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**NEW RECORDS OF *QUARTINIA MONGOLICA* (MORAWITZ, 1889),
WITH A COMMENT ON A CLOSELY RELATED SPECIES *Q. FUNEBRIS*
KOSTYLEV, 1935 (HYMENOPTERA: VESPIDAE: MASARINAE)**

A. V. Fateryga^{1*)}, B. Buyanjargal²⁾

1) *T.I. Vyazemsky Karadag Scientific Station – Nature Reserve of RAS – Branch of A.O. Kovalevsky Institute of Biology of the Southern Seas of RAS, Kurortnoye, Feodosiya, 298188, Russia. *Corresponding author. E-mail: fater_84@list.ru*

2) *Institute of Biology, Mongolian Academy of Sciences, Ulaanbaatar, 210351, Mongolia.*

Summary. *Quartinia mongolica* (Morawitz, 1889), a species hitherto known only from the type series collected in China (Gansu), is reported from Mongolia (Khovd Province). The species is closely related to *Q. funebris* Kostylev, 1935 known from Turkmenistan. They differ in coloration, integumental sculpture, and the structure of the male genitalia. Lectotypes are designated for both species. *Quartinia funebris* reported from Kazakhstan for the first time.

Key words: pollen wasps, taxonomy, Palearctic region.

А. В. Фатерыга, Б. Буянжаргал. Новые находки *Quartinia mongolica* (Morawitz, 1889) с комментарием по близкому виду *Q. funebris* Kostylev, 1935 (Hymenoptera: Vespidae: Masarinae) // Дальневосточный энтомолог. 2022. N 453. С. 8-16.

Резюме. Для Монголии (аймак Ховд) указан вид *Quartinia mongolica* (Morawitz, 1889), ранее известный лишь по типовой серии, собранной в Китае (Ганьсу). Вид близок к *Q. funebris* Kostylev, 1935, известному из Туркменистана. Между ними имеются различия в окраске, скульптуре кутикулы и строении гениталий самца. Обозначены лектотипы обоих видов. *Quartinia funebris* впервые приводится для Казахстана.

INTRODUCTION

Quartinia André, 1884 is the largest genus of pollen wasps with more than 140 described species from arid areas of either the Palearctic or the Afrotropical region (Carpenter, 2001; Gess & Gess, 2010; Zimmermann *et al.*, 2020). These wasps are on average the smallest among the family Vespidae, ranging only from 2 to 7 mm in length. All representatives of the genus *Quartinia*, in which nesting behavior has been studied so far (nine Afrotropical and five Palearctic species), construct their nests in loose sand. The walls of the burrow are stabilized by a silky excretion that is applied on their inner surfaces during nest construction. The use of self-produced silk is the key adaptation of *Quartinia* to inhabitation of sand biotopes (Gess & Gess, 1992, 2010; Mauss & Müller, 2016; Mauss *et al.*, 2018; Zimmermann *et al.*, 2020).

Quartinia mongolica (Morawitz, 1889) is a poorly known species described from “Mongolia merid[ionalis]. Dshin-Tasy”. It was subsequently reported to occur in Mongolia in various revisional papers (Kostylev, 1935; Carpenter, 2001; Buyanjargal *et al.*, 2017). However, the locality “Dshin-Tasy” is actually situated in China (Gansu) (see Astafurova, 2014). Any further specimen-based records of *Q. mongolica*, besides those from the locus typicus, have not been reported so far. Therefore, the presence of the species in Mongolia has not been documented in fact. The identity of *Q. mongolica* was not clear to Richards (1962), since he mentioned this species as *Celonites mongolicus* Morawitz, 1889, according to the original combination published by Morawitz (1889).

Kostylev (1935), in his paper on the Palaearctic Masarinae, described a very similar species *Q. funebris* Kostylev, 1935 from Turkmenistan. He indicated its differences from *Q. mongolica* in the punctuation of the posterior surface of the propodeum, the coloration, and the emargination of the last metasomal-tergum of the male.

The purpose of the present contribution is to report the first records of *Q. mongolica* from Mongolia based on voucher specimens and to clarify its separation from *Q. funebris*. Furthermore, lectotypes are designated for both species.

