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A new subspecies of *Bracon pallicarpus* Thomson, 1892 (Hymenoptera, Braconidae, Braconinae) parasitising larvae of *Dorytomus cinereus* Hochhuth (Coleoptera, Curculionidae) in Magadan Province, Russia

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ABSTRACT. The data on biology and taxonomy of the new subspecies *Bracon pallicarpus dorytomovorus* Samartsev & Dokuchaev **ssp. nov.** are given. It was shown that in the Northern Okhotsk region, the wasps of the new subspecies are solitary univoltine parasitoids of the *Dorytomus cinereus* Hochhuth, 1851 (Coleoptera, Curculionidae) larvae which feed on the central axis of the catkins of the willow *Salix rorida* Lakschevitz (Salicaceae). Having consumed the weevil larva, the parasitoid forms a cocoon inside the host's tunnel and overwinters as a pupa inside the fallen catkin. *Bracon pallicarpus dorytomovorus* **ssp. nov.** adults emerge the next year in the second half of May. The status of the specimens of the type series of *B. pallicarpus pallicarpus* Thomson, 1892 was specified and its differences from 30 closely related species are presented. *Bracon schmiedeknechti* Fahringer, 1927 was synonymised with *B. pallicarpus pallicarpus* (**syn. nov.**).

Key words: parasitoid, phenology, taxonomy, Palaearctic, Northern Okhotsk region

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INTRODUCTION

Comprising more than a thousand described and many undescribed species (Quicke et al., 2023), *Bracon* Fabricius is one of the largest genera of the family Braconidae. Members of the genus *Bracon* are abundant and diverse in most Palaearctic natural communities mostly being idiobiont ectoparasitoids of phytophagous larvae from the orders Coleoptera, Diptera, Hymenoptera, and Lepidoptera (Shaw & Huddleston, 1991). However, the reliability of the known host-parasite relationships of the *Bracon* species requires clarification, primarily due to difficulties in identifying the parasitoid. The taxonomy of the genus has undergone significant changes, first towards expansion (e.g. Papp, 1966, 1969; Tobias et al., 1986) and then narrowing of the species boundaries (e.g. Papp, 2000, 2008, 2012). Currently, there are no keys to the *Bracon* species for any region of the world based on modern taxon concepts of the species (Yu et al., 2016). Thus, the problem of reliable identification of parasitoids and clarification of their biology seems to be important.

The common hosts of the members of *Bracon* are concealed larvae of weevils (Curculionidae). Thus, of 156 *Bracon* species listed in Russia, 40 are associated with Curculionidae (87 weevil species are

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recorded as their hosts; Samartsev, 2019a). However, weevils of the Holarctic genus *Dorytomus* Germar, 1817 have not yet been indicated as hosts of *Bracon* (Yu et al., 2016). The members of the genus *Dorytomus* develop on plants of the willow family Salicaceae (Egorov et al., 1996). In the northeast of Asia, 10 out of 17 species of *Dorytomus* are associated with the genus *Salix*. In particular, it has been determined that larvae of *D. cinereus* Hochhuth, 1851 develop in catkins of the *Salix rorida* Lakschevitz eating out their central stem (Dokuchaev & Korotyaev, 2017). The damage dealt by weevil larvae to catkins may be considerable. For example, in 2016, 72 % of examined fallen catkins from five trees of the model group of *S. rorida* were affected by the larvae of *D. cinereus* (Dokuchaev & Korotyaev, 2017).

In 2016, ectoparasitoid Hymenoptera and Diptera have been found on *D. cinereus* larvae. Due to the scarcity of the material, the species have not been identified. In 2019 special studies were performed to reveal the composition of parasitoids developing on *D. cinereus*. A part of the reared parasitoids belongs to the braconid species, *Bracon pallicarpus* Thomson, 1892, of which phenology and systematics this article is devoted.

MATERIAL AND METHODS

Material. The parasitoids of the larvae of *D. cinereus* were collected by N.E. Dokuchaev in 2016, 2019, and 2020 in the environs of Magadan City (Northern Priokhotye, or Northern Okhotsk region), in the Dukcha River valley, 7 km from the seacoast (59° 37.653' N, 150° 56.226' E; 41 m a.s.l.), on a group of five trees of *Salix rorida*, on which catkins the larvae of *D. cinereus* feed. Weevils were identified by B.A. Korotyaev (ZISP). In 2016, when the first material on beetles was collected, parasitoids were not intentionally studied. In 2019, the study of weevil parasitoids was exploratory and the methods of collecting and observation were not unified across the season, catkins were collected in different quantities from both the trees and the ground. The catkins collected in May and early June were placed in 1.5 L glass jars for rearing of weevils and kept in the laboratory at room temperature. Subsequently collected catkins were cut along the central stem by the sharp scalpel in search of insects. The found larvae of weevils with parasitoids on them were kept inside the catkins in Petri dishes at room temperature until September. The volumes of collected material are presented in Table 1. On September 21, 2019, eight braconid wasp cocoons were placed in nylon bags in soil litter under the same willows at the depth of 2–3 cm where they were kept until May 2020. The other eight cocoons were kept in a refrigerator at +4 °C from October 6 till December 2, 2019. Afterwards, they were kept in the laboratory at room temperature until adults emerged. The material and literature that served as a source for the taxon concepts of the species related to *B. pallicarpus* are presented in the Appendix.

Table 1. Material collected in 2019 from catkins of the examined group of *Salix rorida* trees.

	May		June						September
	18	28	5	12	15	22	26	30	5
***Salix rorida* catkins**	*48*	*127*	*88*	35	40	221	68	15	40
Weevil larvae	*3*	*19*	*28*	10	30	24	3	-	-
Dead weevil larvae	-	-	-	16	20	45	1	7	-
Weevil pupae	-	-	-	-	-	-	-	-	-
Empty weevil tunnels	-	-	-	7	-	68	16	11	-
Lepidoptera larvae	*13*	*44*	*40*	-	-	-	-	-	-
Empty butterfly tunnels	-	-	-	-	-	13	-	-	-
***Bracon* larvae**	-	-	-	1	2	16	19	1	-
***Bracon* pupae**	-	-	-	-	-	-	1	-	5
Chalcidoidea larvae	-	-	-	-	1	19	12	3	-
Diptera larvae	-	-	-	-	-	1	-	7	-

Note. Most numbers represent the results of dissections of the collected catkins. The catkins from the first samples were not dissected, the numbers of insects that left them are given in *Italics*.

Terminology. Morphological nomenclature follows Quicke (1987) and van Achterberg (1993) with additions described in Samartsev and van Achterberg (2021:302). The following abbreviations are used: **OD**: maximum diameter of lateral ocellus; **OOL**: ocular-ocellar distance; **POL**: postocellar distance; **T1–T7**: first–seventh metasomal tergites.

Museum acronyms. **HNHM**: Hungarian Natural History Museum (Budapest, Hungary); **IRSNB**: Royal Belgian Institute of Natural Sciences (Brussels, Belgium); **MZLU**: Lund Museum of Zoology, Lund University (Lund, Sweden); **NHRS**: Swedish Museum of Natural History (Stockholm, Sweden); **NMW**: Natural History Museum Vienna (Austria); **USNM**: National Museum of Natural History (Smithsonian Institution, Washington DC); **ZISP**: Zoological Institute of the Russian Academy of Sciences (Saint Petersburg, Russia).

Other data. Data on temperature conditions in Magadan in May 2016 and 2019 were taken from the http://rp5.ru/ website. The distribution of *B. pallicarpus* is given mainly according to the Taxapad catalogue (Yu et al., 2016).

RESULTS

Phenology. Observations on the seasonal development of *D. cinereus* and *B. pallicarpus* are summarised in Figure 1. Adults of *D. cinereus* appear on *Salix rorida* catkins at the end of April or at the beginning of May when most of the Dukcha River floodplain is covered in snow and ice. On May 12, 2016 weevil eggs and a weevil larva with a formed head capsule were found inside the dissected willow catkin (Dokuchaev & Korotyaev, 2017; Fig. 1). In all seven examined willow catkins collected from a tree on May 28, 2019, small weevil larvae were found. The latest date for the detection of weevil eggs was June 9, 2016.

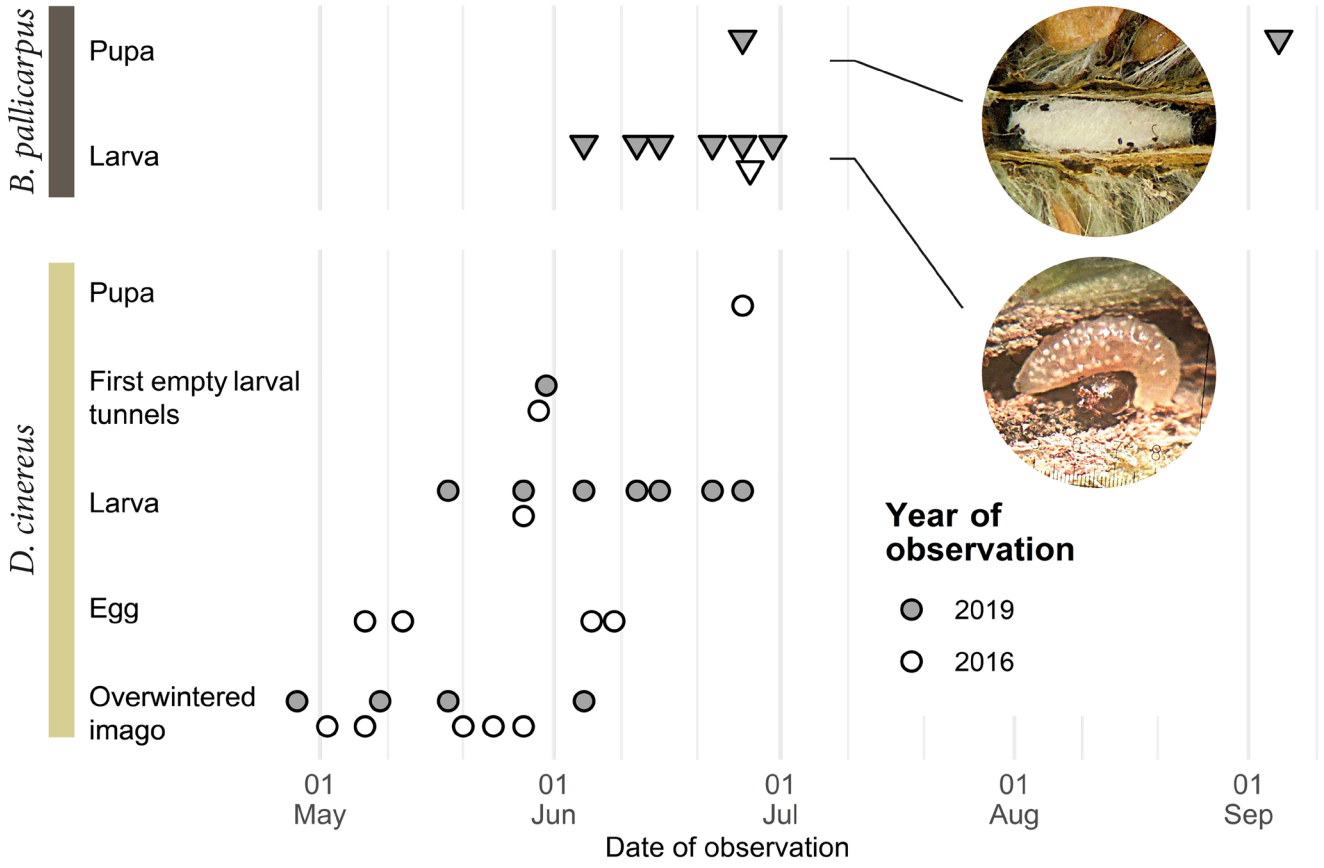


Figure 1. Seasonal development of *Dorytomus cinereus* and *Bracon pallicarpus dorytomovorus* **ssp. nov.** observed in 2016 and 2019.

