

## The genus *Phaestacoenitus* Smits van Burgst (Hymenoptera: Ichneumonidae: Phrudinae) in Israel, with description of a new species and an identification key

DMITRY R. KASPARYAN<sup>1</sup> & WOLF S. KUSLITZKY<sup>2</sup>

<sup>1</sup>Zoological Institute, Russian Academy of Sciences, 1 Universitetskaya Emb., St Petersburg, 199034 Russia. E-mail: kasparyan@yandex.ru

<sup>2</sup>The Steinhardt Museum of Natural History and Research Center, Tel Aviv University, Tel Aviv, 69978 Israel. E-mail: wkuslitzky@yahoo.com

### ABSTRACT

A review of the genus *Phaestacoenitus* Smits van Burgst, 1913 in Israel is presented. A new species, *Ph. fuscipennis* n. sp., is described and *Ph. longicaudus* n. stat. is recorded from Israel for the first time; both species are illustrated along with the type species of genus, *Ph. demeyerei* Smits van Burgst, 1913. All known *Phaestacoenitus* species are keyed.

KEYWORDS: Ichneumonidae, *Phaestacoenitus*, parasitic wasps, new species, identification key, Israel, Middle East.

### INTRODUCTION

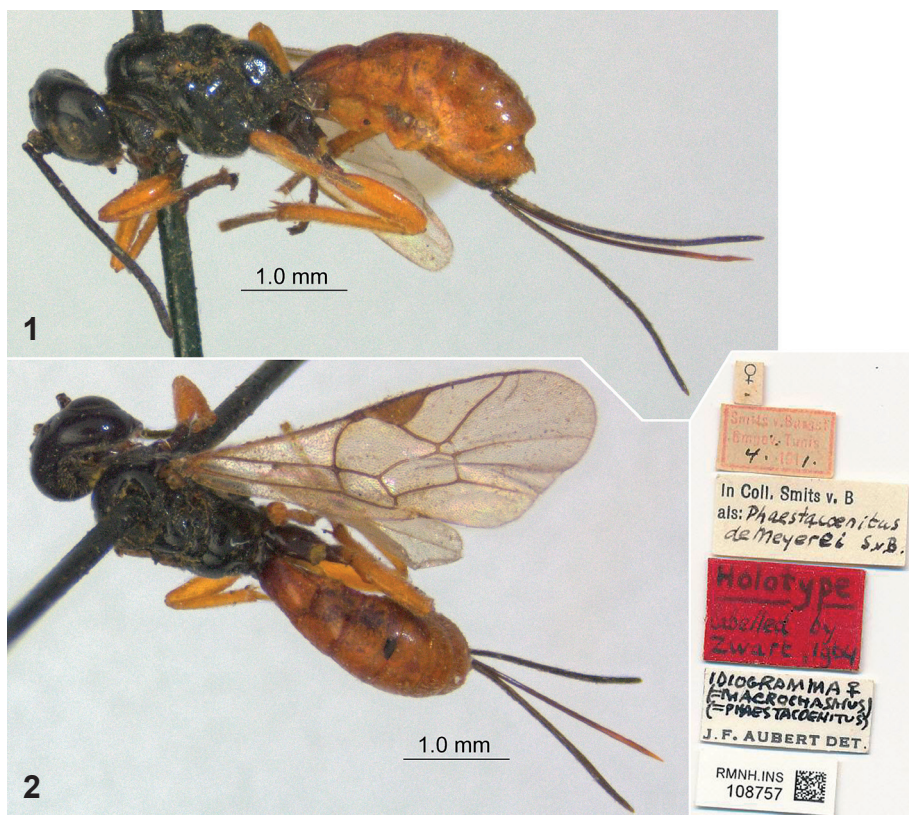
*Phaestacoenitus* Smits van Burgst, 1913 is a small Palearctic genus belonging in the subfamily Phrudinae (Ichneumonidae). All species of the genus inhabit semi-arid and arid landscapes from Tunisia and Israel to Turkey, the Caucasus, Iran and Middle Asia (Kasparyan 1983; Ghahari *et al.* 2010; Kolarov & Calmasur 2011; Barahoei *et al.* 2012; Ghahari & Jussila 2015).

