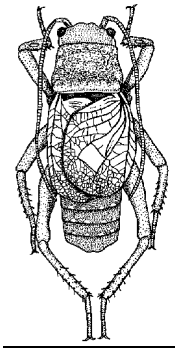

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NEW DATA ON THE GENUS *SPHECODES* LATREILLE (HYMENOPTERA: HALICTIDAE) FROM MONGOLIA

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An annotated list of ten species of the genus *Sphecodes* collected by Czech entomologists (J. Halada, J. Straka and M. Kadlecová) in Mongolia in 2003–2007 is given. Fourteen species are currently known from this region, including *S. ferruginatus* Hagens, 1882 newly recorded from Mongolia. The female of *S. schwarzi* Astafurova et Proshchalykin, 2015 is here described for the first time.

KEY WORDS: Apoidea, Apiformes, fauna, new records, Mongolia.

Ю. В. Астафурова, М. Ю. Прощалыкин, М. Шварц. Новые данные по пчелам рода *Sphecodes* Latreille (Hymenoptera: Halictidae) Монголии // Дальневосточный энтомолог. 2015. N 302. С. 1-9.

Приведен аннотированный список десяти видов пчел рода *Sphecodes*, собранных чешскими энтомологами (Я. Халада, Я. Страка и М. Кадлецова) в Монголии в 2003–2007 гг. Общий список *Sphecodes* фауны Монголии увеличен до 14 видов. Описывается ранее неизвестная самка *S. schwarzi* Astafurova et Proshchalykin, 2015. Для фауны Монголии впервые указывается *S. ferruginatus* Hagens, 1882.

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INTRODUCTION

This work is a continuation of our study on the bees of the genus *Sphecodes* Latreille, 1804 of Russia and neighboring countries (Proshchalykin & Astafurova, 2012; Astafurova & Proshchalykin, 2014, 2015a,b,c; Astafurova *et al*., 2014). The results presented in this paper are based on 352 specimens collected by Czech entomologists (J. Halada, J. Straka and M. Kadlecová) in Mongolia in 2003-2007 and currently housed in the private collection of Maximilian Schwarz (Ansfelden, Austria). In the present study we report additional records of ten *Sphecodes* species with one species recorded from Mongolia for the first time.

For detailed synonymy and published records of Mongolian *Sphecodes* species see K. Warncke (1992), P. Bogusch and J. Straka (2012), Yu. Astafurova and M. Proshchalykin (2014, 2015a,b). We have used the following abbreviations for collectors: JH – J. Halada; JS – J. Straka; MK – M. Kadlecová. New distributional records are noted with an asterisk (*).

Morphological terminology generally follows Ch. Michener (2007). We used the abbreviations T1, T2, T3, etc., to denote the first, second, third, etc., metasomal terga; S1, S2, S3, etc. to denote the first, second, third, etc., metasomal sterna; and F1, F2, F3, etc., to denote the first, second, third, etc. flagellomeres. Integumental sculpture is described by the following formula: puncture diameter (in μm) / ratio of distance between punctures to average puncture diameter, e.g., 15–20 μm / 0.5–1.5. Surface texture is described as follows: reticulate – superficially net-like or made up of a network of lines; rugose – irregular, nonparallel wrinkled; tessellate – variety of reticulations, regular net of shallow grooves with flat interspaces. Observations were made with a stereomicroscope Leica M205A and photographs taken with a digital camera Leica DFC500. Illustrations were obtained by montaging an image series, covering different focal planes, into a single in-focus image with the Helicon Focus 6. The final illustrations were post-processed for contrast and brightness using Adobe® Photoshop® software.

LIST OF THE SPECIES

Sphecodes crassus Thomson, 1870

Sphecodes crassus Thomson, 1870: 100; Astafurova & Proshchalykin, 2015a: 3.

SPECIMENS EXAMINED. **Mongolia**: *Bayan-Khongor Aimag*: 86 km NW Bayan-Khongor, 2070 m, 14.VII 2004, 1 ♀ (MK); *Bulgan Aimag*: 137 km NE Arbai-Khere, 1250 m, 5.VII 2004, 1 ♂ (JH); *Tuv Aimag*: 50 km E Ulaanbaatar, Tuul riv., 22.VI 2003, 1 ♀ (JH); 90 km N Ulaanbaatar, Segnezer riv., 1450 m, 6-8.VII 2003, 1 ♀ (JH); Ulaanbaatar, Tuul riv., 20.VI 2003, 1 ♀ (JH); 100 km E Ulaanbaatar, 20 km NE Tereltz, Tuul riv., 15-21.VII 2003, 3 ♀ (JH).

