

A new species of the bee genus *Colletes* Latreille, 1802 (Hymenoptera: Colletidae) from Yemen

Новый вид пчел рода *Colletes* Latreille, 1802 (Hymenoptera: Colletidae) из Йемена

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Abstract. *Colletes leleji* Kuhlmann et Proshchalykin, **sp.n.** is described and illustrated from Yemen, increasing the number of species reported from the region to nine.

Резюме. Дано описание и иллюстрации нового вида *Colletes leleji* Kuhlmann et Proshchalykin, **sp.n.** из Йемена. Число обнаруженных в Йемене видов *Colletes* увеличено до 9.

Introduction

The bee fauna of the Arabian Peninsula is generally poorly investigated and only in the last 15 years there is a growing number of studies covering bees from that area including the description of many new species [e.g. Kuhlmann, 2004; Patiny, Michez, 2007; Dathe, 2009; Pesenko, Pauly, 2009; Alqarni et al., 2014; Pauly, 2014, and the references cited therein]. Our knowledge of the bees of Yemen is particularly thin although the SW corner of the Arabian Peninsula and neighbouring Ethiopia is of special biogeographic interest as crossroads of Afrotropical and Palaearctic faunas [Patiny, Michez, 2007; Patiny et al., 2009; Engel, Dathe, 2011; Kuhlmann, Pauly, 2013]. This also applies to the genus *Colletes* Latreille, 1802 with only eight species reported from Yemen so far, three of them (*C. guichardi* Kuhlmann, 2003, *C. hiekejuniore* Kuhlmann, 2003, *C. jemeniticus* Kuhlmann, 2015) described since 2003 [Kuhlmann, 2003; Kuhlmann, Proshchalykin, 2015]. The majority of the Yemenite bees have a Palaearctic origin, with two of them endemic to the islands of Sokotra (*C. inconspicuus* Kirby, 1900, *C. hiekejuniore*), that is biogeographically distinct, and one to the high mountains of Yemen (*C. yemensis* Noskiewicz, 1929), while the other three (*C. maroccanus* Warncke, 1978, *C. perezi* Morice, 1904, *C. salsolae* Cockerell, 1934 [= *omanus* Kuhlmann, 2003])

are more widespread in the Arabian Peninsula and beyond [Kuhlmann, 2004, 2014; Kuhlmann, Proshchalykin, 2015]. *Colletes jemeniticus* and *C. guichardi* have their closest relatives in the Afrotropical region [Kuhlmann, 2003; Kuhlmann, Proshchalykin, 2015].

When Kuhlmann and Pauly [2013] described *C. langano* Kuhlmann, 2013 from Ethiopia based on females only, a single male from Yemen was assumed to belong to this species. However, because of the uncertainty it was not included in the type series. Based on a comprehensive study of specimens in the collections of the Zoological Institute of the Russian Academy of Sciences, St Petersburg, Russia [ZISP], and the Zoological Museum of the Moscow State University, Moscow, Russia [ZMMU], more specimens of the same collector and from the same region in Yemen were discovered, including both males and females. After this additional material was examined it turned out to belong to a new species closely related but different from *C. langano*.

We here describe this new species of *Colletes* from Yemen that we dedicate to well-known Russian entomologist, expert for Aculeata, Professor Arkadiy S. Lelej from Vladivostok, a colleague and friend for many years.

Materials and methods

Terminology for the description of species is based on Michener [2007] for general morphology. Puncture density is expressed as the relationship between puncture diameter (d) and the space between them (i), such as $i = 1.5d$ or $i < d$. The following abbreviations were used for morphological structures: T — metasomal tergum, S — metasomal sternum, Bl — body length. Body length was measured from the vertex to the of metasoma apex.



Fig. 1. *Colletes leleji* Kuhlmann et Proshchalykin, sp.n., paratype, female: a — habitus, lateral view; b — head; c — mesoscutum and scutellum; d — T1–T2. Scale bar: 1.0 mm.

Рис. 1. *Colletes leleji* Kuhlmann et Proshchalykin, sp.n., паратип, самка: а — общий вид сбоку; б — голова; с — скутум и скутеллум; д — Т1–Т2. Масштабная линейка: 1,0 мм.

