.

Wings.— Hyaline, covered with microtrichia except for basal cells, which are nearly entirely bare. Halteres yellow, with a white-yellow knob.

Legs.— Entirely yellow to light-brown. All femora darker at base, hind femur with darker ring in the middle. Tibiae are light yellow, darker brown in the apical half. All tarsi orange-yellow, hind tarsus being a little darker. All claws are yellow in basal half and black in the apical half.

Abdomen.— Tergite 1 more or less fused with tergite 2, as is characteristic of this species-group. Abdomen entirely translucent orange-brown. Tergite 2 and 3 with a very faint dark ring at posterior margin. Tergite 4 and 5 with a broader and more distinct dark ring. Tergites 3-5 with a white, dusted band, slightly interrupted in the middle, clearly broader on tergite 5. Tergite 2 predominantly light-haired, with a band of black hairs on faint dark ring, which is broader than the dark ring itself and partly continuous on the third tergite. Tergite 3 predominantly black-haired with only a relatively narrow band of light hairs on the dusted band. Tergite 4 similar, though at the posterior margin with a narrow band of light hairs, which is continuous on entirely light-haired tergite 5. Sternites uncolored translucent brown and with long erect light hairs. Pregenital segment dusted and white-haired, except for the part normally folded against the abdomen, which is brightly shining and without hairs.

Genitalia (fig. 3).— Epandrium in lateral view narrow and triangular shaped. Cerci not prominent. Styles (= surstylus) a little shorter than epandrium and curved a little upwards posteriorly. Penis sheath (= hypandrium) with a distinct triangular projection curved downwards and lacking the median ventral projection. Inferior claspers (= lateral lobe of aedeagus) well developed, extending ventrally into rounded lobes that project below the level of the hypandrium. Superior claspers (= paramere) droplet-shaped and borne on the triangular projection of the hypandrium.

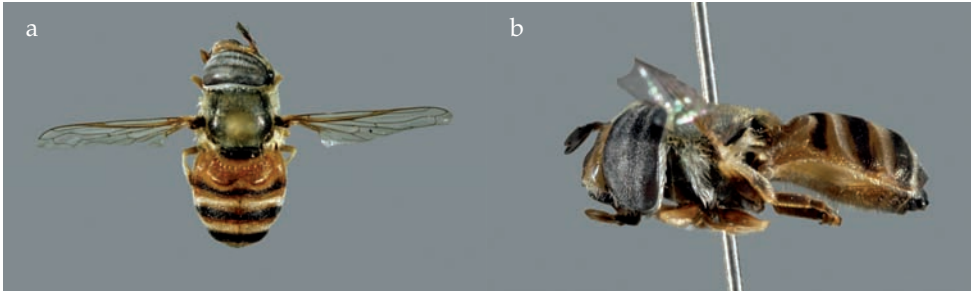


Fig. 4. Female paratype of *Paragus binominalis* spec. nov. a. Dorsal view. b. Lateral view.

Measurements.— Body 7.5 mm, wing 6.0 mm.

Variation (paratype series).— There is one specimen which has the darker median line in the face running upwards to halfway between the facial tubercle and the antenna. Antenna can be darker brown, either with a slightly lighter lower half. Legs can be darker, the dark ring on femur three may be nearly black and covering 2/3 of its length. In most paratypes the abdomen is slightly darker, with slightly more prominent dark rings.

Measurements.— Body 6.5-7.5 mm, wing 5.5-6.0 mm.

Female (fig. 4).— Similar to the male, except for the following differences: oral margin nearly entirely black, dark median line on the face running up to the antenna, or just below. Frons with a distinctive 'W'-shaped dust spot (fig. 5). Abdomen generally broader and with more defined black rings.

Measurements.— Body 5.5-8.5 mm, wing 5.0-7.5 mm.

Diagnosis.— *Paragus binominalis* spec. nov. is most closely related to *Paragus auritus* Stuckenberg, 1954, to which it will run in his key (Stuckenberg, 1954). *Paragus binominalis* spec. nov. is, however, immediately recognized within the *serratus* species-group by the nearly entirely dusted mesonotum, only the lateral margins are not dusted and are clearly golden shining. All other species have dusted longitudinal bands on the mesonotum.

Based on the genitalia it is immediately recognizable by the penis sheath (= hypandrium) that has a clear triangular projection curved downwards and lacking the median ventral projection.

Etymology.— The species is dedicated to Carl von Linné; *binominalis* refers to the binominal nomenclature proposed by him in the 10<sup>th</sup> edition of *Systema Naturae*, published in 1758.

Distribution.— Only known from Yemen.



Fig. 5. Head of female paratype of *Paragus binominalis* spec. nov., with the distinctive 'W'-shaped dusted spot on the frons.

### Checklist of the species of the *P. serratus*-group

Up to now eight species were known in the *serratus* species-group, three of which only occur in the Oriental region, three are confined to the African continent, one is known from Africa and east towards India and Nepal, and one is only known from Turkey (Stuckenberg, 1954; de Weyer, 2000). *Paragus binominalis* spec. nov. is the ninth species of this species-group and is only known from Yemen thus far.

*P. auritus* Stuckenberg, 1954: 418.

Distribution.— Afrotropical and Oriental region.

*P. azureus* Hull, 1949: 729.

Distribution.— Afrotropical region and known from Turkey (Hayat & Claussen, 1997).

*P. binominalis* spec. nov.

Distribution.— Yemen.

*P. capricorni* Stuckenberg, 1954: 399.

Distribution.— Afrotropical region.

*P. crenulatus* Thomson, 1868: 503.

Distribution.— Oriental region.

*P. faesi* De Weyer, 2000: 150.

Distribution.— Turkey.

*P. pusillus* Stuckenberg, 1954: 401.

Distribution.— Afrotropical region.

*P. serratus* (Fabricius, 1805): 186 (*Mulio*)

Distribution.— Oriental region.

*P. yerburiensis* Stuckenberg, 1954: 415.

Distribution.— Oriental region.

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