MATERIAL AND METHODS

Studied specimens are deposited in the collections of the Zoological Institute of the Russian Academy of Sciences (Saint Petersburg, Russia) [ZISP], the Institute of Biology of the Mongolian Academy of Sciences (Ulaanbaatar, Mongolia) [IBU], and the Federal Scientific Center of the East Asia Terrestrial Biodiversity of the Far East Branch of the Russian Academy of Sciences (Vladivostok, Russia) [FSCV]. The data on type specimens of *Q. funebris* from the M.V. Lomonosov Moscow State University (Moscow, Russia) [ZMMU] temporary stored on loan in the American Museum of Natural History (New York, USA) [AMNH] were provided by J.M. Carpenter. Photographs (except those of the male genitalia) were taken in ZISP with an Olympus E-M1 camera attached to an Olympus SZX10 stereomicroscope. Multifocus images were created from stacks of photographs using Helicon Focus 6 Pro software. Male genitalia of two specimens of *Q. mongolica* and one specimen of *Q. funebris* were extracted after re-softening the specimens and were then boiled in 10% NaOH for 5 min. After that, they were rinsed in 80% ethanol and only then stored and studied in glycerin. Photographs of the male genitalia were taken in the Laboratory of Algae and Microbiota of the T.I. Vyazemsky Karadag Scientific Station – Nature Reserve of RAS – Branch of A.O. Kovalevsky Institute of Biology of the Southern Seas of RAS (Feodosiya, Russia). Final illustrations were post-processed for sharpness, contrast, and brightness using Adobe Photoshop CS2 software.

TAXONOMY

Genus *Quartinia* André, 1884

Quartinia André, 1884: 822–823. Type species: *Quartinia dilecta* André, 1884, by monotypy.

Quartiniella von Schulthess, 1929: 510. Type species: *Quartiniella waterstoni* von Schulthess, 1929, by monotypy.

Quartinioides Richards, 1962: 170. Type species: *Quartinia capensis* Kohl, 1898, by original designation.

DIAGNOSIS. Representatives of the genus can be distinguished from other pollen wasps by the following characters: body size comparatively small, clypeus emarginated apically, antenna with a club, metanotum entirely vertical and visible only at center (its sides hidden between scutellum and propodeum), sides of metasoma not acute, sterna not flat, wings capable of longitudinal folding.



Figs 1–8. *Quartinia mongolica* (Morawitz, 1889): 1–4 – ♀, lectotype (1 – habitus, dorsal view; 2 – habitus, lateral view; 3 – head, frontal view; 4 – labels); 5–8 – ♂, paralectotype (5 – habitus, dorsal view; 6 – habitus, lateral view; 7 – head, frontal view; 8 – apex of metasoma, dorsal view). Scale bars 0.5 mm.

SPECIES INCLUDED. At least 45 species from the Palaearctic and 99 described species from the Afrotropical region (J.M. Carpenter, in litt.).

