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A revision of the Palearctic species of the genus *Crabro* Fabricius, 1775 (Hymenoptera: Spheciformes: Crabronidae), with reclassification of the world subgenera

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Abstract

The genus *Crabro* Fabricius, 1775 includes 40 Palearctic species belonging to nine subgenera. Two subgenera are described as new: *Deserticrabro* and *Prothyreopus*, as well as four new species: *Crabro* (s. str.) *flavidens*, *C.* (s. str.) *karakotovi*, *C.* (s. str.) *pulawskii* and *C.* (*Prothyreopus*) *ornatus*. The females of *Crabro caspicus* (F. Morawitz, 1888) and *C. femoralis* F. Morawitz, 1892, and the males of *C. pubens* Marshakov, 1976 and *C. marshakovi* Kazenas, 1984 are described for the first time. Lectotypes are designated for *Crabro uljanini* Radoszkowski, 1877, *C. filiformis* Radoszkowski, 1877 and *C. malyshevi* L. Ahrens, 1933. The subgenus *Parathyreopus* Kohl, 1915 is restored from synonymy. Two new synonymies are proposed: *Crabro filiformis* Radoszkowski, 1877 = *C. carabili* Nesterov, 1994 and *C. peltarius* (Schreber, 1784) = *C. interruptus* Stephens, 1829. *Crabro altaicus* F. Morawitz, 1892 is recognized as a valid species and is provided with an additional diagnosis. *Crabro bilbaoensis* Leclercq, 1960 is raised to full species status. Identification keys to the world subgenera (based on males) and to both sexes of the Palearctic species are provided.

Key words: digger wasps, Crabroninae, identification key, taxonomy, lectotype, new records

Introduction

The genus *Crabro* Fabricius, 1775 comprises 91 species distributed across the following regions: northern Holarctic (one species), Nearctic (47 species), Neotropical (three species), Palearctic (40 species) and Oriental (one species). The world subgenera of the genus were first revised by Ashmead (1899). The Palearctic species were revised by Kohl (1915) and subsequently by Marshakov (1977). Bohart (1976) provided a key to the Nearctic species that was later corrected by Leclercq (2008).

These medium-sized, conspicuously visible wasps are common in humid ecosystems and rare in arid ones; they are frequently found on flowering plants. They nest in the ground, generally in sandy soil, where they dig multicellular nests. Their prey consists mainly of various flies (Diptera) (Bohart & Menke 1976).

Based on a comprehensive study of specimens from multiple collections, as well as an extensive review of the literature, we treat 40 Palearctic *Crabro*, four of which are newly described. We present an illustrated key to the world subgenera and species groups, together with a key to the Palearctic species.

Materials and methods

This paper is based on 1078 specimens deposited in the Zoological Museum of Moscow State University (Moscow, Russia) [ZMMU]; Zoological Institute, Russian Academy of Sciences (St. Petersburg, Russia) [ZISP]; Bioresource Collection of the Federal Scientific Center for Terrestrial Biodiversity of East Asia, Far East Branch of the Russian Academy of Sciences (Vladivostok, Russia) [FSCV]; Zoological Museum of the Southern Federal University (Rostov-on-Don, Russia) [SFU]; Institute of Systematics and Ecology of Animals, Siberian Branch of the Russian Academy of Sciences (Novosibirsk, Russia) [ISEA]; personal collection of M.V. Mokrousov (Nizhny Novgorod, Russia) [MMC] and in a number of other personal collections (indicated in the text).

Photographs were taken with a digital camera Canon M200 attached to a Carl Zeiss Stemi 508 or Olympus SZX16 stereomicroscope. Photographs 68–75, 93–97, 252–260, 292–294 were taken with a combination of stereomicroscope Olympus SZX10 and digital camera Olympus OM-D. Final images were produced by stacking multiple photographs taken at different focal planes using Helicon Focus 7.6.1. All images were post-processed for sharpness, contrast and brightness using Adobe® Photoshop® v. CC 2017 (×64).

The distribution maps (Figs 303–305) were created using the online tool SimpleMappr (Shorthouse 2010).

Morphological terminology generally follows Hymenoptera Anatomy Ontology Portal (2025) and Bohart & Menke (1976). We have used the following abbreviations: F—flagellomere; FT—foretarsomere; S—metasomal sternum; T—metasomal tergum; L—length; H—height; W—width. Body length measurements are rounded to 0.1 mm, the measurement ratios are rounded to 0.01. Notes on the general distribution of species follow Antropov (2017), Mokrousov & Proshchalykin (2025) and Pulawski (2025). Abbreviations for the collectors: AF—A. Fateryga, AK—A. Humala, AL—A. Lelej, BK—B. Korotyayev, DK—D. Kasparyan, LE—L. Egorov, MK—M. Kozlov, MM—M. Mokrousov, MP—M. Proshchalykin, PK—P. Kozlov, ST—S. Tarbinsky, VG—V. Gussakovskij, VK—V. Kazenas, VL—V. Loktionov, VT—V. Tobias, YP—Yu. Pesenko. Coordinates of collection sites not indicated on the labels are

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