Hosts of the *Phaestacoenitus* parasitic wasps are so far unknown. The wasps were collected mainly on flowering plants mostly in April–May. The genus was reviewed by Kasparyan (1983). The present paper reports on two species from Israel, *Ph. fuscipennis* n. sp. described herein and *Ph. longicaudus* Kasparyan, 1983 recorded for the first time in the country. The status of the latter is raised here to the species level from subspecies of *Ph. niger* Kasparyan, 1983.

The seven known species of *Phaestacoenitus* can be split into three groups, as follows.

(1) *bidentator* species group includes a single species, *Ph. bidentator* Aubert, 1979, which differs from all congeners by having a distinctly bidentate mandible and a very long ovipositor (1.3× as long as body).

(2) *demeyerei* species group comprises *Ph. demeyerei* Smits van Burgst, 1913 (Figs 1, 2), *Ph. caucasicus* Kasparyan, 1983, *Ph. rufus* Kasparyan, 1983 and *Ph. fuscipennis* n. sp., and is characterised by having the polished face with punctures (Fig. 3), abdomen and legs reddish (sometimes except for black coxae and trochanters), and the flagellum with 22–30 segments; the wasps are usually larger and more stocky.

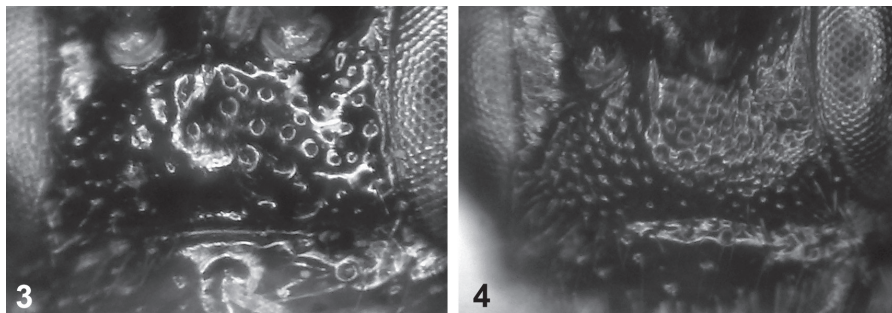


**Figs 1, 2:** *Phaestacoenitus demeyerei*, holotype, habitus, lateral (1) and dorsal (2) views, and associated labels.

(3) *niger* species group (*Ph. niger niger* Kasparyan, 1983, *Ph. niger nitidus* Kasparyan, 1983 and *Ph. longicaudus* Kasparyan, 1983, n. stat.) is characterised by having the face usually mat and granulate with punctures (Fig. 4), abdomen black, legs predominantly black and brown, and flagellum usually with 19–21 segments (rarely up to 24 segments); the wasps are usually smaller and more gracile.

#### MATERIALS AND METHODS

This work is based on a large *Phaestacoenitus* collection in the Zoological Institute of the Russian Academy of Sciences, St. Petersburg (ZISP) and the collection of the Steinhardt Museum of Natural History, Tel Aviv University, Israel (TAUI). The morphological terminology follows mainly Townes (1969). Taxonomy follows the *Taxapad* catalogue (Yu *et al.* 2016). Photographs were taken in ZISP with a Canon EOS 70D digital camera attached to an Olympus SZX10 stereomicroscope, and images were stacked with Helicon Focus 6 Pro software.



**Figs 3, 4:** Face of *Phaestacoenitus* spp.: (3) *Ph. caucasicus* (paratype ♂, Azerbaijan); (4) *Ph. longicaudus* (♀, Israel).