Having finished feeding, the weevil larvae leave the catkins to pupate in the litter. The first larvae to leave the catkins were noticed on May 30, 2016, and May 31, 2019. In 2016, beetle pupae were observed starting from June 25 (Dokuchaev & Korotyaev, 2017; Fig. 1). In 2019, pupation was recorded almost two weeks earlier (the first pupae were observed on June 9). Empty larval tunnels were observed on June 12, and in 10 catkins collected from the trees on June 15, one weevil pupa was found the next day. It should be noted that the average temperature in May 2019 was 1 °C higher than in 2016 (4.8 and 3.8 °C, accordingly). In the laboratory, adults of *D. cynereus* developed from larvae without entering diapause (not indicated in Fig. 1, because no adults were found in natural conditions).

Among 284 willow catkins collected from the ground on June 22 and 26, 2019, less than 14 % were intact, while 82 % had the central stem eaten out or inhabited by *D. cinereus* larvae. Meanwhile, 80 weevil larvae (33.8 %; 13 parasitoid larvae were not identified and thus not included in Table 1) were infected by parasitoids about half of which belonged to *B. pallicarpus* (Table 1). Most weevil larvae that remained in the catkins at the end of June and beginning of July were apparently paralysed by parasitoids. For instance, among 68 catkins collected on June 26, 2019, 20 out of 23 weevil larvae were parasitised. Only single braconid larvae were found on weevils.

Having finished feeding, larvae of *B. pallicarpus* form cocoons inside weevil tunnels in catkins. Such cocoons were first recorded on June 20 and 26, 2016, and June 25, 2019. By the end of July 2019, there were 19 cocoons under observation. When dissecting three cocoons on July 19, 2016, pupae of braconid wasps were found at different stages of development. One of them had only the eyes pigmented, another had the darkened head and mesosoma, and the third had the whole body pigmented. Two cocoons found in the catkins collected on September 4, 2019, were damaged during dissection. They contained unpigmented wasp pupae. On December 14, 2019, and then January 14, 2020, *B. pallicarpus* adults emerged from five cocoons kept in the refrigerator from October 6 to December 2, 2019. Eight cocoons that had been kept in nylon bags in litter under the willows during the winter were examined on May 15 and 24, 2020, adults of *B. pallicarpus* emerged from five cocoons.

Systematic part

Taxonomic hierarchy

Order Hymenoptera Linnaeus, 1758

Superfamily Ichneumonoidea Latreille, 1802

Family Braconidae Nees, 1811

Subfamily Braconinae Nees, 1811

Genus *Bracon* Fabricius, 1804

Bracon pallicarpus pallicarpus Thomson, 1892
(Figs 2–13, 29, 31, 32, 34)

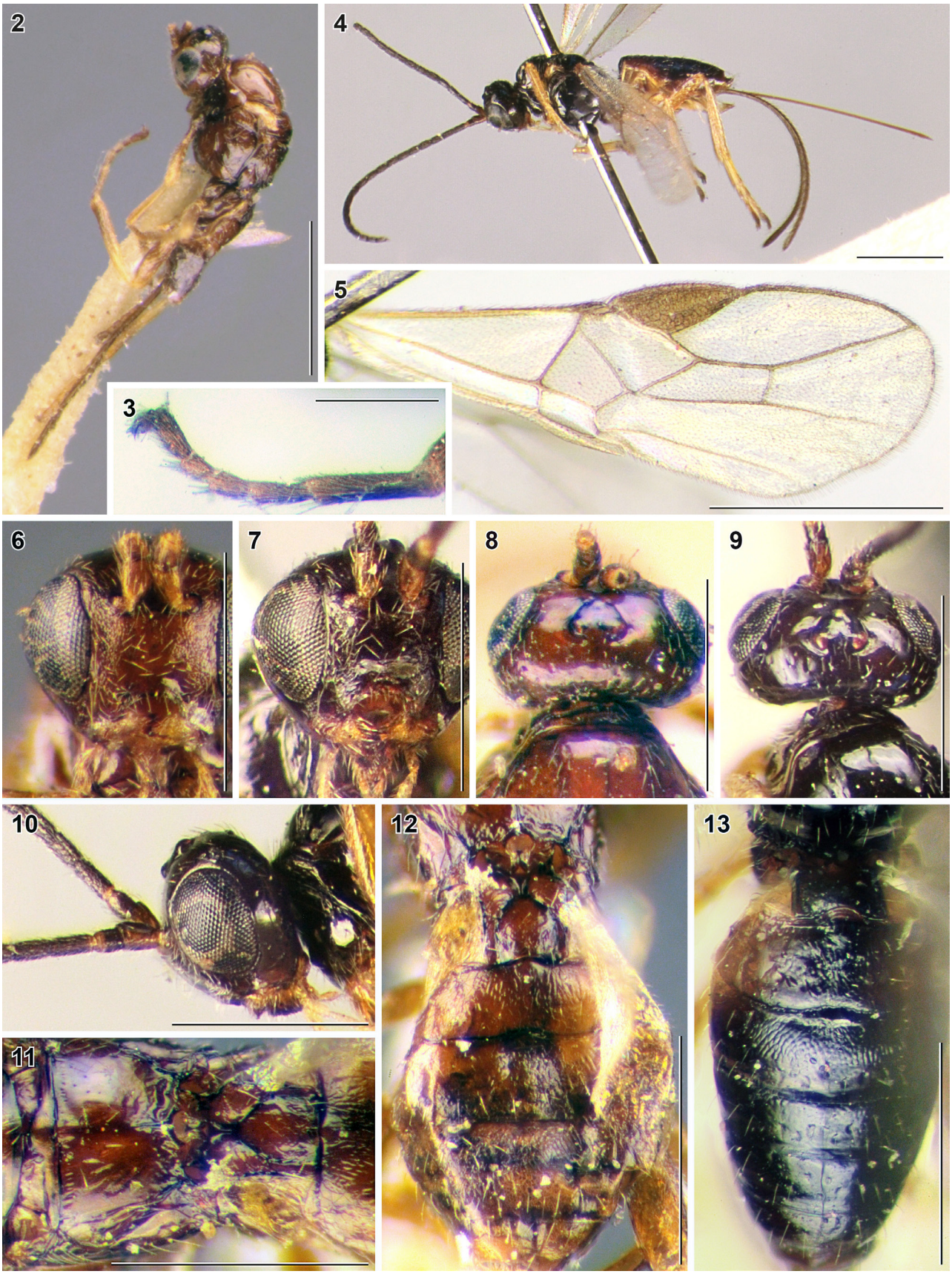
Bracon pallicarpus Thomson, 1892:1809; Papp, 2000:256

Bracon obscurator ab. *pallidicarpus*: Papp, 1966:378 (in key); Shenefelt, 1978:1576

Bracon pallidicarpus: Schmiedeknecht, 1897:592; Papp, 1969:203 (lectotype designation; synonymised with *B. obscurator* Nees, 1811)

Bracon schmiedeknechti Fahringer, 1927:420; Papp, 1971: 285; Shenefelt, 1978:1648. **Syn. nov.**

Material examined. 1 ♀ (lectotype)(MZLU HYM_00063014), 2 ♂ (paralectotypes) (MZLU HYM_00063015–00063016), “Lpl”, “Sweden Lappland”, “*pallicarpus*”, “Lectotypus *Bracon pallicarpus* Thomson 1894, sp. n. des. Papp J. 1968 middle male”, “Paralectotypus *Bracon pallicarpus* Thomson 1894, sp. n. des. Papp J. 1999”, “1965 155”, “1989 245”, “MZLU Type no. 6536: 1–3”. 1 ♀ (holotype of *B. schmiedeknechti*), NMW, Germany, Thuringia, Blankenberg, 6 x 1916. 1 ♀ (ZISP Hym.KS_0005462), Russia, Novgorod Province, 20 km NW Pestovo, Tychkino, 30 vii 2003, V.I. Tobias leg.



Figures 2–13. *Bracon pallicarpus pallicarpus* Thomson, 1892 (**2, 3, 6, 8, 11, 12.** Lectotype, female, MZLU; **4, 5, 7, 9, 10, 13.** Holotype of *B. schmiedeknechti* Fahringer, 1927, female, NMW). **2, 4.** Habitus, lateral view; **3.** Hind tarsus; **5.** Fore wing; **6, 7.** Head, front view; **8, 9.** Head, dorsal view; **10.** Head, lateral view; **11.** Propodeum and T1, dorsal view; **12, 13.** Metasoma, dorsal view. Scale bars – 2, 4, 5: 1 mm; 3: 0.25 mm; 6–13: 0.5 mm.

Remarks. Dr. Jenö Papp twice published information about the status of specimens of the type series (Papp, 1969, 2000), with different specimens designated as lectotypes and different numbers of insects mentioned in the series. The first work (Papp, 1969:203) indicates six specimens, three of which were examined by J. Papp, and the only female is designated as the lectotype: "1 ♀ (lectotype) & 2 ♂ (paralectotypes) on one pin". The second article (Papp, 2000:256) mentions only four specimens (same three wasps on one pin and another male on a separate pin), while a male is called the lectotype: "the first male (below the female) is in good condition and earlier this syntype specimen was designated as the lectotype by me (Papp 1969)".