Colletes leleji Kuhlmann et Proshchalykin, sp.n.

Figs 1, 2.

Material. Yemen: Holotype, male, Sanaa [44°12' E, 15°21' N], 27.X.1931, W. Filippov leg. [ZMMU] (this specimen was previously identified as *C. langano*) Paratypes: 1♀, idem, 30.VIII.1930 [ZISP]; 2♀♀, idem, 10.X.1931 [ZISP; Coll. Kuhlmann]; 1♂, idem, 1.XI.1931 [Coll. Kuhlmann].

Description. Female. Bl = 10.0–13.0 mm.

Head. Head wider than long (ratio width : length = 1.35–1.45 : 1). Integument black except mandible in the middle, sometimes apex dark reddish brown. Face except clypeus (with sparse pilosity) densely covered with long, whitish grey to yellowish brown, erect hairs, vertex with blackish hairs (Fig. 1b). Clypeus with a shallow and broad longitudinal median depression, supraclypeal area convex in profile. Clypeus finely and densely punctate ($i < 0.5d$), in median depression punctures slightly finer and denser; surface between punctures smooth and shiny (Fig. 1b). Malar area medially short, about 1/4 as long as width of mandible base, finely striate and punctate. Antenna black, flagellum ventrally blackish brown. Mesosoma. Integument black. Mesoscutal disc between punctures smooth and shiny; disc densely punctate ($i = 0.5–1.0d$). Scutellum anteriorly almost impunctate with more dense punctation apically, surface smooth and shiny (Fig. 1c). Mesoscutum, mesepisternum and propodeum covered with orange brown, erect hairs (Fig. 1a, c). Wings. Slightly yellowish; wing venation dark brown. Legs. Integument black to dark reddish-brown. Vestiture whitish to greyish, scopa white. Metasoma. Integument black except

T1, sometimes T2 and T3 apicomediaally dark red; apical depressed tergal margins reddish brown to yellowish translucent (Fig. 1d). T1 anteriorly densely covered with long, erect white hairs; T2 with broad basal hair band; apical tergal hair band of T1 narrow, on the following terga broad (Fig. 1a, d). Terga densely and finely punctate ($i < d$), between punctures smooth and shiny (Fig. 1d).

Male. Bl = 9.0–10.0 mm.

Head. Head wider than long (ratio width : length = 1.3 : 1). Integument black except tip of mandible partly dark reddish brown. Face densely covered with long, yellowish brown, erect hairs. Malar area medially about half as long as width of mandible base, finely striate. Antenna black, ventrally dark brown. Mesosoma. Integument black. Mesoscutal disc between punctures smooth and shiny; disc densely punctate ($i = 0.5–1.0d$). Scutellum anteriorly impunctate with denser punctation apically, surface smooth and shiny. Mesoscutum, scutellum, metanotum, mesepisternum and propodeum covered with long, yellowish brown erect hairs (Fig. 2a). Wings. Slightly yellowish brown; wing venation brown. Legs. Integument dark reddish brown. Vestiture yellowish brown. Metasoma. Integument black except elevated apical margin of T1 yellowish translucent and T1–T4 apicomediaally dark red; apical margins of T2–T5 brownish translucent (Fig. 2b). T1 and disc of T2 sparsely covered with long, erect yellowish white hairs (Fig. 2b); apical tergal hair bands broad (Fig. 2a, b). Terga densely and finely punctate ($i < d$), between punctures smooth and shiny (Fig. 2b). Terminalia. Genitalia and S7 as illustrated (Figs 2c–d).