#### TAXONOMY

Genus *Phaestacoenitus* Smits van Burgst, 1913

**Type species:** *Phaestacoenitus demeyerei* Smits van Burgst, 1913. Monobasic.

The genus may be distinguished from other members of the subfamily Phrudinae by the suite of the following characters: a long unidentate mandible (except for *Ph. bidentator* with bidentate mandibles), a distinct (in both sexes) sensorial pit with one inner sensilla on the ventral side of the apical half of flagellomeres 4–6 (for details see Gokhman & Krutov (1996)), 3-segmented labial palpus, reduction of propodeal carinae, an oblique pentagonal areolet, and a rather long ovipositor. First metasomal segment with glymmae, its sternite very short.

#### *Phaestacoenitus fuscipennis* n. sp.

(Figs 5, 6)

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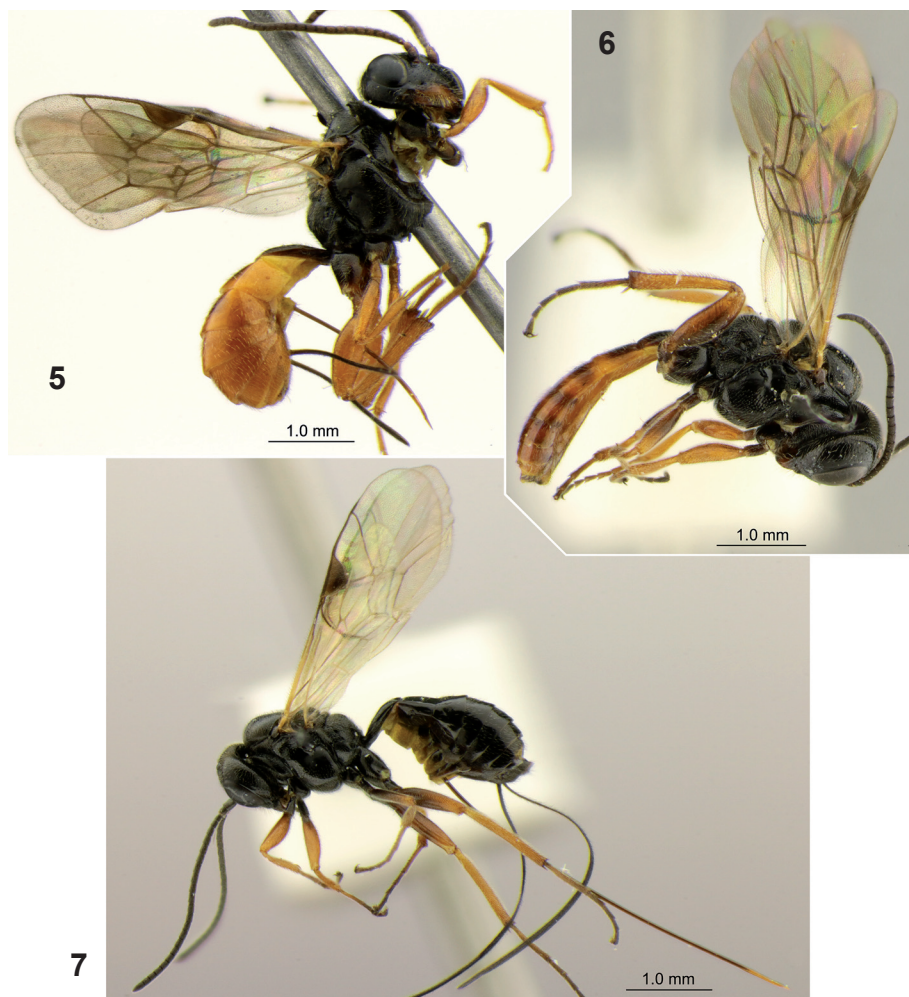
**Etymology:** From Latin *fuscus* (dark, dusky) and *penna* (feather), in reference to infusate wings in males and females of the new species.

**Diagnosis:** *Ph. fuscipennis* n. sp. belongs to the *demeyerei* species group and differs from other members of the group in having distinctly infusate wings and 22 flagellomeres ( $\geq 24$  in other species); as well as by the characters listed in the key.