According to the article 74.1.1. of the International Code of Zoological Nomenclature, this designation is not valid as secondary, thereby the female with the collection number HYM 00063014 should be considered the lectotype. The two specimens left unmentioned in the 2000 article were labelled as "*Bracon claripennis* Ths. det. Papp J. 1999" and "present only mesostigma [= mesosoma]", accordingly (as reported by Rune Bygebjerg, MZLU). Thus these two specimens should have been excluded from the type series by J. Papp.

Distribution. Austria; Finland; Germany; Hungary; Italy; Kazakhstan; Russia: Murmansk Province (Hellén, 1957; see Samartsev, 2019b:81), Novgorod Province (new record); Serbia (Papp, 2000), Slovenia (as *B. schmiedeknechti*); Spain; Sweden; United Kingdom.

Redescription — Female. *Head*. OOL 1.8–2.3 × OD; POL 1.2–1.5 × OD. Transverse diameter of eye (lateral view) 1.7–2.2 × minimum width of temple. Face width 1.3–1.5 × combined height of face and clypeus, 2.0–2.1 × width of hypoclypeal depression. Longitudinal diameter of eye 3.1–3.3 × as long as malar space (front view). Width of hypoclypeal depression 1.5–1.6 × distance from depression to eye. *Antenna* with 19–22 antennomeres. *Mesosoma*. Transverse pronotal sulcus smooth or weakly crenulate. *Wings*. Vein 1-R1 1.3–1.4 × as long as pterostigma. Vein 3-SR 1.8–1.9 × vein r, 0.4–0.5 × vein SR1, 1.1–1.2 × vein 2-SR. Vein cu-a weakly postfurcal. *Metasoma*. Median length of T1 1.1–1.2 × its apical width. Median area of T1 separated by smooth or weakly crenulate furrow. T2 medially 0.8–0.9 × as long as T3. Basal width of T2 1.8–2.3 × its median length. *Sculpture*. Face medially almost smooth or weakly granulate. Propodeum smooth with short rugae apically. *Colouration*. Legs more light-coloured. Fore tibia entirely, middle and hind tibia largely brownish yellow proximally or most legs brownish yellow. Maxillary palps and tegulae brownish yellow. Otherwise similar to the new subspecies.

Male. OOL about 1.8 × OD; POL about 1.1 × OD. Longitudinal diameter of eye about 3.8 × as long as malar space (front view). Width of hypoclypeal depression about 1.8 × distance from depression to eye. Vein 3-SR 1.1–1.2 × vein 2-SR. Vein 2-SR+M about 0.2 × vein 2-SR, 0.4 × vein m-cu. Median length of T1 1.2–1.4 × its apical width. T2 medially 0.90–0.95 × as long as T3. Metasoma entirely smooth. Otherwise similar to female.

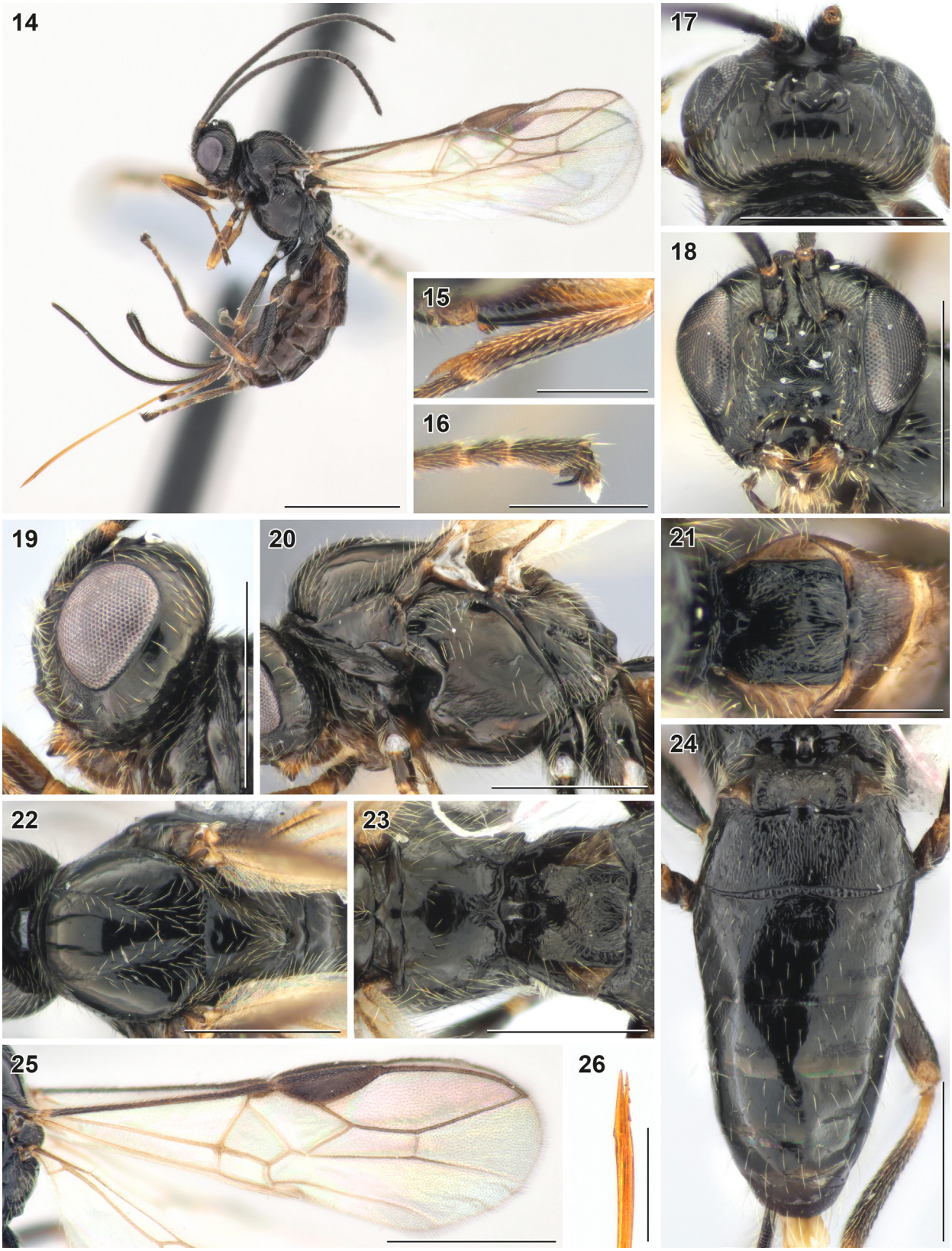
Bracon pallicarpus dorytomovorus Samartsev & Dokuchaev **ssp. nov.**

(Figs 14–28, 30, 33, 35)

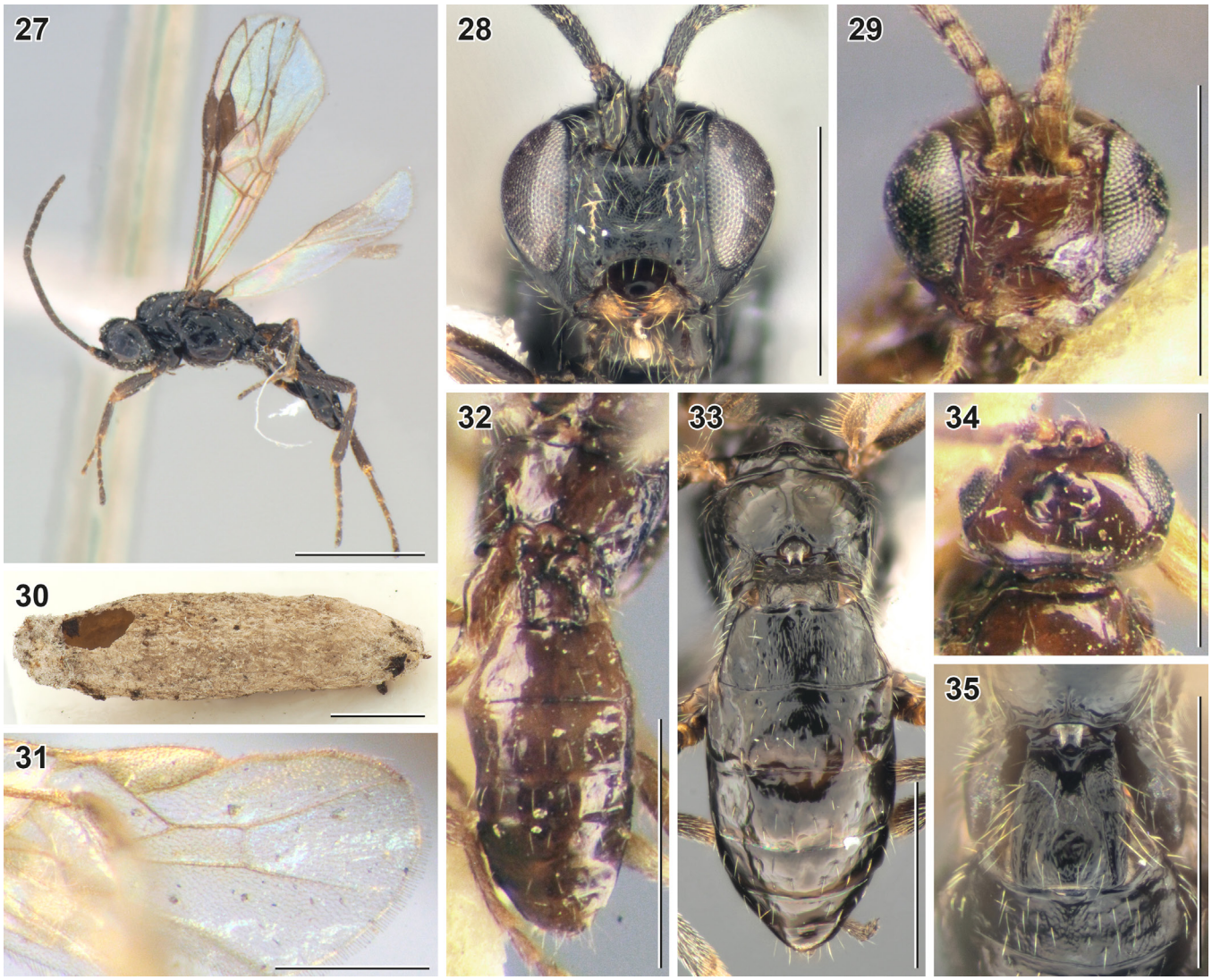
Material examined. **Holotype**. ♀ (ZISP INS_HYM_0002250), Russia, Magadan Province, Dukcha River floodplain, 59° 37.653' N, 150° 56.226' E, *Dorytomus cinereus* larvae in *Salix rorida* catkins, 22 vi 2019, reared 8 i 2020, NE Dokuchaev leg.; **Paratypes.** Same locality and collector as for holotype: 1 ♀ (ZISP INS_HYM_0002254), 22 vi 2019, reared 14 xii 2019; 1 ♀ (ZISP INS_HYM_0002252), 22 vi 2019, reared 14 i 2020; 1 ♀ (ZISP INS_HYM_0002251), 22 vi 2019, reared 20 v 2020; 1 ♀ (ZISP INS_HYM_0002253), 22 vi 2019, reared before 27 v 2020; 1 ♂ (ZISP INS_HYM_0002255), 26 vi 2019, reared 18 xii 2019; 1 ♂ (ZISP INS_HYM_0002256), 26 vi 2019, reared 22 xii 2019; 1 ♂ (ZISP INS_HYM_0002258), 26 vi 2019, reared 25 v 2020; 1 ♀ (ZISP INS_HYM_0002257), 26 vi 2019, reared 27 v 2020.