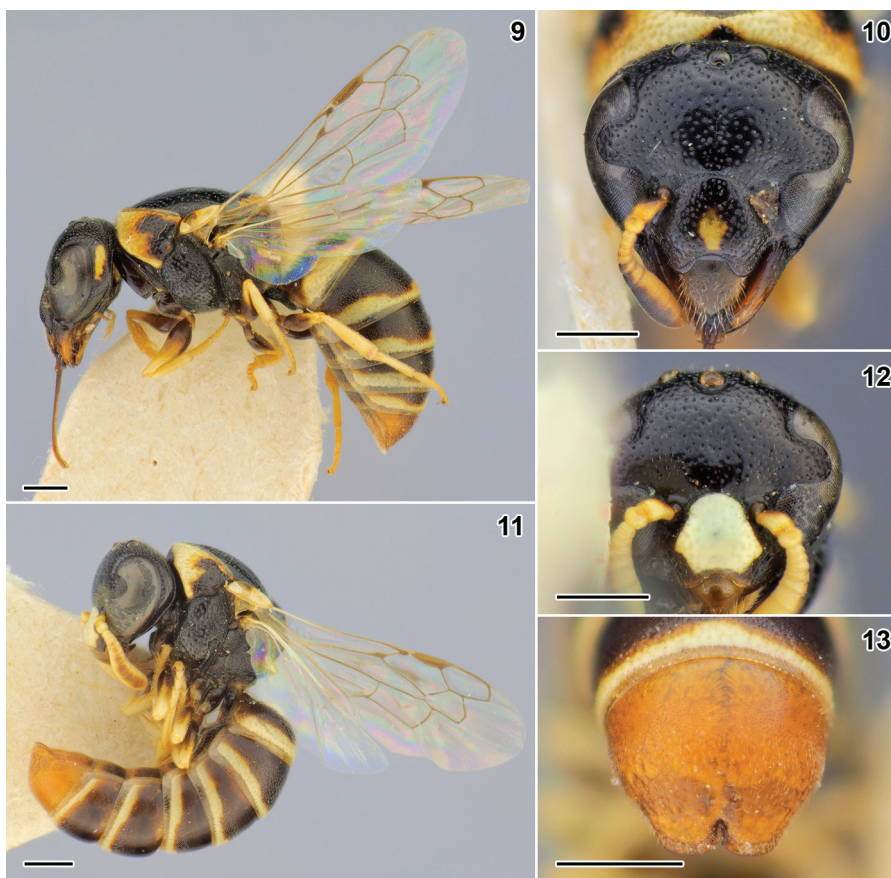
***Quartinia mongolica* (Morawitz, 1889)**

Figs 1–15

Celonites? *mongolicus* Morawitz, 1889: 166–168, ♀ ♂ (type locality: “Mongolia merid. Dshin-Tasy” [China: Gansu]).

Quartinia mongolica: Kostylev, 1935: 104; Carpenter, 2001: 26.

TYPE MATERIAL. Lectotype (**designated here**): ♀, <golden disc> // Mongol[ia]. mer[idionalis]. / Tdschin-Ta-ssu. [China: Gansu] // к. Ф Моравица [coll. F. Morawitz] // *Celonites?* / *mongolicus* ♀ / F. Morawitz // Lectotypus ♀ / *Celonites mongolicus* / Morawitz, 1889 / des. Fateryga, 2021 <red label> [ZISP] (Figs 1–4). Paralectotypes: ♂, <golden disc> // Mongol. mer. / Tdschin-Ta-ssu. // к. Ф Моравица // *Celonites?* / *mongolicus* ♂. / F. Morawitz. // Paralectotypus ♂ / *Celonites mongolicus* / Morawitz, 1889 / des. Fateryga, 2021 <red label>



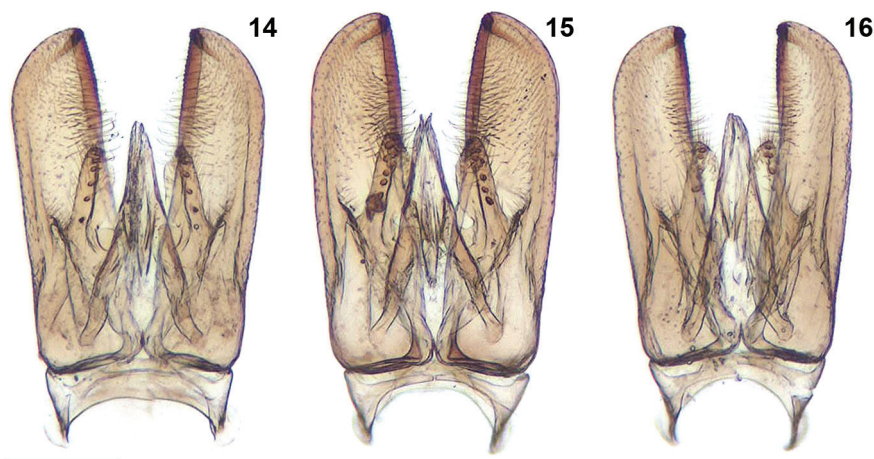
Figs 9–13. *Quartinia mongolica* (Morawitz, 1889) from Mongolia (Khovd Province): 9–10 – ♀ (9 – habitus, lateral view; 10 – head, frontal view); 11–13 – ♂ (11 – habitus, lateral view; 12 – head, frontal view; 13 – apex of metasoma, dorsal view). Scale bars 0.5 mm.