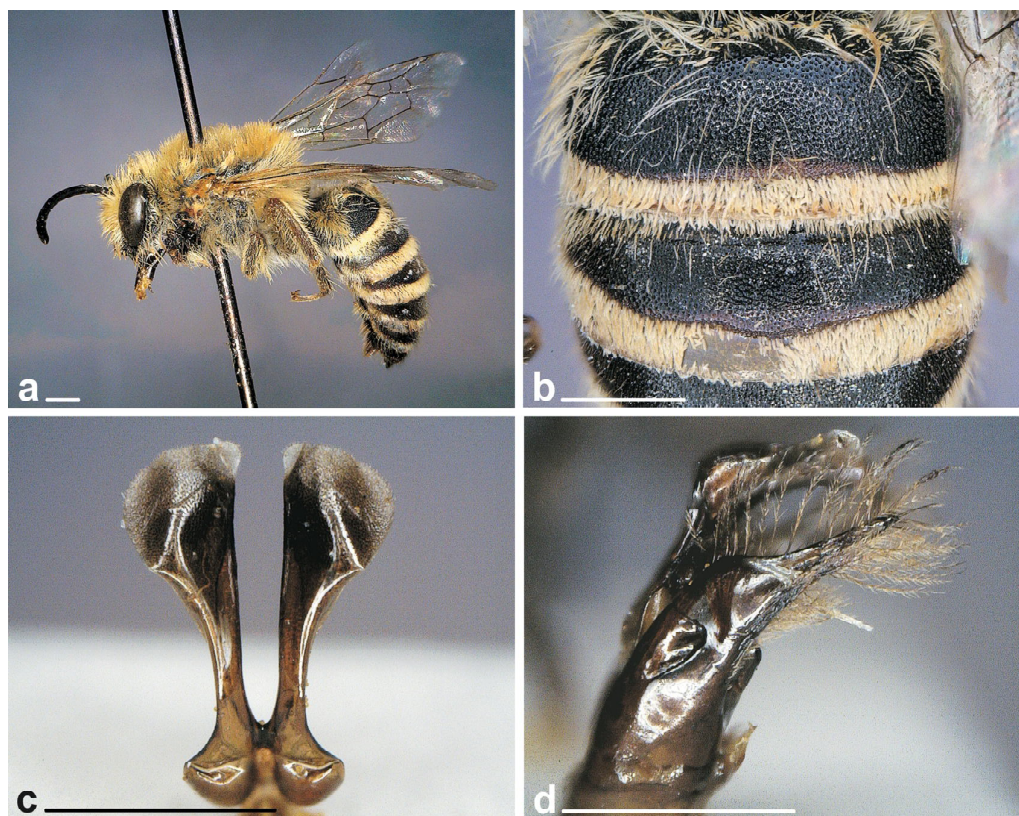


Fig. 2. *Colletes leleji* Kuhlmann et Proshchalykin, **sp.n.**, holotype, male: a — habitus, lateral view; b — T1–T2; c — S7, dorsal view; d — gonostylus, lateral view. Scale bar: 1.0 mm.

Рис. 2. *Colletes leleji* Kuhlmann et Proshchalykin, **sp.n.**, голотип, самец: а — общий вид сбоку; б — T1–T2; в — S7 сверху; д — гоностиль сбоку. Масштабная линейка: 1.0 мм.

Etymology. The species is dedicated to Arkadiy S. Lelej, Vladivostok, Russia, to celebrate his 70th birthday.

Diagnosis. The female of *C. leleji* sp.n. is characterized and distinguishable from other species of this group (see Remarks below) and all *Colletes* of the Arabian Peninsula by a combination of the following characters: mesoscutum densely and extensively covered with yellowish brown hairs (Fig. 1c) (mixed with more or less abundant dark brown to blackish hairs on the mesoscutal disc in *C. guichardi*, *C. langano*, *C. rothschildi*, *C. ruficollis* and *C. somereni*); integument of T1–T3 medio-apically with narrow dark red stripe black (black in *C. langano*, *C. rothschildi* and most specimens of *C. somereni*); disk of T1 finely and densely punctate (Fig. 1d) (with more dispersed and/or coarser punctures in *C. langano*, *C. missionum*, *C. ruficollis* and *C. somereni*).

The male of new species is best characterized and identifiable by its long and slender, apically slightly broadened and truncate S7 (Fig. 2c) (in the species-group apically much broader and emarginate in *C. guichardi* and *C. missionum*; shorter and more clavate in *C. ruficollis*; almost parallel-sided in *C. somereni* whose hind basitarsus in addition is conspicuously broadened and has a broad fringe of long hairs). The male of *C. langano* is unknown.