Additional material. Same data as for holotype: 1 ♂ pupa, 1 ♀ adult, 1 ♀ pupa (ZISP Hym.KS_0005239–Hym.KS_0005241, respectively), 22 vi 2019; 1 ♀ pupa (ZISP Hym.KS_0005242), 26 vi 2019; 1 ♀ pupa, 2 ♂ pupae (ZISP Hym.KS_0000066), 5 ix 2019.

Distribution. Russia: Magadan Province (**new record**).



Figures 14–26. *Bracon pallicarpus dorytomovorus* **ssp. nov.** (**14, 16, 19, 20, 22.** Holotype, female, ZISP; **15, 17, 18, 21, 23–26.** Paratype, female, ZISP). **14.** Habitus, lateral view; **15.** Fore tibia, front view; **16.** Apex of hind tarsus; **17.** Head, dorsal view; **18.** Head, front view; **19.** Head, lateral view; **20.** Mesosoma, lateral view; **21.** T1, dorsal view; **22.** Mesosoma, dorsal view; **23.** Propodeum and T1, dorsal view; **24.** Metasoma, dorsal view; **25.** Fore wing; **26.** Apex of ovipositor. Scale bars – 14, 25: 1 mm; 15, 16, 21, 26: 0.25 mm; 17–20, 22–24: 0.5 mm.



Figures 27–35. *Bracon pallicarpus dorytomovorus* **ssp. nov.** (**27, 28, 30, 33, 35.** Paratype, male, ZISP) and *Bracon pallicarpus pallicarpus* Thomson, 1892 (**29, 31, 32, 34.** Paralectotype, male, MZLU). **27.** Habitus, lateral view; **28, 29.** Head, front view; **31.** Apex of fore wing; **32, 33.** Propodeum and metasoma, dorsal view; **34.** Head, dorsal view; **35.** T1, dorsal view. Scale bars – 27: 1 mm; 28, 29, 31–35: 0.5 mm.

Etymology. The name "*dorytomovorus*" is composed of the host generic name "*Dorytomus*" formed from the Greek words (and since that followed by the connecting vowel "o") and the Latin suffix "vorus" referring to the trophic relationships of the new subspecies.

Description — Female. Fore wing length 2.5–3.1 mm. *Head*. Width of head (dorsal view) 1.8–1.9 × its median length, transverse diameter of eye 1.6–2.0 × as long as temple. Eyes with sparse, short setae. OOL 2.4–2.9 × OD; POL 1.6–1.9 × OD; OOL 1.4–1.6 × POL. Frons not impressed behind antennae, with shallow mid-longitudinal groove. Longitudinal diameter of eye in lateral view 1.4–1.5 × its transverse diameter; transverse diameter of eye 1.5–1.9 × minimum width of temple; hind margins of eye and temple parallel or weakly broadened ventrally. Face medially weakly and widely convex, face width 1.6 × combined height of face and clypeus, 1.8–1.9 × width of hypoclypeal depression. Longitudinal diameter of eye 2.6–2.9 × as long as malar space (front view). Malar space 0.70–0.85 × base of mandible. Malar suture absent. Clypeus prominent, dorsally evenly rounded, with weakly protruding ventral rim; clypeal sulcus smoothed. Height of clypeus 0.30–0.35 × width of hypoclypeal depression. Width of

hypoclypeal depression 1.6–1.9 × distance from depression to eye. *Antenna* 0.7–0.8 × as long as fore wing, with 23 antennomeres. Scape 1.6–1.9 × as long as maximum wide (lateral view). First flagellomere 2.2–2.9 × as long as its apical width, 1.0–1.2 × as long as second flagellomere. Middle and penultimate flagellomeres 1.8–2.0 × and 1.7–1.9 × as long as wide, respectively. *Mesosoma* 1.4–1.5 × as long as its maximum height. Transverse pronotal sulcus deep and smooth. Mesoscutum with setae only along notauli. Width of mesoscutum 1.1–1.2 × its median length (dorsal view). Notauli weakly impressed anteriorly and absent posteriorly. Scutellar sulcus crenulate, about 0.1 × as long as scutellum. Mesepimeral sulcus smooth. Mesopleural pit deep. Metapleural sulcus smooth. Propodeal spiracle round, located behind middle of propodeum. Propodeum apically with short branching keel and without mid-longitudinal impression. *Wings*. Angle between veins C+SC+R and 1-SR about 65–75°. Pterostigma 2.7–3.4 × as long as wide. Vein r arising from basal 0.35–0.40 of pterostigma. Vein 1-R1 1.2–1.3 × as long as pterostigma. Marginal cell 5–10 × as long as distance from its apex to apex of wing. Vein 3-SR 1.9–2.1 × vein r, 0.5–0.6 × vein SR1, 1.2–1.5 × vein 2-SR. Vein 1-M 0.75–0.85 × vein 1-SR+M, 1.9–2.2 × vein m-cu, 2.2–2.4 × vein cu-a. Vein 1-SR+M weakly curved anteriorly. Vein 2-SR+M 0.2–0.4 × vein 2-SR, 0.4–0.8 × vein m-cu. Vein cu-a weakly antefurcal. Hind wing vein 1-1A 1.1–1.3 × vein cu-a; vein 2-1A absent; vein R1 3.2–4.1 × as long as vein r-m; vein r-m antefurcal. *Legs*. Fore tibia with wide row of long thick setae. Hind femur 3.9–4.1 × as long as wide. Hind tibia without subapical row of thick setae, 8–9 × as long as wide, 1.5–1.6 × as long as hind femur. Inner spur of hind tibia 0.3–0.4 × as long as hind basitarsus. Hind tarsus 0.90–0.95 × as long as hind tibia; hind tarsomeres with dense setae ventrally and thick setae apico-ventrally. Fifth segment of hind tarsus 0.4–0.5 × as long as hind basitarsus, 0.90–0.95 × as long as second segment. Claws with large, protruding and blunt basal lobes. *Metasoma* with 7 visible tergites. Median length of T1 1.0–1.1 × its apical width (lectotype female: about 1.15–1.20 ×). Dorsolateral carinae of T1 weakly separated; dorsal carinae absent; median area of T1 separated by crenulate furrow. T2 medially 0.70–0.85 × as long as T3. Basal width of T2 1.7–2.0 × its median length. Median area of T2 absent; spiracle located in middle of T2. Suture between T2 and T3 deep, curved, and weakly crenulate. Apical margins of T3 to T6 thin. Ovipositor sheath 2.35–2.45 × as long as hind tibia, 0.68–0.73 × as long as fore wing. Apex of ovipositor with developed (weak) dorsal nodus and ventral serration. *Sculpture*. Mostly smooth. Face, malar space, and frons granulate; genae smooth or weakly coriaceous in lower half. Propodeum smooth to weakly coriaceous, with short rugae apically. T1 laterally weakly rugulose, its median area obliquely rugulose; T2 rugulose medially, granulate-rugulose laterally; T3 weakly granulate to smooth; T4 weakly granulate anteriorly or entirely smooth, T5–T7 (almost) smooth. *Colouration*. Body almost entirely brownish black; maxillary palps and tegulae dark brown; fore femur apically and all tibiae basally yellowish brown. Wing membrane almost hyaline or weakly darkened, somewhat darker apically; pterostigma brown, veins brown, proximally pale or yellowish brown.

Male. Fore wing length 2.3–2.5 mm. Transverse diameter of eye (dorsal view) 1.8–1.9 × as long as temple. OOL 2.4–2.5 × OD; POL 2.1–3.5 × OD; OOL 0.7–1.1 × POL. Longitudinal diameter of eye in lateral view 1.5–1.6 × its transverse diameter, 3.1–3.5 × as long as malar space (front view). Width of hypoclypeal depression 1.5–1.6 × distance from depression to eye. Antenna about 0.9 × as long as fore wing, with 23 antennomeres. Mesosoma 1.6 × as long as its maximum height. Marginal cell 5.8–5.9 × as long as distance from its apex to apex of wing. Vein 3-SR 1.5–1.7 × vein r, 0.45–0.50 × vein SR1, 1.1–1.4 × vein 2-SR. Vein 2-SR+M 0.35–0.45 × vein 2-SR. Vein 2-SR+M 0.70–0.75 × vein m-cu. Hind wing vein 1-1A 1.3–1.5 × as long as vein cu-a. Hind femur and hind tibia 3.7–3.8 × and 7.7–8.4 × as long as wide, respectively. Fifth segment of hind tarsus 0.8–0.9 × as long as second segment. Median length of T1 about 1.2 × its apical width. T2 medially 0.85–0.90 × as long as T3. Basal width of T2 1.5–1.6 × its median length. Otherwise similar to female.

Cocoon. Robust, with dense, non-transparent, pale brownish wall; otherwise of usual for the braconine wasps oblong oval shape with circular subapical emerging hole (Shaw & Huddleston, 1991); (2.3) 3.0–3.4 × as long as wide and (1.05) 1.3–1.5 × as long as fore wing.