[ZISP] (Figs 5–8, 14); ♀, <golden disc> // Mongol. mer. / Dschin-Tasu. / 11/VII Potanin. // к. Ф Моравица // *Celonites* ♀ / *mongolicus* / F. Morawitz. // Paralectotypus ♀ *Celonites mongolicus* Morawitz, 1889 des. Fateryga, 2021 <red label> [ZISP].

ADDITIONAL MATERIAL EXAMINED. **Mongolia** (new record): Khovd Province, Bulgan Sum, Bulgan-Gol River, oasis, 4–5.VII.1966, 1 ♀, leg. B. Namhaidorj [IBU]; [Khovd Province], Altai Sum, 5 km SW Altai, lower reaches of Bodonchin-Gol River, 11.VIII 1968, 2 ♀, leg. [M.A.] Kozlov [ZISP]; [Khovd Province], Altai Sum, 12 km SW Altai, Bodonchin-Gol River, 22.VII 1970, 1 ♀, 1 ♂ leg. [M.A.] Kozlov [ZISP] (Figs 9–13, 15).

REMARKS. It is of note that most material from Mongolia was collected by M.A. Kozlov (1936–2006), an outstanding Soviet and Russian entomologist, not P.K. Kozlov (1863–1935), a famous Russian and Soviet traveler, who collected the type specimen of *Celonites kozlovi* Kostylev, 1935 (this is not reflected on the labels but is obvious from the dates).

DISTRIBUTION. Mongolia (Khovd Province), China (Gansu).



Figs 14–16. Male genitalia in dorsal view: 14 – *Quartinia mongolica* (Morawitz, 1889), paralectotype; 15 – *Q. mongolica* from Mongolia (Khovd Province); 16 – *Q. funebris* Kostylev, 1935, paralectotype. Scale bar 0.25 mm.

DIAGNOSIS. Clypeus with rather flat anterior surface; frons sparsely punctate, with interstices exceeding puncture diameter, with evident reticulate microsculpture; gena evenly rounded, without an angle posteriorly; mesoscutum sparsely punctate, with shining interstices significantly exceeding puncture diameter; tegula elliptic, evenly rounded laterally, not narrowing posteriorly; terga densely but rather finely punctate; male tergum 7 with a deep narrow emargination apically at center. Male genitalia as in Figs 14–15. Coloration variable: specimens from Mongolia (Figs 9–13) are much darker than the typical form from China (Figs 1–3, 5–8). Female tergum 6 and male tergum 7 are deep yellow in the type series but rather orange in the Mongolian material.

***Quartinia funebris* Kostylev, 1935**

Figs 16–24

Quartinia funebris Kostylev, 1935: 103–104, ♀ ♂ (type locality: “Imam-Baba (Trans-caspian)” [Turkmenistan: Mary Region]); Richards, 1962: 151–152; Carpenter, 2001: 24.

TYPE MATERIAL. Lectotype (**designated here**): ♀, <golden disc> // Имам-баба [Turkmenistan: Mary Region, Yolöten District, Imam-Baba] / 15–24.V.934 / А. и А. Шестаковы [leg. A. and A. Shestakov] // *Quartinia / funebris* n. sp. / G. Kostylev det. 1933 // Lectotypus ♀ / *Quartinia funebris* / Kostylev, 1935 / des. Fateryga, 2021 <red label> [ZISP] (Figs 17–20). Paralectotypes: 1 ♀, <golden disc> // Имам-баба / 15–24.V.932 / А. и А. Шестаковы // Paralectotypus ♀ / *Quartinia funebris* / Kostylev, 1935 / des. Fateryga, 2021 <red label> [ZISP]; 1 ♂, <golden disc> // Имам-баба / 15–24.V.932 / А. и А. Шестаковы // Paralectotypus ♂ / *Quartinia funebris* / Kostylev, 1935 / des. Fateryga, 2021 <red label> [ZISP]; 9 ♀, <golden disc> // Имам-баба / 15–24.V.934 / А. и А. Шестаковы // Paralectotypus ♀ / *Quartinia funebris* / Kostylev, 1935 / des. Fateryga, 2021 <red label> [ZISP]; 2 ♂, <golden disc> // Имам-баба / 15–24.V.934 / А. и А. Шестаковы // Paralectotypus ♂ / *Quartinia funebris* / Kostylev, 1935 / des. Fateryga, 2021 <red label> [ZISP] (Figs 16, 21–24); 2 ♀, <silver disc> // Transcaspia / Imam-Baba / A. Shestakov / 15–24.V / 1932 // *Quartinia funebris* n. sp. / G. Kostylev / det. 1934 / Paratyp // Москва / Зоологический / Музей МГУ [Moscow, Zoological Museum of the Moscow State University] // <blank, red label> [ZMMU, on loan in AMNH].