**Description: Female** (holotype, Fig. 5). Fore wing 3.7 mm long. Flagellum 2.3 mm (about 0.6 as long as fore wing), with 22 flagellomeres. Temples weakly swollen, in dorsal view almost parallel beyond eyes. Malar space distinct, about 0.9× as long as diameter of middle flagellomeres. Face smooth and shiny, punctures rather coarse and scarce; central area of face above clypeus almost impunctate, subpolished, with weak traces of very fine granulation. Frons covered with uniformly dense and moderately large punctures; punctures on temple finer and sparser. Clypeus polished with coarse punctures at base and in lateral corners; its lower margin

slightly depressed and covered on depression with dense long setae (setae 0.5–0.7× as long as height of clypeus).

Thorax polished with moderately large punctures; speculum large, impunctate; mesoscutum on hind half of lateral lobes very scarcely punctate; metapleurum sparsely punctate, separated from propodeum by distinct carina. Propodeum on basal half without any carinae and with distinct and rather dense punctures, except laterally (on pleural area); its three apical areas almost impunctate and delimited anteriorly by very weak apical transverse carina (its lateral ends distinct); median



**Figs 5–7:** *Phaestacoenitus* spp., habitus, lateral view: (5, 6) *Ph. fuscipennis* n. sp., female holotype (5) and male paratype (6); (7) *Ph. longicaudus*.

apical area high and bordered laterally by strong subparallel longitudinal carinae. Fore wing with pterostigma short and wide (about  $2.3\times$  as long as wide); radial cell about  $1.6\times$  as long as wide; *R1* and *R2* almost straight and meeting at right angle. *R2* about  $1.9\times$  as long as *R1*. Areolet shortly sessile above; distal *rm* obliterated except for anterior third. Second recurrent vein with long bulla at basal 0.55. Nervulus strongly inclivous, almost interstitial. Nervellus unbroken. Hind femur  $2.8\times$  as long as wide. Inner (longest) spur of hind tibia slightly curved at apex, about as long as apical width of tibia. Ratio of lengths of hind tarsal segments 3.9:1.7:1.4:1.0:1.6; inner claw of hind tarsus with 1 or 2 short triangular teeth before base.

Abdomen polished with very fine and sparse punctures and with sparse, moderately long hairs. First tergite  $1.75\times$  as long as wide, without dorsal longitudinal carinae and with short dorsolateral carina above base of glymma; sclerotized part of first sternite is very short, about  $0.2\times$  as long as length of tergite. Second tergite  $0.57\times$  as long as wide. Epipleuron of tergite 2 and 3 large, not separated from tergite. Ovipositor straight at basal 0.6, beyond middle weakly upcurved; ovipositor sheath as long as basal abdominal segments 1–3 combined and  $1.2\times$  as long as hind tibia.

Antennae blackish. Head black with clypeus (except for extreme base) and mandibles reddish brown. Thorax entirely black, tegulae brownish black. All coxae blackish, hind coxa ventrally at apical half reddish brown; legs beyond coxae uniformly light reddish, (2)3–5 hind tarsomeres fuscous. Wings fuscous, pterostigma blackish. Abdomen light reddish; tergite 1 blackish with hind margin reddish; tergites 2 and 3 with a broad blackish dorsal spot in basal half. Sternites light yellow.

**Male** (paratype) (Fig. 6). Largely similar to female. Fore wing 3.9 mm, flagellum about 2.5 mm long. Flagellomeres 4–6 possibly with sensory pit discernible as small white dot in apical half of each flagellomere (similar pit in female not marked with white). Malar space about  $1.2\times$  as long as diameter of middle flagellomeres (a little longer than in female). Clypeus with dense coarse punctures at base and with brush of dense long setae; setae  $0.3\text{--}0.4\times$  as long as height of clypeus (a little shorter than in female). Hind femur  $2.7\times$  as long as wide. Ratio of lengths of hind tarsal segments 3.9:1.9:1.5:1.1:1.6. First tergite of metasoma about  $2\times$  as long as wide; its basal 0.7 moderately coarsely punctate, its apical 0.3 polished, impunctate. Second tergite dorsally with very scarce fine setiferous punctures, setae rather long. Subsequent tergites with similar scarce punctures and long setae. In colouration male differs from female in having all trochanters blackish and middle and hind femora brownish in basal 0.3–0.5.