Diagnosis. Papp (2000) considered *B. pallicarpus* to be a member of the *B. obscurator* group. This species group, which establishment was not well justified (see discussion), comprise quite different species. In addition, among the Palaearctic species of the genus *Bracon*, a number of species are habitually similar to *B. pallicarpus*. These species are associated by the filiform antennae with not thickened flagellomeres, the small hypoclypeal depression, the not or weakly shortened marginal cell of the fore wing, the mostly smooth propodeum, the partly sculptured metasomal tergites, the deep second metasomal suture, and the relatively long ovipositor (about as long as metasoma or somewhat longer). The differences between *B. pallicarpus*, its related species, and the members of the *B. obscurator* group are summarised in Table 2. It can be noted that *B. pallicarpus* is most similar to *B. conjugellae* Bengtsson, *B. flavinus* Fahringer, *B. fukushimai* Tobias, *B. mediator* Nees, *B. momphae* Papp, and *B. pulcher* Bengtsson. Differences between these six species and two subspecies of *B. pallicarpus* are presented in the key below (the differences between the new subspecies and the nominate subspecies are given in the last pair of couplets of the key).

Key to the species most closely related to *Bracon pallicarpus* Thomson

1 Face width about 1.9 × combined height of face and clypeus (Fig. 38). Clypeal sulcus deep, crenulate. – Vein r arising from basal 0.45–0.50 of pterostigma. Middle flagellomeres 1.1–1.3 × as long as wide. Median length of T1 0.80–0.95 × its apical width. Fifth segment of hind tarsus 0.7–0.8 × as long as second segment. OOL 2.1–2.3 × POL. (Figs 36–38). ..... ***B. mediator*** Nees

— Face width 1.3–1.6 × combined height of face and clypeus (Figs 6, 7, 41, 51, 54). Clypeal sulcus absent, dorsal clypeal margin more or less smooth. **2**

2 Suture between T2 and T3 almost straight and wide (Fig. 40). – T2 with very weak narrow elongate-triangular median area and with large impressed thyridia. Marginal cell 18 × as long as distance from its apex to apex of wing. Longitudinal diameter of eye in lateral view 1.3 × its transverse diameter; transverse diameter of eye (lateral view) 2.5 × minimum width of temple. Vein cu-a postfurcal. Metasoma with distinct rugulose sculpture only on T2. (Figs 39–42). ..... ***B. fukushimai*** Tobias

— Suture between T2 and T3 curved and less wide (Figs 12, 13, 24, 44, 48, 53). **3**

3 Flagellum somewhat thickened, middle flagellomeres less than 1.35 × as long as wide (Fig. 46). First flagellomere 1.6 × as long as its apical width, penultimate flagellomere 1.5 × as long as wide. – Width of hypoclypeal depression 1.2 × distance from depression to eye. Vein r arising from basal 0.45 of pterostigma. Median length of T1 about 0.85 × its apical width. T2 with spiracles located in anterior part of tergite and with shallow dorsolateral impressions. (Figs 43–46). ..... ***B. momphae*** Papp

— Flagellum not thickened, middle flagellomeres 1.5–2.1 × as long as wide. First flagellomere 1.7–2.9 × as long as its apical width, penultimate flagellomere 1.6–2.2 × as long as wide. **4**

4 Longitudinal diameter of eye in lateral view 1.2–1.3 × its transverse diameter; transverse diameter of eye 2.6–3.0 × minimum width of temple (Fig. 47). Propodeum with mid-longitudinal keel in apical half (Fig. 48). T2 with weakly defined, small, elongate-triangular median area. – Marginal cell 10–20 × as long as distance from its apex to apex of wing. Claws with acute angularly protruding basal lobe. Median length of T1 0.90–0.95 × its apical width. Spiracle of T2 located in middle of tergite. Ovipositor sheath 1.3–1.8 × as long as hind tibia. (Figs 47–49). ..... ***B. flavinus*** Fahringer, 1928

— Longitudinal diameter of eye in lateral view 1.4–1.7 × its transverse diameter; transverse diameter of eye 1.3–2.2 × minimum width of temple (Figs 19, 50). Propodeum with mid-longitudinal keel occupying less than its apical third (Figs 23, 55). Median area of T2 indistinct. **5**

5 Claws with relatively short angularly protruding basal lobe (Fig. 52). Spiracle located in anterior part of T2. Mesosoma and head with light pattern: face brownish yellow; propleuron, pronotum, mesoscutum along notauli, and mesopleuron dorsally reddish brown. Tegulae yellow. Longitudinal diameter of eye 3.4–3.7 × as long as malar space (front view) (Figs 50–52). ..... ***B. pulcher*** Bengtsson

— Claws with long, protruding (acute or blunt) basal lobe (Fig. 16). Spiracle located in middle of T2 (Fig. 24). Mesosoma and head without light pattern, entirely brownish black (Fig. 14, 56). Tegulae dark

brown or yellowish brown. Longitudinal diameter of eye 2.6–3.4 × as long as malar space (front view; Figs 6, 7, 54). **6**

6 Metasoma entirely smooth (Fig. 53). Longitudinal diameter of eye in lateral view 1.6–1.7 × its transverse diameter; transverse diameter of eye (lateral view) 1.3–1.4 × minimum width of temple; hind margins of eye and temple (in lateral view) slightly broadened dorsally (Figs 53–56). .... ***B. conjugellae*** Bengtsson

– Metasoma with rugulose sculpture on T1–T2 and with weak granulate sculpture on T2–T5 or T2–T6 (Figs 12, 13, 24). Longitudinal diameter of eye in lateral view 1.4–1.5 × its transverse diameter; transverse diameter of eye (lateral view) 1.5–2.2 × minimum width of temple; hind margins of eye and temple (in lateral view) parallel or broadened ventrally (Figs 10, 19). **7**

7 Longitudinal diameter of eye 3.1–3.3 × longer than malar space (front view; Figs 6, 7). Face width 1.3–1.5 × combined height of face and clypeus. Vein 3-SR 1.1–1.2 × vein 2-SR (Fig. 5). Median length of T1 1.1–1.2 × its apical width (Fig. 11). T2 medially 0.8–0.9 × as long as T3 (Figs 12, 13). .... ***B. pallicarpus pallicarpus*** Thomson

– Longitudinal diameter of eye 2.6–2.9 × longer than malar space (front view; Fig. 18). Face width about 1.6 × combined height of face and clypeus. Vein 3-SR 1.2–1.5 × vein 2-SR (Fig. 25). Median length of T1 0.97–1.06 × its apical width (Fig. 21). T2 medially 0.70–0.85 × as long as T3 (Fig. 24). .... ***B. pallicarpus dorytomovorus*** **ssp. nov.**

Table 2. Diagnostic characters separating *B. pallicarpus* from related species.

T1DLC	HTS	RS	GS	OS:WL (TL)	LDE:MS	Trs V:II	T1 L:W	T2:T3	1-R1:AW
B. pallicarpus* Thomson, 1892									
Weakly separated	Absent	On T1–T2	More or less developed on T2–T6	0.65–0.70 (2.2–2.5)	2.6–3.2	0.90–0.95	1.0–1.15	0.7–0.9	5–10
***B. admotus* Papp, 2000**									
Developed	Absent	**Absent**	Hardly visible on T2–T3	0.6 (2.3)	2.9	0.95–0.95	**1.3**	0.8	3.7
B. arcuatus* Thomson, 1892									
Developed	-	On T1–T3	Hardly visible on T2–T3	*0.50–0.55 (1.63)*	2.6–2.7	0.9	0.85	0.9	2.35–2.65
***B. batis* Papp, 1981**									
Developed	One seta	On T1–T2	Hardly visible on T2–T3 or T2–T5	*0.40–0.55 (1.3–1.8)*	2.7–3.1	0.6–0.9	0.8–1.1	1.0–1.2	7–12
B. claripennis* Thomson, 1892									
Developed	**Developed**	On T1–T2	**Absent**	**0.3 (0.95)**	2.6	**1.2**	**0.8**	0.75	4.0
B. colpophorus* Wesmael, 1838									
Absent	Absent	**Absent**	**Absent**	**0.3 (1.2)**	*3.4–3.6*	0.9	1.1	0.6–0.8	4.9–6.6
***B. conjugellae* Bengtsson, 1924**									
Weakly separated	Absent	**Absent**	**Absent**	0.5–0.6 (2)	3.1–3.3	0.9–1.1	0.95–1.05	0.8–0.9	8.7
***B. epitriptus* Marshall, 1885**									
Developed	Absent	On T1–T2	Developed on T2–T3	**0.3–0.4 (1.2)**	2.8–2.9	0.7	0.9–1.0	**0.95–1.1**	7–14
***B. flavinus* Fahringer,1928**									
Developed	Absent	On T1–T2	**Absent**	*0.40–0.55 (1.4–1.8)*	2.8–3.3	0.80–0.95	0.9	0.85–0.90	*10–22*
***B. fukushimai* Tobias, 2000**									
Developed	Absent	*Only on T2*	Hardly visible on T2–T6	0.65–0.65 (2.25)	2.9	0.9	1.1	*0.95*	18
B. instabilis* Marshall, 1897									
Weakly separated	Absent	On T1–T3	Hardly visible on T2–T3	**0.25 (0.8)**	**2.25**	**1**	0.95	0.8	4.4
B. kopelkei* Papp, 2000									
Developed		On T1–T2	T2 weakly granulate laterally	*0.5 (1.7)*	**2.2–2.5**	0.95	0.8	1.0–1.1	3.9
B. longulus* Thomson, 1892									
Absent	**Developed**	**Absent**	**Absent**	**1.7 (5)**	3.3	0.75	**1.3**	**1**	5.0
B. marshalli* Szepligeti, 1901									
Absent or weakly separated	Two thick setae	**Absent**	**Absent**	**0.3–0.4 (1.2–1.4)**	2.5–2.9	0.8–0.9	0.75–1.0	0.85–0.95	4.2–6.8