DISTRIBUTION. Mongolia (*Bayan-Khongor Aimag, *Bulgan Aimag, *Tuv Aimag, Khentii Aimag, Dornod Aimag), Russia (European part, Siberia, Far East), Japan, Europe (north to 64°), Turkey, Iran, North Africa.

***Sphecodes cristatus* Hagens, 1882**

Sphecodes cristatus Hagens, 1882: 218; Astafurova & Proshchalykin, 2015a: 5.

SPECIMENS EXAMINED. **Mongolia**: *Bulgan Aimag*: 143 km NE Arbai-Khere, 1300 m, 26.VII 2004, 2 ♂ (JS); *Tuv Aimag*: 50 km N Ulaanbaatar, 1180 m, 8-13.VIII 2007, 4 ♀, 5 ♂ (JH, MK); Ulaanbaatar, Tuul riv., 20.VI 2003, 1 ♀(JH); 75 km W Ulaanbaatar, 2.VIII 2005, 2 ♀, 12 ♂ (JH); *Sukhbaatar Aimag*: 200 km SSE Baruun-Urt, 27.VII 2007, 1 ♂ (JH); 210 km SSE Baruun-Urt, 29.VII 2007, 1 ♀, 5 ♂ (JH); *Khentii Aimag*: 100 km NE Under-Khan, Kerulen riv., 970 m, 22.VII 2007, 1 ♀, 17 ♂ (JH); *Dornod Aimag*: 15 km W Choibalsan, Kerulen riv., 770 m, 24.VII 2007, 8 ♂ (JH).

DISTRIBUTION. Mongolia (*Bulgan Aimag, *Tuv Aimag, *Dundgovi Aimag, Khentii Aimag, Dornogovi Aimag, Dornod Aimag, Sukhbaatar Aimag), Russia (European part, Siberia, Far East), Europe (north to Sweden), Turkey, China (Beijing).

***Sphecodes ferruginatus* Hagens, 1882**

Sphecodes ferruginatus Hagens, 1882: 221.

SPECIMENS EXAMINED. **Mongolia**: *Bulgan Aimag*: 137 km NE Arbai-Khere, 1250 m, 5.VII 2004, 1 ♀ (JH).

DISTRIBUTION. *Mongolia (*Bulgan Aimag), Russia (European part, Siberia, Far East), Japan (Hokkaido, Honshu, Shikoku, Kyushu), Europe (north to 66°), Turkey.

***Sphecodes geoffrellus* (Kirby, 1802)**

Melitta geoffrella Kirby, 1802: 45.
Sphecodes geoffrellus: Astafurova & Proshchalykin, 2015a: 5.

SPECIMENS EXAMINED. **Mongolia**: *Tuv Aimag*: Ulaanbaatar, Tuul riv., 20.VI 2003, 3 ♀ (JH); Ulaanbaatar, Zuunmod env., 27.VII 2004, 1 ♀ (JH); Khangayn Mts, 5 km N Khunt, 21.VII 2005, 1 ♀ (JH); 100 km E Ulaanbaatar, 20 km NE Tereltz, Tuul riv., 15-21.VII 2003, 4 ♀ (JH); *Dornogovi Aimag*: Atayn Mts, Gichigniv Nuruu, 10 km SW Sain-Shand, 12.VII 2005, 1 ♂ (JH).

DISTRIBUTION. Mongolia (Bayan-Ulgii Aimag, Tuv Aimag, Khentii Aimag, *Dornogovi Aimag, Dornod Aimag), Russia (European part, Siberia, Far East), Japan (Hokkaido, Honshu, Shikoku, Kyushu), Europe (north to 66°), Turkey, Near East, North Africa.

***Sphecodes kozlovi* Astafurova et Proshchalykin, 2015**

Sphecodes kozlovi Astafurova & Proshchalykin, 2015a: 6–7 (holotype: ♂, Mongolia: Khentii Aimag, 8 km NW Umne-Delger, 27.VIII 1975, leg. M. Kozlov [ZISP]).