**Holotype:** ♀ **Israel:** *Coastal Plain:* Herzliya hill [32°11'N 34°49'E], 18.iv.2008, A. Freidberg, Malaise trap (TAUI).

**Paratype:** 1♂, labelled as holotype, but 17.iv.2010 (ZISP).

**Distribution:** Israel.

*Phaestacoenitus longicaudus* Kasparyan, 1983, n. stat.

(Fig. 7)

*Phaestacoenitus niger longicaudus* Kasparyan, 1983: 155 (♀♂; holotype ♀, Azerbaijan, Maraza, 19.v.1972, D. Kasparyan (ZISP)).

**Diagnosis:** Fore wing 2.7–3.4 mm, antenna with 19–21 segments. Body, coxae and trochanters black. Ovipositor almost straight, long, ovipositor sheath 0.8–1.1× as long as body. Differences from *Ph. niger* Kasparyan, 1983 are given in key.

**Material examined:** **Azerbaijan:** 3♀ 17♂, Maraza, 19.v.1972, D. Kasparyan (ZISP); 1♂, 5 km N Shamakhi, 19.v.1972, D. Kasparyan (ZISP). **Israel:** 1♂, Degania A[lef] [32°42'30"N 35°34'30"E], 25.iii.1942, Y. Palmoni (TAUI); 1♀, Bet Shemesh [31°45'N 34°59'E], 17.iv.1974, D. Furth (TAUI); 5♀ 2♂, Bet Guvrin [31°37'N 34°54'E], 4.iv.2007, D. Gerling (TAUI); 1♀, Mishmar Dawid [31°49'N 34°54'E], 29.iii.2013, W. Kuslitzky (TAUI).

**Key to species of *Phaestacoenitus*, based on females**

- 1 Mandible distinctly bidentate. Ovipositor sheath 1.3× as long as body (about 4× as long as hind tibia). [Armenia, Turkey] ..... *bidentator* Aubert
- Mandible unidentate, if inconspicuously bidentate then ovipositor shorter ..... 2
- 2 Abdominal tergites red (at least tergites 2 and 3 predominantly reddish). Face polished, with punctures (Fig. 3)..... 3
- Abdominal tergites completely black. Face usually mat and granulate with punctures (Fig. 4) ..... 6
- 3 Wings fuscous. Ovipositor sheath as long as abdominal tergites 1–3 combined (Fig. 5); ovipositor slightly upcurved. Flagellum with 22 segments. Legs reddish beyond the black coxae. [Israel]..... *fuscipennis* n. sp.
- Wings subhyaline. Ovipositor sheath usually longer (except for *Ph. rufus* with straight ovipositor). Flagellum with 24–30 segments..... 4
- 4 Coxae and trochanters black. Ovipositor sheath somewhat curved and slightly longer than abdomen (Fig. 1). [Tunisia] ..... *demeyerei* Smits van Burgst
- Coxae blackish or reddish, trochanters reddish ..... 5
- 5 Ovipositor straight, ovipositor sheath as long as abdominal tergites 1–3 combined. Mesoscutum evenly punctate. [Middle Asia]..... *rufus* Kasparyan
- Ovipositor upcurved, ovipositor sheath more or less as long as abdomen. Mesoscutum on lateral lobes with large polished impunctate area. [Transcaucasia] ..... *caucasicus* Kasparyan
- 6 Ovipositor sheath about as long as body (about 3× as hind tibia). [Caucasus, Israel]..... *longicaudus* Kasparyan, n. stat.
- Ovipositor sheath about 0.6–0.7× as long as body (about 2× as hind tibia) .... 7
- 7 Face and frons matte, distinctly granulate. [Middle Asia].....
- ..... *niger niger* Kasparyan
- Face and frons smooth, shiny, without distinct granulation. [SE Europe: Russia, Daghestan]..... *niger nitidus* Kasparyan

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