T1DLC	HTS	RS	GS	OS:WL (TL)	LDE:MS	Trs V:II	T1 L:W	T2:T3	1-R1:AW
***B. mediator* Nees, 1834**									
Developed	Absent	On T1–T3	**Absent**	*0.80–0.85 (2.3–2.5)*	2.4–2.5	*0.7–0.8*	0.8–0.9	0.8–0.9	6.2–7.9
B. momphae* Papp, 1999									
Developed		On T1–T2	Developed on T2–T3	*0.5 (1.5)*	2.7	0.9	0.85	*0.9–1.0*	6.0
***B. negativus* Tobias, 1957**									
Weakly separated	**Developed**	On T1–T2	Developed on T1–T3	0.65 (2)	3.15	**0.6**	1	0.9	9.7
***B. nigriventris* Wesmael, 1838**									
Developed	Two thick setae	On T1–T2	Hardly visible on T2–T4	**0.35 (1.25)**	3.1	**1**	1	0.8	6.9
***B. novus* Szepligeti, 1901**									
Developed	Absent	On T1–T2	Developed on T2–T3	*0.40–0.45 (1.45–1.50)*	2.8–2.9	0.8	**0.8**	*0.95*	7.9–8.6
B. obscurator* Nees, 1811									
Absent	-	*Absent or developed on T2*	**Absent**	(1.25)	-	-	1.1	**1**	5.5
***B. orbus* Papp, 1981**									
Developed	Two thick setae	On T1–T2 or T1–T3	Hardly visible on T2–T5	*0.45 (1.5)*	2.8	0.8	**0.8**	0.8	7.2
B. pachyceri* Quintaret, 1912									
Absent	-	*Only on T1*	**Absent**	(1)	3.3	**1.1**	-	0.7	7.6
B. parvicornis* Thomson, 1892									
Absent	Absent	**Absent**	**Absent**	**0.4 (1.2)**	2.9	0.9	1.15	0.8	1.7
B. parvulus* Wesmael, 1838									
Absent	One seta	**Absent**	**Absent**	**1 (3.6–3.9)**	2.9–3.4	0.95	1.1–1.2	*0.9–1.0*	6
B. pauris* Beyarslan, 1996									
Absent	Absent	**Absent**	**Absent**	**0.3 (1.15)**	2.7	**1.05**	**1.4**	0.75	4.5
***B. picticornis* Wesmael, 1838**									
Developed	*Some sparse thickened setae*	On T1–T2	Hardly visible on T2–T4	**0.35–0.40 (1.2–1.4)**	*3.5*	0.80–0.95	0.85–0.9	0.8–1.0	7–12
***B. pulcher* Bengtsson, 1924**									
Developed	-	On T1–T3	Hardly visible on T3–T6	0.45–0.65	*3.4–3.7*	0.9–0.95	0.95–1.1	0.8–0.9	**3.2**
***B. romani* Fahringer, 1927**									
Developed	Absent	On T1–T2	More or less developed on T2–T6	0.45–0.55 (1.6–1.8)	*2.4–2.6*	0.9	0.9	**1.0–1.1**	6–10
***B. subsinuatus* Szepligeti, 1901**									
Weakly separated	Absent	On T1–T2	**Absent**	**0.35 (1.2)**	**2.4**	-	1	**1.1**	5.3
***B. tornator* Marshall, 1885**									
Weakly separated	Absent	On T1–T2	**Absent**	0.40–0.65 (1.6–2.0)	**2.2–2.4**	0.8–0.9	0.8–1	*0.85–1.10*	6–14

Notes. Character states distinctly differing the particular species from *B. pallicarpus* are given in **bold** while marginally different states are marked by *italics*. The species of the *obscurator* species group *sensu* Papp (2000) are marked by asterisks.

Column names abbreviations.

T1DLC – dorsolateral carinae of T1;

HTS – subapical row of thick setae on hind tibia;

RS – development of rug(ul)ose sculpture on metasoma;

GS – development of granulate sculpture on metasoma;

OS:WL(TL) – ovipositor sheath : wing length ratio (ovipositor sheath: hind tibia length ratio);

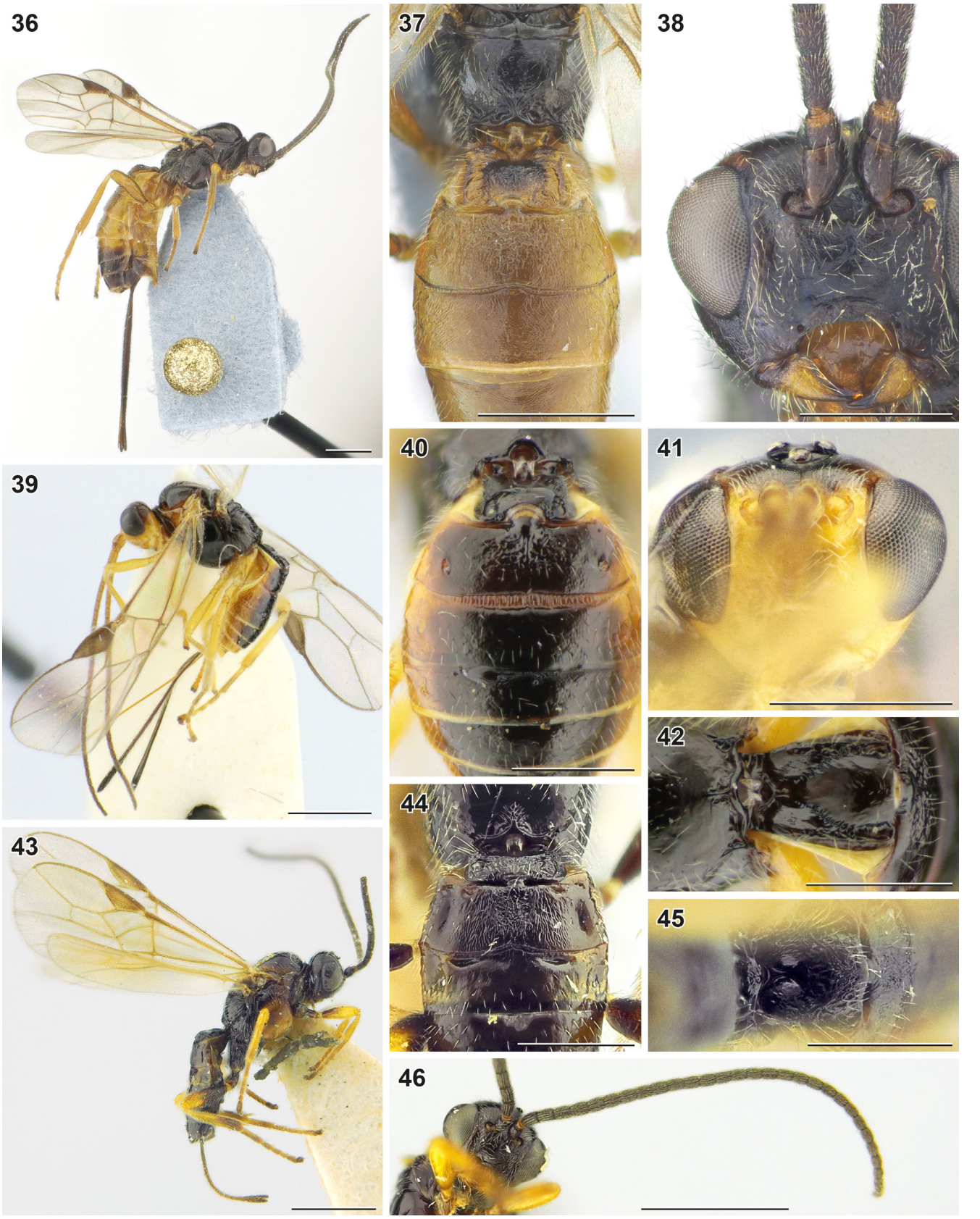
LDE:MS – longitudinal diameter of eye : malar space height ratio;

Trs V:II – fifth segment of hind tarsus : second segment ratio;

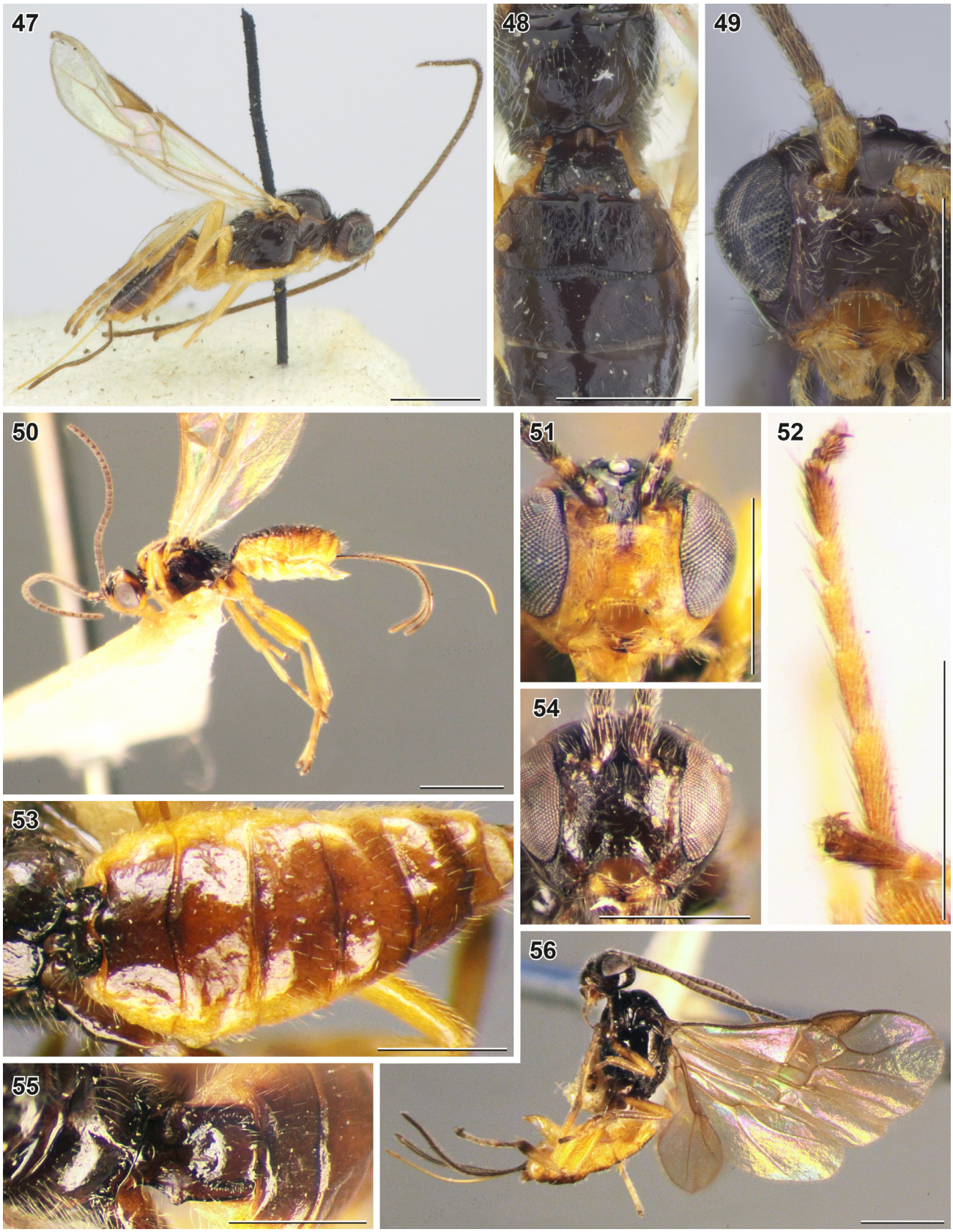
T1 L:W – median length of T1 : its apical width ratio;

T2:T3 – median lengths of T2 : T3 ratio;

1-R1:AW – marginal cell length: distance from its apex to the apex of wing ratio.