ADDITIONAL MATERIAL EXAMINED. Turkmenistan: [Mary Region], Imam-Baba, 1932, 1 ♀, leg. [A.] Shestakov [ZISP]; [Akhal Region], 25 km E Ashgabat, 20.VI 1976, 2 ♀, [N.V.] Kurzenko [FSCV]; [Akhal Region], vicinity of Ashgabat, 21.VI 1976, 4 ♀, [N.V.] Kurzenko [FSCV]; [Balkan Region], 30 km W Gazandjyk [currently Bereket], Akhcha-Kuyma, 4.VI, 5.VI 1988, 2 ♀, leg. [N.V.] Kurzenko [FSCV]. **Kazakhstan** (new record): [Kyzylorda Province], 20 km S Yany-Kurgan [currently Zhanakorgan], Kyzylkum Desert, 14–15.VII 1990, 1 ♀, V.[L.] Kazenas [FSCV].

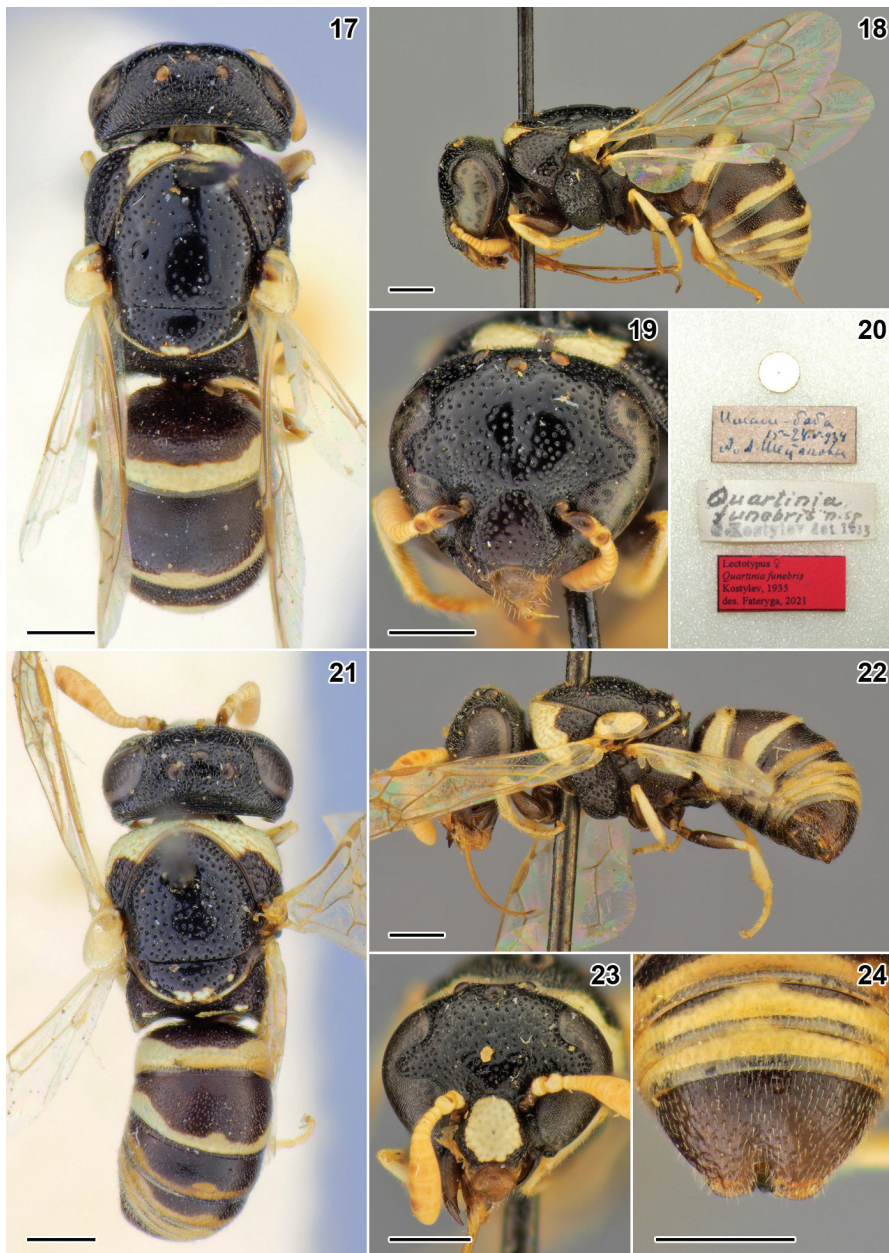
REMARKS. Kostylev (1935: 104) indicated that the type (as “Typ.”) was “15 ♀, 1 ♂ Imam-Baba (Transcaspien) 15–24 V 1932. A. Shestakov”. We, however, examined a total of 13 ♀ and 3 ♂ in ZISP and ZMMU (on loan in AMNH), with golden or silver discs, obviously belonging to the type series (all of them with the dates “15–24.V”). It is possible that Kostylev made a mistake, when he stated that there was just one male in this series. It is also of note that the year of collection written on the label of most specimens (12 of 16) differs from the information given by Kostylev (1934 instead of 1932). An additional specimen from the type locality has no exact date on the label (only the year 1932) and therefore we do not treat it as a member of the type series.