SPECIMENS EXAMINED. **Mongolia**: *Khentii Aimag*: 100 km NE Under-Khan, Kerulen riv., 970 m, 22.VII 2007, 1 ♂ (JH); *Dornod Aimag*: 15 km W Choibalsan, Kerulen riv., 770 m, 24.VII 2007, 1 ♂ (JH).

DISTRIBUTION. Mongolia (*Dornod Aimag, Khentii Aimag).

***Sphecodes monilicornis* (Kirby, 1802)**

Melitta monilicornis Kirby, 1802: 47.
Sphecodes monilicornis: Astafurova & Proshchalykin, 2015a: 8.

SPECIMENS EXAMINED. **Mongolia**. *Tuv Aimag*: 50 km N Ulaanbaatar, 1180 m, 8-13.VIII 2007, 1 ♀, 6 ♂ (JH, MK).

DISTRIBUTION. Mongolia (Darkhan Aimag, *Tuv Aimag), Russia (European part, Siberia, Ural, Far East), Europe (north to 64°), Turkey, Caucasus, Central Asia, North Pakistan, North Africa.

***Sphecodes nippon* Meyer, 1922**

Sphecodes nippon Meyer, 1922: 171; Astafurova & Proshchalykin, 2015a: 8.

SPECIMENS EXAMINED. **Mongolia**. *Tuv Aimag*: 90 km N Ulaanbaatar, Segnezer riv., 1450 m, 6-8.VII 2003, 5 ♀ (JH); 100 km E Ulaanbaatar, 20 km NE Tereltz, Tuul riv., 15-21.VII 2003, 10 ♀ (JH); 75 km W Ulaanbaatar, 2.VIII 2005, 1 ♀, 3 ♂ (JH); Ulaanbaatar, Tuul riv., 12.VII 2003, 1 ♀, 1 ♂ (JH); 50 km N Ulaanbaatar, 1180 m, 8-13.VIII 2007, 14 ♀, 45 ♂ (JH, MK); *Khentii Aimag*: 100 km NE Under-Khan, Kerulen riv., 970 m, 22.VII 2007, 1 ♀ (JH).

DISTRIBUTION. Mongolia (*Tuv Aimag, Khentii Aimag, Dornod Aimag), Russia (Eastern Siberia, Far East), Japan (Hokkaido, Honshu, Shikoku, Kyushu).

***Sphecodes pellucidus* Smith, 1845**

Sphecodes pellucidus Smith, 1845: 1014.

SPECIMENS EXAMINED. **Mongolia**: *Arkhangai Aimag*: 90 km NE Tsetserleg, 1400 m, 24.VII 2004, 2 ♀ (JH); *Bayan-Khongor Aimag*: 130 km S Bayan-Khongor, 1240 m, 6.VII 2004, 1 ♀ (MK); *Bulgan Aimag*: 143 km Arbai-Khere, 1300 m, 26.VII 2004, 4 ♂ (JS); *Tuv Aimag*: 50 km N Ulaanbaatar, 1180 m, 8-13.VIII 2007, 59 ♀, 2 ♂ (JH, MK); 90 km N Ulaanbaatar, Segnezer riv., 1450 m, 6-8.VII 2003, 2 ♀, 11 ♂ (JH); *Dornod Aimag*: 100 km W Choibalsan, 820 m, 23.VII 2007, 1 ♀, 1 ♂ (JH); *Sukhbaatar Aimag*: 200 km SSE Baruun-Urt, 27.VII 2007, 1 ♀ (JH).

DISTRIBUTION. Mongolia (*Arkhangai Aimag, *Bayan-Khongor Aimag, Bulgan Aimag, Tuv Aimag, Khovd Aimag, *Dornod Aimag, *Sukhbaatar Aimag), Russia (European part, Siberia, Far East), China (Xinjiang, Sichuan), Europe (north to 66°), Turkey, North Africa.

Sphecodes pinguiculus Pérez, 1903

Sphecodes pinguiculus Pérez, 1903: CCXX.

SPECIMENS EXAMINED. **Mongolia**: *Bayan-Khongor Aimag*: 86 km NW Bayan-Khongor, 2070 m, 14.VII 2004, 1 ♀ (MK); 75 km S Bayan-Khongor, 1150 m, 9.VII 2004, 1 ♀ (JH); 130 km S Bayan-Khongor, 1240 m, 6.VII 2004, 3 ♀ (JH); 75 km S Bayan-Khongor, 1330 m, 8.VII 2004, 4 ♀, 1 ♂ (JH); *Uvurkhangai Aimag*: 159 km SW Arbai-Khere, 1250 m, 5.VII 2004, 6 ♀, 5 ♂ (JH); 139 km SW Arbai-Khere, 1430 m, 4.VII 2004, 1 ♀ (MK).