Figures 36–46. *Bracon mediator* Nees, 1834 (**36–38.** female), *B. fukushimai* Tobias, 2000 (**39–42.** Holotype, female, ZISP), and *B. momphae* Papp, 1999 (**43–46.** Pratype, female, HNHM); **36, 39, 43.** Habitus, lateral view; **37.** Propodeum and T1–T3, dorsal view; **38, 41.** Head, front view; **40.** Metasoma, dorsal view; **42, 45.** T1, dorsal view; **44.** T2–T3, dorsal view; **46.** Antenna. Scale bars – 36, 37, 39, 43, 46: 1 mm; 38, 40–42, 44, 45: 0.5 mm.



Figures 47–56. *Bracon flavinus* Fahringer, 1928 (**47–49.** Holotype of *Macrodyctium flavipes* Ashmead, 1906, female, USNM), *B. pulcher* Bengtsson, 1924 (**50–52.** Paralectotype, female, NHRS), and *B. conjugellae* Bengtsson, 1924 (**53–56.** Lectotype, female, NHRS); **47, 50, 56.** Habitus, lateral view; **48.** Propodeum and T1–T3, dorsal view; **49, 51, 54.** Head, front view; **52.** Hind tarsus; **53.** Metasoma, dorsal view; **55.** Propodeum and T1, dorsal view. Scale bars – 47, 50, 56: 1 mm; 48, 49, 51–55: 0.5 mm.

DISCUSSION

It is ascertained that in the Northern Okhotsk region larvae of *Bracon pallicarpus dorytomovorus* **ssp. nov.** develop on larvae of the weevil *Dorytomus cinereus* as solitary parasitoids. Because of inconsistency in methods of collection of the material for this work, the obtained data cannot be interpreted as quantitative. However, they let us conclude that *B. pallicarpus dorytomovorus* is one of the main parasitoids of *D. cinereus* in the investigated model group of *Salix rorida* trees and to infer the seasonal development patterns of the wasp and its host. The weevil develops one generation per year from the eggs laid into the willow catkins in early May. During June the beetle larvae leave the catkins and pupate in the litter. Braconid wasps begin to attack *D. cinereus* larvae in the end of May and first wasp pupae appear from the end of June. Having consumed the weevil larva, the *B. pallicarpus dorytomovorus* **ssp. nov.** forms a cocoon inside the catkins, in which it apparently persists until the following May. The fact that darkening of parasitoid pupae was noted already in June while unpigmented pupae were found in September probably indicates that the development of pupae in *B. pallicarpus dorytomovorus* **ssp. nov.** is considerably extended. The parasitoid pupae overwinter inside the fallen catkins. While most of the idiobiont Braconidae diapause as the prepupa inside the cocoon (Shaw & Huddleston, 1991), overwintering at the pupal stage found in *B. pallicarpus dorytomovorus* **ssp. nov.** must represent an adaptation to the short summer and early appearance of the host larvae in spring. Thus, in the Northern Okhotsk region *B. pallicarpus dorytomovorus* **ssp. nov.** develops one generation per year.

The discovery of a new subspecies of *B. pallicarpus* in Magadan Province represents the first finding of the species in the Eastern Palaearctic, quite far from its known range. Restoring *B. pallicarpus* as a valid species, Papp (2000) included it in the newly established *B. obscurator* species group. The characteristics of this group of species seem to be too nonspecific: the black colouration (but not always), the ovipositor sheath longer than the hind tibia (but not in all included species), the antennae with 15–33 antennomeres (the most common state in the genus). Despite only 15 species being initially included in the *B. obscurator* group, many more Palaearctic species satisfy its diagnosis. As it may be seen on a restricted number of characters included in Table 2, rather different species got into the *B. obscurator* group. We considered differences between *B. pallicarpus* and other members of the *obscurator* group of genera, and also 15 similar species not included in the *obscurator* group. The differences between the species closest to *B. pallicarpus* turned out to be subtle. Thus, the differences between *B. pulcher* and *B. pallicarpus* are so weak that only the scarcity of available material and a remarkable difference in the colouration pattern does not allow us to synonymise them. Considering the slight differences between species related to *B. pallicarpus*, we decided that insects from Magadan Province deserve to be isolated into a separate subspecies.

AUTHOR'S CONTRIBUTION

The authors confirm their contribution to the paper as follows: N.E.D. conducted field observations, collecting and rearing of the material; K.G.S. performed the taxonomic analysis; K.G.S. and N.E.D. contributed to the writing of the manuscript; The authors read and approved the final version of the manuscript.

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AVAILABILITY OF DATA AND MATERIAL

The specimens of Braconidae listed in this study are mostly deposited in the Zoological Institute (St Petersburg, Russia) and are available from the curator, upon request. A complete list of the involved material from other museum collections is given in the Appendix.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

Not applicable.

CONSENT FOR PUBLICATION

Not applicable.

CONFLICT OF INTERESTS

The authors declare that there is no conflict of interest regarding the publication of this paper.

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Appendix. Sources of data on taxa presented in Table 2

Bracon admotus Papp, 2000. Papp, 2000:237. *Material examined.* 1 ♀ (paratype), HNHM Hym.coll.153306, "Bulgaria, Mts. Rhodopes, Popsko 14.VII.1976, Zaykov", "14.7.1976. Rhodopi Popsko leg A. Zaykov", "Paratypus ♀ *Bracon admotus* sp. n. Papp 1999. ant. 29-art.", "Hym.Typ.No. 7938. Museum Budapest". 1 ♀, ZISP, Russia, Saratov Province, Khvalynsky National Park, 2 km W Khvalynsk, meadow and steppe near pine forest, K. Samartsev leg. 7 vi 2011.

Bracon arcuatus **Thomson, 1892**. Papp, 2000:240. *Material examined.* 1 ♀ (lectotype), MZLU, "Sweden Öland", "*arcuatus* m.", "Lectotypus *Bracon arcuatus* sp. n. Thomson 1894; des. Papp, 1968", "1965 172", "1989 257".

Bracon batis **Papp, 1981**. *Material examined.* 1 ♀ (holotype), HNHM Hym.coll.154908, "Hungaria, Nagyhegyes Vajdalapos", "1975.VI.16–18 leg Kaszab & Mahunka", "Holotypus *Bracon* (*Orthobracon*) *batis* Papp sp.n. Papp 1981", "Hym.Typ. No. 2852 Museum Budapest". 1 ♀, ZISP, Russia, Ulyanovsk Province, N of Skugareyevka, Tashelka River bank, bottomland forest, K. Samartsev leg. 21 vii 2011.

Bracon claripennis **Thomson, 1892**. Papp, 2000:241. *Material examined.* 1 ♂ (lectotype), MZLU, "Rsiö", "Sweden Skåne Ringsjön", "Lectotypus *Bracon claripennis* Thomson 1894, sp. n., des. Papp J. 1968", "*Bracon claripenis* Ths. ♂ det. Papp J. 1997", "1965 160", "1989 250", "MZLU 2013 072". 1 ♀ (paralectotype?), MZLU, Pålsjö, Skåne, "Pål", "*claripennis*".

Bracon colpophorus **Wesmael, 1838**. Papp, 2000:242; 2012:6. *Material examined.* 1 ♀ (holotype), IRSNB, Belgium, Brussels (detailed label data in Papp, 2012).

Bracon conjugellae **Bengtsson, 1924**. Samartsev, 2013:319. *Material examined.* 1 ♀ (lectotype), NHRS JUST_000000034, Sweden (detailed label data in Samartsev, 2013).

Bracon epitriptus **Marshall, 1885**. *Material examined.* 2 ♀ (paralectotypes), HNHM Hym. coll.153365–153367, "England, Wiltshire Nunton; locus typicus". 1 ♀ (lectotype of *B. melanogaster* Szépligeti, 1901), HNHM Hym. coll. 154912, "Szóváta Csiki", "Transsylvania". 1 ♀ (lectotype of *B. pallidipes* Szépligeti, 1896), HNHM Hym.coll.154913, "Budapest Szépligeti". 1 ♀, ZISP Hym.KS_0005255, Russia, Novgorod Province, 20 km NW Pestovo, Tychkino, V.I. Tobias leg. 2 vii 2002; 1 ♀, ZISP Hym.KS_0005256, same data as for preceding, 13 v 1993.

Bracon flavinus **Fahringer, 1928**. *Material examined.* 1 ♀ (holotype of *Macrodyctium flavipes* Ashmead, 1906), USNM ENT_00809664, Japan, Hokkaido, Sapporo, S. Matsumura leg.

Bracon fukushimai **Tobias, 2000**. *Material examined.* 1 ♀ (holotype), ZISP INS_HYM_0002249, "Hinoemata Village Fukushima Pref. Honshu, Japan, 16–8. viii, 1999 S. Belokobylskij".

Bracon instabilis **Marshall, 1897**. Papp, 2000:244. *Material examined.* 1 ♀, ZISP Hym.KS_0005461, Russia, Novgorod Province, 20 km NW Pestovo, Tychkino, V.I. Tobias leg. 22 v 1993.

Bracon kopelkei Papp, 2000. Papp, 2000:244. *Material examined.* 1 ♀ (paratype), HNHM_153384, Norway, "N/Nordland, Korgfjellet, Kopelke 17.08.97", "Ex *Potania glaucael*, S. glauca, Kopelke det.", "Zucht: Kopelke Nr. 32 P/1997 Schlüpfdatum: 8.5.98", "Paratypus *Bracon* (*Gl.*) *kopelkei* sp. n. Papp J. 1999". 1 ♀ (paratype), HNHM_153385, Norway, "N/Finnmark N.-Varanger Sandfjord", "Ex. *Pontania herbaceae* Cam., det. Kopelke", "Zucht: Kopelke Nr. 6J Schlüpfdatum: 15.5.98".