DISTRIBUTION. Turkmenistan (Balkan Region, Akhal Region, Mary Region), Kazakhstan (Kyzylorda Province).

DIAGNOSIS. This species can be distinguished from the closely related *Q. mongolica* by the punctuation on the frons with shining interstices lacking visible microsculpture (versus with evident microsculpture in *Q. mongolica*), brown tergum 6 in the female and tergum 7 in the male (versus deep yellow or orange in *Q. mongolica*), slightly broader apical emargination of the tergum 7 in the male, and narrower parameres in the male genitalia (Figs 16). Kostylev (1935) also reported that the tergum 7 in the male of *Q. funebris* had a pit-like longitudinal impression near its [shallowly emarginated] apical margin (versus deep and narrow apical emargination in *Q. mongolica*). Examination of the type material of *Q. funebris* revealed that such a structure of the tergum 7 is characteristic to one specimen (possibly anomalous) while two others have deep emargination, rather similar to that in *Q. mongolica*, although somewhat broader but not shallower (Fig. 24).

CONCLUSIONS

Our results confirm that *Quartinia mongolica* is a well-defined species, although polymorphic in coloration. As pointed out by Kostylev (1935), it is closely related to *Q. funebris*.



Figs 17–24. *Quartinia funebris* Kostylev, 1935: 17–20 – ♀, lectotype (17 – habitus, dorsal view; 18 – habitus, lateral view; 19 – head, frontal view; 20 – labels); 21–24 – ♂, paralectotype (21 – habitus, dorsal view; 22 – habitus, lateral view; 23 – head, frontal view; 24 – apex of metasoma, dorsal view). Scale bars 0.5 mm.

Apparently, these species have allopatric distributions, with *Q. funebris* occurring in Central Asia and *Q. mongolica* farther to the east in Mongolia and China. *Quartinia mongolica* is the second species of the pollen wasps reported from Mongolia after *Celonites kozlovi*, which is known from Khovd and Ömnögovi provinces (Gusenleitner, 1991; Fateryga, 2020). This group of wasps is still poorly known in Mongolia and further records of its representatives can be expected.

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Address: Federal Scientific Center of the East Asia Terrestrial Biodiversity (former Institute of Biology and Soil Science), Far East Branch of the Russian Academy of Sciences, 690022, Vladivostok-22, Russia.

E-mail: storozhenko@biosoil.ru

web-site: <http://www.biosoil.ru/fee>