DISTRIBUTION. Mongolia (*Bayan-Khongor Aimag, *Uvurkhangai Aimag), Russia (south of European part, Eastern Siberia), Central Asia, Iran, South Europe, Turkey, Israel, North Africa, Cape Verde Islands.

Sphecodes schwarzi Astafurova et Proshchalykin, 2015

Figs 1–6

Sphecodes schwarzi Astafurova & Proshchalykin, 2015b: 83 (holotype: ♂, Russia, Tyva Republic, 32 km SW Kyzyl, Elegest River, 22.VII 2014, leg. A. Lelej, M. Proshchalykin, V. Loktionov; paratypes: ♂, Mongolia, Dornod Aimag, Derhin-Tsagan-Obo Mts., 60 km ENE Bayan-Burda,; ♂, Khalkhyn Gol [Khalkh River], 70 km E Bayan-Nur Lake; ♂, Numergin-Gol River, 32 km SE Salhit Mts. [ZISP]).

SPECIMENS EXAMINED. **Mongolia:** *Bayan-Khongor Aimag*: 130 km S Bayan-Khongor, 1240 m, 6.VII 2004, 33 ♀, 1 ♂ (JH); 75 km S Bayan-Khongor, 1330 m, 8.VII 2004, 7 ♂ (JH); 2 km S Bayan-Khongor, 1880 m, 10.VII 2004, 1 ♀ (JH); 16 km NW Bayan-Khongor, 1430 m, 4.VII 2004, 1 ♀ (JH); 56 km NW Bayan-Khongor, 2200 m, 12.VII.2004, 1 ♀ (JH); *Bulgan Aimag*: 137 km NE Arbai-Khere, 1250 m, 5.VII 2004, 1 ♀ (JH); *Uvurkhangai Aimag*: 159 km SW Arbai-Khere, 1250 m, 5.VII 2004, 22 ♀ (JH); 139 km SW Arbai-Khere, 1430 m, 4.VII 2004, 2 ♀ (JH); *Tuv Aimag*: Ulaanbaatar, Tuul riv., 12.VII 2003, 1 ♀ (JH); *Dornod Aimag*: 50 km SW Choibalsan, 960 m, 25.VII 2007, 1 ♀ (JH); 15 km W Choibalsan, Kerulen riv., 770 m, 24.VII 2007, 2 ♂ (JH); 100 km W Choibaisan, 820 m, 23.VII 2007, 4 ♂ (JH); *Sukhbaatar Aimag*: 100 km SSW Baruun-Urt, 1100 m, 30.VII 2007, 2 ♀ (JH).

REMARKS. *Sphecodes schwarzi* was described from males only (Astafurova & Proshchalykin, 2015b). Recently, material became available containing males and females found at the same locality, thus making possible the description of the hitherto unknown female.

DIAGNOSIS. This species belongs to *miniatus*-group of species with similarly long and transverse Fl1−Fl3 in female. *S. schwarzi* differs from other species of *miniatus*-group by stronger developed pubescence of face in female with dense (except clypeus) and strongly plumose white hairs below antennal sockets (Fig. 2) and densely punctate T1 in male. Combination of the characters differs female of *S. schwarzi* from female of *S. miniatus* Hagens, 1882 listed in Table 1.

Table 1. Differences between females of *S. miniatus* and *S. schwarzi*

Characters	*S. miniatus*	*S. schwarzi*
Vestiture of face below antennal sockets	with sparse and weakly plumose white hairs (Fig. 1)	with dense and strongly plumose white hairs (Fig. 2)
Sculpture of vertex between lateral ocellus and compound eye	with punctures separated by about a puncture diameter (15–25 μm / 0.5–1.5) or less than a puncture diameter	with punctures separated by more than a puncture diameter (10–15 μm / 1–2)
Sculpture of propodeum	propodeal sculpture coarse, posterior vertical surface of propodeum reticulate-rugose (Fig. 3)	propodeal sculpture smoother, posterior vertical surface of propodeum, finely and irregularly rugose (Fig. 4)
Sculpture of T2 on disc	with shallow or deep punctures, usually sparsely and irregularly punctate on posterior half (Fig. 5)	with deep and dense punctures, impunctate or sparsely punctate along marginal zone only (Fig. 6)
Wide of pygidium	equal hind basitarsus	narrower than hind basitarsus