General distribution. Only known from the type locality Sanaa (Yemen).

Floral hosts. Unknown.

Seasonal activity. August to November (first–last observations).

Remarks. The form of the male S7 suggests that *C. leleji* sp.n. might be related to the Palearctic species in the *Col-*

letes nigricans-group and belongs to a group of five species that are distributed in sub-Saharan Africa (*C. langano* Kuhlmann, *C. missionum* Cockerell, 1932, *C. rothschildi* Vachal, 1909, *C. ruficollis* Friese, 1925, and *C. somereni* Cockerell, 1947) and one in the Arabian Peninsula (*C. guichardi* Kuhlmann) [Kuhlmann, 2003]. This species-group is characterized by the propodeum laterally densely covered with short appressed hairs that at least partly hide the sculpture of the integument, and the more or less extensive dark red markings of the clypeus, labrum and in most species parts of the abdominal terga. This combination of characters is unknown in the new species.

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References

- Alqarni A.S., Hannan M.A., Engel M.S. 2014. A new species of the cleptoparasitic bee genus *Thyreus* from northern Yemen and southwestern Saudi Arabia (Hymenoptera, Apidae) // Zookeys. No.428. P.29–40.
- Dathe H.H. 2009. Order Hymenoptera, superfamily Apoidea. Families Colletidae, Andrenidae, Halictidae, Melittidae,

- Megachilidae and Apidae // Arthropod Fauna of the UAE. Vol.2. P.335–432.
- Engel M.S., Dathe H.H. 2011. Order Hymenoptera, family Apidae, Tribe Allodapini, genus *Braunsapis* // Arthropod Fauna of the UAE. Vol.4. P.630–635.
- Kuhlmann M. 2003. Zur Kenntnis paläarktischer Bienen der Gattung *Colletes* Latr. Mit Beschreibung neuer Arten (Hymenoptera: Apidae: Colletinae) // Linzer Biologische Beiträge. Bd.35. S.723–746.
- Kuhlmann M. 2004. The bee genus *Colletes* Latreille (Hymenoptera: Apidae: Colletinae) in the Arabian Peninsula, including the description of the female of *C. arabicus* // Zoology in the Middle East. Vol.32. P.79–84.
- Kuhlmann M. 2014. Order Hymenoptera, family Colletidae. Supplementary records of the genus *Colletes* Latreille // Arthropod Fauna of the UAE. Vol.5. P.649–656.
- Kuhlmann M., Pauly A. 2013. The bee genus *Colletes* Latreille 1802 in Ethiopia (Hymenoptera: Apoidea: Colletidae) // Zootaxa. No.3693(2). P.267–292.
- Kuhlmann M., Proshchalykin M.Yu. 2015. New and remarkable Asian and North African species of *Colletes* Latreille (Hymenoptera: Colletidae) // Zootaxa. No.4028(1). P.81–101.
- Michener Ch.D. 2007. The bees of the world. Second edition. Baltimore, Maryland: The John Hopkins University Press. 953 p.
- Patiny S., Michez D. 2007. Biogeography of bees (Hymenoptera, Apoidea) in Sahara and the Arabian deserts // Insect Systematics and Evolution. Vol.38. P.19–34.
- Patiny S., Michez D., Kuhlmann M., Pauly A., Babier Y. 2009. Factors limiting the species richness of bees in Saharan Africa // Bulletin of Entomological Research. Vol.99. P.337–346.
- Pauly A. 2014. Les Abeilles des Graminées ou *Lipotriches* Gerstaecker, 1858, sensu stricto (Hymenoptera: Apoidea: Halictidae: Nomiinae) de l'Afrique subsaharienne // Belgian Journal of Entomology. Vol.20. P.1–393.
- Pesenko Y.A., Pauly A. 2009. A contribution to the fauna of the Nomioidine bees of the Arabian Peninsula (Hymenoptera: Halictidae) // Fauna of Arabia. Vol.24. P.217–236.

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