Bracon longulus **Thomson, 1892**. Papp, 2000:248. Samartsev, 2019b:73.

Bracon marshalli **Szépligeti, 1901**. Papp, 2000:249. *Material examined.* 1 ♀, ZISP Hym.KS_0001428, "*Bracon obscurator* N.", "Schmiedeknecht dt". 1 ♀, ZISP Hym.KS_0001429, Ukraine, 50 km N of Kovel, reared from *I. typographus*, V. Kozak leg. 27 iv 1971. 1 ♀, ZISP Hym.KS_0001430, Kazakhstan, Aktau Mountains, 60 km SE Atasu (Zhana-Arka), Taldy-Manak River valley, V.I. Tobias leg. 21 v 1959.

Bracon mediator **Nees, 1834**. *Material examined.* 1 ♀, ZISP Hym.KS_0001432, Russia, Moscow Province, Kokujev collection, 30 vii 1896. 1 ♀, ZISP Hym.KS_0005484, Russia, Samara Province, N of Upravlencheskiy, aspen forest, K. Samartsev leg. 21 vi 2012. 1 ♀, ZISP Hym.KS_0005483, Russia, Ulyanovsk Province, near Surskiy, wet meadow, K. Samartsev leg. 24 vii 2011.

Bracon momphae **Papp, 1999**. Papp, 2000:251. *Material examined.* 1 ♀ (paratype), HNHM Hym. coll. 153417, 153418, "England Surry Box Hill, R. L. E. Ford", "Ex. *Mompha nodicolella*, pup. 20 vi 1952, Em. 17 v 1953, Lep. Momphidae".

Bracon negativus **Tobias, 1957**. *Material examined.* 1 ♀ (holotype), Turkmenistan, sands N of Pereval train station (39.41N, 55.01E) and S of Uzboy valley, "Пески Ел-Кол-Галай, Туркмения, Крыжановский, 30 IV 1952", "*Bracon negativus* Tobias опр. Тобиас ТИП", "Holotypus", "*Bracon epitriptus* Mshl. det. Papp J. 1999". **Remark.** *Bracon negativus* is considered here to be non-synonymous to *B. epitriptus* Marshall, because of remarkably different ovipositor length. The status of *B. negativus* requires further clarification.

***Bracon nigriventris* Wesmael, 1838**. Papp, 2012:61. *Material examined.* 1 ♀ (holotype), IRSNB, Belgium, Brussels, leg. C. Wesmael. 1 ♀, (ZISP), Russia, Samara Province, near Shiryayevo, leg. K. Samartsev 11 viii 2011.

***Bracon novus* Szépligeti, 1901**. Papp, 2008:1769. *Material examined.* 1 ♀ (lectotype), HNHM Hym.coll.154924, Hungary, "Budapest Szépligeti". 1 ♀ (lectotype of *Bracon maculifer* Szépligeti, 1901), HNHM Hym.coll.154925, "Budapest Hárshegy", "[18]95.VI.28 Szépligeti". 1 ♀, ZISP Hym.KS_0005458, Russia, Samara Province, SE Bakhilova Polyana, meadow near camp site, K. Samartsev leg. 13 vii 2010. 1 ♀, ZISP Hym.KS_0005459, Russia, Volgograd Province, 10 km S Mikhaylovka, Medveditsa River, forest, A.I. Khalaim leg. 29 vi 2004.

***Bracon obscurator* Nees, 1811**. Papp, 2000:252.

***Bracon orbus* Papp, 1981**. *Material examined.* 1 ♀ (holotype), HNHM Hym.coll.154926, Hungary, "Hungaria Egyek Ohati-erdő", "1975.VI.16–18 leg. Kaszab & Mahunka". 1 ♀, ZISP, Russia, Ulyanovsk Province, N of Skugareyevka, Tashelka River bank, meadow and forest edge, K. Samartsev leg. 19 vii 2011.

***Bracon pachyceri* Quintaret, 1912**. Papp, 200:254. *Material examined.* 1 ♀, HNHM, Denmark, "DK, E-Jutland, Staksrode Skov, 55° 41' N 9° 51' E, Munk 10.6.1984", "Bracon pachyceri Q. det. Papp J. 2008".

***Bracon parvicornis* Thomson, 1892**. Papp, 200:257. *Material examined.* 1 ♀ (lectotype), "Deg", "Degeberga i Skåne", "parvicornis", "Lectptypus *Bracon parvicornis* Thoms design. 1968 J. Papp; upper specimen", "1965 154", "ZML.2005 456". 1 ♀, Iran, Isfahan Province, Najafabad, swept on weeds, E. Nader leg. 22 iv 2013.

***Bracon parvulus* Wesmael, 1838**. Papp, 2000:258; 2012:66. *Material examined.* 1 ♀ (lectotype), IRSNB, Belgium, Brussels, C. Wesmael leg. 1 ♀ (lectotype of *B. fuscipennis* Thomson, 1892), MZLU, Sweden, "Lpl.", "Sweden Lappland", "*fuscipennis*", "Lectotypus ♀ *Bracon fumipennis* sp. n. Thomson 1894 / des. Papp J. 1968, ant 21-art.", "*Bracon* ♀ *parvulus* Ws det. Papp J. 2000", "1965 183", "1989 277". 1 ♀, ZISP Hym.KS_0005460, Russia, Samara Province, 6 km S Gvardeytsy, Tavolzhanka River bank, meadow, K. Samartsev leg. 29 vii 2010.

***Bracon pauris* Beyarslan, 1996**. Papp, 2000:260. *Material examined.* 1 ♀ (syntype), ZISP INS_HYM_0002500, Turkey, Edirne, Büyükdöllük, wheat field, F. Inanç leg. 20.VI.1987.

***Bracon picticornis* Wesmael, 1838**. Papp, 2012:78. *Material examined.* 1 ♀, ZISP Hym.KS_0005265, Russia, Ulyanovsk Province, 2 km SW Maliy Kuvay, mixed forest, K. Samartsev leg. 25 vii 2011. 1 ♀, ZISP Hym.KS_0005270, Russia, Samara Province, 3 km SW Bolshaya Ryazan, mapple-lime forest edge, meadow, K. Samartsev leg. 14 vii 2008.

***Bracon pulcher* Bengtsson, 1924**. Samartsev, 2013:325.

***Bracon romani* Fahringer, 1927**. *Material examined.* 1 ♀ (holotype), NMW, "T.Lp.; 1908 ", "27/7; ARn", "*Bracon romani* m Type det. Dr. Fahringer", "Holotype". 1 ♀, INS_HYM_0002499, "Mal / T.'Lp.", "5", "Pontania / [?]polaris herbaceae", "*Bracon Romani* Fahr. ♀ Cotype A. Roman det.", "к. Шостакова". 1 ♀, ZISP Hym.KS_0001431, "A/Tirol Ötztaler Alpen Vent/Am Spiegel KOPELKE 1.9.91", "ex *Pontania maculosa* KOP. KOPELKE det.", "Zucht: KOPELKE Nr. 187/1991 Schlüpfdatum: 28.4.92", "*Salix helvetica*", "*Bracon romani* Fahr. ♀ det. Papp J. 1996".

***Bracon subsinuatus* Szépligeti, 1901**. Papp, 2008:1782. *Material examined.* 1 ♀ (lectotype), HNHM Hym.coll.154931, Hungary, "Budapest Zugliget", "1898.VI.20 Szépligeti".

***Bracon tornator* Marshall, 1885**. *Material examined.* 1 ♀ (paralectotype), HNHM Hym.coll.154895, United Kingdom, "*tornator* Marsh. coll. Marshall", "England Leicestershire; teste Papp J. 1991", "Paralectotypus ♀ *Bracon tornator* sp. n. Marshall 1885 / des. Papp J. 1991; ant. 29-art.", "Hym.Typ.No.11537. Museum Budapest". 1 ♀ (lectotype of *Bracon aequalis* Thomson, 1892), MZLU, Sweden, Skåne, Pålsjö, "Pål", "Lectotupus ♀ *Bracon aequalis* sp. n. Thomson 1894; des. Papp J. 1989", "*Bracon tornator* Mshl. det. Papp J. 2000", "1989 251", "Type NO 3230:1-2 Zool. Mus. Lund Sweden, Braconidae: Braconinae". 1 ♀, ZISP Hym.KS_0005456, Russia, Saratov Province, 4 km N Malinovka, meadow on oakery edge, K. Samartsev leg. 4 vi 2011. 1 ♀, Hym.KS_0005457, Russia, Ulyanovsk Province, near Ryabina station, glades in oak-mapple-lime forest, K. Samartsev leg. 7 vii 2011.

زیرگونه جدید از زنبور *Bracon pallicarpus* Thomson, 1892 (Hymenoptera, Braconidae, Braconinae) پارازیتویید لارو سرخرطومی *Dorytomus cinereus* Hochhuth (Coleoptera, Curculionidae) در استان ماگادان روسیه

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چکیـــده: در این تحقیق اطلاعاتی درباره زیست‌شناسی و تاکسونومی زیرگونهٔ جدید *Bracon pallicarpus dorytomovorus* Samartsev & Dokuchaev **ssp. nov.** ارایه شد. مشخص گردید که در منطقه اوخوتسک شمالی، زنبورهای متعلق به زیرگونه جدید، پارازیتویید انفرادی و تک‌نسلی لارو سرخرطومی *Dorytomus cinereus* Hochhuth, 1851 (Coleoptea, Curculionidae) هستند. لارو این سوسک‌ها از بخش مرکزی گل‌آذین بید *Salix rorida* Lakschevitz (Salicaceae) تغذیه می‌کند. پس از تکمیل تغذیه، لارو زنبور از بدن لاور سوسک خارج شده و در داخل دالان لاروی آن پیله خود را ایجاد و در گل‌آذین خزان کرده زمستان‌گذرانی می‌کند. حشرات کامل زنبور *Bracon pallicarpus dorytomovorus* **ssp. nov.** در نیمه دوم ماه مه سال بعد ظاهر می‌شوند. وضعیت نمونه‌های مرجع *B. pallicarpus pallicarpus* Thomson, 1892، مشخص و تفاوت آن با ۳۰ گونه نزدیک و مرتبط ارایه شد. گونهٔ *Bracon schmiedeknechti* Fahringer, 1927 به عنوان نام مترادف جدید زیرگونه *B. pallicarpus pallicarpus* معرفی شد.

واژگـــان کلیدی: پارازیتویید، پدیده‌شناسی، تاکسونومی، پالئارکتیک، منطقهٔ اوخوتسک شمالی