DESCRIPTION. Female (*nova*). Body length 4.5–5.5 mm. Head transverse, 1.25–1.30 times wider than long (Fig. 2). Vertex not elevated in front view; short, distance from top of head to upper margin of lateral ocellus about 1.7−2.0 lateral ocellar diameters. Labrum trapezoidal, 0.5 times as long as wide. Genal area 1.6−1.8 times narrower than eye in lateral view. Fl1−Fl3 short, transverse, about 1.25 wider then long; other flagellomeres longer, weakly transverse or square. Hind femora moderately enlarged on proximal half, with maximal width 0.35 times as length. Hind wing with 5 hamuli. Pygidium narrower than hind basitarsus. Sculpture. Clypeus with punctures separated by about a puncture diameter (10−25 μm / 0.3−1.5), smooth and shiny between punctures. Frons, paraocular and supraclypeal areas dense punctate, with punctures separated by less than a puncture diameter. Vertex between lateral ocellus and compound eye with fine punctures separated by more than a puncture diameter (10−15 μm / 1−2), smooth and shiny between punctures. Vertex (behind lateral ocelli) and genal area smooth and shiny, with sparse fine and longitudinal wrinkles. Scutum and scutellum relatively sparsely punctate medially (15−25 μm / 1−4 or more), becoming denser peripherally. Mesepisternum shiny, rugose. Basal part of propodeum (propodeal triangle) with sparse and mainly longitudinal wrinkles, between wrinkles smooth and shiny; posterior vertical and lateral surface of propodeum shiny, finely and irregularly rugose (Fig. 4). T1 smooth and shiny, almost impunctate, with few very tine punctures (3−10 μm) only; others terga with dense and fine punctures (10−15 μm / 0.5−2), becoming sparse along marginal zones; marginal zones impunctate. Sterna finely tessellate with coarse hair

Figs 1–6. Females of *Sphecodes* spp. 1, 3, 5 – *S. miniatus* Hagens; 2, 4, 6 – *S. schwarzi* Astafurova et Proshchalykin. 1, 2 – head; 3, 4 – scutum; 5, 6 – T2.

pores separated by 1−3 their diameters. Coloration. Head and mesosoma black except yellow mandibles (brown on apex) and flagellomeres ventrally. Legs brown, tarsi yellow or brownish yellow. T1−T2 reddish brown, usual lighter on marginal zones; other terga brown. Sterna reddish brown. Vestiture. Face below antennal sockets (except clypeus) with dense plumose white hairs.

DISTRIBUTION. Mongolia (*Bayan-Khongor Aimag, *Bulgan Aimag, *Uvur-khangai Aimag, *Tuv Aimag, Dornod Aimag, *Sukhbaatar Aimag), Russia (Eastern Siberia).

Thus, fourteen species of the genus *Sphecodes* are now recorded from Mongolia (Table 2).

Table 2. The list of *Sphecodes* bees of Mongolia

№	Species	Reference date		
		I	II	III
1	*Sphecodes crassus* Thomson, 1870	-	+	+
2	*S. cristatus* Hagens, 1882	+	+	+
3	*S. ephippius* (Linnaeus, 1767)	+	-	-
4	*S. ferruginatus* Hagens, 1882	-	-	+
5	*S. geoffrellus* (Kirby, 1802)	-	+	+
6	*S. gibbus* (Linnaeus, 1758)	+	+	-
7	*S. kozlovi* Astafurova et Proshchalykin, 2015	-	+	+
8	*S. miniatus* Hagens, 1882	-	+	-
9	*S. monilicornis* (Kirby, 1802)	-	+	+
10	*S. nippon* Meyer, 1922	-	+	+
11	*S. pellucidus* Smith, 1845	-	+	+
12	*S. pinguiculus* Pérez, 1903	+	-	+
13	*S. puncticeps* Thomson, 1870	-	+	-
14	*S. schwarzi* Astafurova et Proshchalykin, 2015	-	-	+
	Total:	4	10	10

I – Meyer, 1920; Bogusch & Straka, 2012; Ascher & Pickering, 2015; II – Astafurova & Proshchalykin, 2015a; III – current data.

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