

Review of the subtribe Psilommina (Diapriidae: Belytinae: Pantolytini) in the South Korea with description of two new species

Обзор подтрибы Psilommina (Diapriidae: Belytinae: Pantolytini) в Южной Корее с описанием двух новых видов

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КЛЮЧЕВЫЕ СЛОВА: Diapriidae, Pantolytini, Южная Корея, новые виды, новые находки, Восточная Палеарктика, паразитоиды.

ABSTRACT. Following a project on the study of parasitic wasps in South Korea, a review of the diapiids of the subtribe Psilommina (Belytinae: Pantolytini) was conducted. The following five species are newly recorded for South Korean fauna: *Acanopsilus comadensis* Chemyreva et Kolyada, 2021, *A. minimus* Chemyreva et Kolyada, 2021, *Acanosema rufum* Kieffer, 1908, *A. epicnemium* Chemyreva et Kolyada, 2021 and *Psilomma calaris* Chemyreva et Kolyada, 2021. Two new species from South Korea, *Acanopsilus curvoclavus* **sp.n.**, and *Synacra pontilis* **sp.n.** are described and illustrated.

РЕЗЮМЕ. В рамках проекта по изучению паразитических ос Южной Кореи подготовлен обзор диаприид подтрибы Psilommina (Belytinae: Pantolytini). Пять видов впервые обнаружены в фауне Южной Кореи: *Acanopsilus comadensis* Chemyreva et Kolyada, 2021, *A. minimus* Chemyreva et Kolyada, 2021, *Acanosema rufum* Kieffer, 1908, *A. epicnemium* Chemyreva et Kolyada, 2021 и *Psilomma calaris* Chemyreva et Kolyada, 2021. Два новых для науки вида, *Acanopsilus curvoclavus* **sp.n.** и *Synacra pontilis* **sp.n.**, из Южной Кореи описаны и проиллюстрированы.

Introduction

The tribe Pantolytini was diagnosed and divided into two subtribes, Pantolytina and Psilommina, by Macek [1989]. The subtribe Pantolytina includes the follow-

ing three genera: *Anommatus* Förster, 1856, *Pantolyta* Förster, 1856 and *Opazon* Haliday, 1857. The subtribe Psilommina currently combines six genera: *Acanopsilus* Kieffer, 1908, *Acanosema* Kieffer, 1908 (together with its junior synonym *Cardiopsilus* Kieffer, 1908), *Polypeza* Förster, 1856, *Psilomma* Förster, 1856, *Psilommacra* Macek, 1990 and *Synacra* Förster, 1856. Today, the subtribe Psilommina comprises only 34 species known from the Holarctic region, and only one species, *Acanopsilus africanus* (Sundholm, 1970), is known from Africa [Chemyreva, 2023].

The first research of the Pantolytini in the South Korean fauna was devoted to the Pantolytina subtribe [Chemyreva *et al.*, in press]. The present paper is the second part of this project and it is dedicated to the subtribe Psilommina. This group of diapiids has been revised in the European and Russian faunas [Macek, 1989, 1990, 1993, 1995; Chemyreva, Kolyada, 2020, 2021], and only a few studies have been devoted to the Nearctic fauna [Ashmead, 1893, 1902; Harrington, 1900; Fouts, 1927, 1966; Whittaker, 1930a, b; Macek, 1993]. The south-eastern part of the Palaearctic is also poorly studied, except for the Russian Far East. There are only three species: *Acanopsilus heterocerus* Haliday, 1857, *Psilomma dubium* Kieffer, 1908 and *Synacra paupera* Macek, 1995, have been recorded from South Korea and a few more species (*Acanosema rufum* Kieffer, 1908, *Polypeza ciliata* (Thomson, 1858), *Psilomma calaris* Chemyreva et Kolyada, 2021 and *Synacra azepyllopria* Chemyreva et Kolyada, 2020) from Japan [Macek,

1990, 1993; Chemyreva, Kolyada, 2020, 2021; Kim, Lee, 2016a, b; Kawai, 2023].

Material and methods

This study is based mostly on the materials from the National Institute of Biological Resources (Incheon, South Korea; NIBR), the Science Museum of Natural Enemies (Geochang, South Korea; SMNE) and Zoological Institute of the Russian Academy of Sciences (St Petersburg, Russia; ZISP).

Morphological terminology and measurements follow Yoder [2004], Hymenoptera Anatomy Ontology [Yoder *et al.*, 2010] and Chemyreva & Kolyada [2020, 2021]. The following abbreviations are used: A, antennomeres; MT, Malaise trap; T and S, metasomal terga and sterna, respectively. Some abbreviations of the Korean provinces are used: GW — Gangwon-do; JJ — Jeju-do. New records are asterisked (*).

Most of photographs were taken using a combination of an Olympus SZX10 stereomicroscope and an Olympus OM-D digital camera. Some images were taken with a Leica 205C Motor Focus system combined with a Dhyana 400DC digital camera and a Nikon stereo microscope SMZ25 equipped with objective lens Plan Apo 1.6X and digital camera DS-10.

Taxonomy

Family Diapriidae Haliday, 1833
Subfamily Belytinae Förster, 1856
Tribe Pantolytini Hellén, 1963
Subtribe Psilommina Macek, 1989

The diagnosis for this tribe could be checked in Chemyreva [2023]; the diagnosis of subtribe is given by Macek [1989].

Genus *Acanopsilus* Kieffer, 1908

Type species: *Acanopsilus clavatus* Kieffer, 1908 (= *Belyta heterocera* Haliday, 1857), by monotypy.

Acanopsilus comadensis Chemyreva et Kolyada, 2021

MATERIAL. South Korea, (GW) Mt. Jeombong, Jindong-ri, Girin-myeon, Inje-gun, MT, 22.VI–20.VII.2017, 38°2'58.31''N 128°28'52.10''E, Hyung-Keun Lee leg., 1 ♀ (NIBR).

DISTRIBUTION. Russia (Far East), *South Korea.

Acanopsilus minimus Chemyreva et Kolyada, 2021

MATERIAL. South Korea, (GW) Mt. Jeombong, Jindong-ri, Girin-myeon, Inje-gun, MT, 13.V–22.VI.2017, 38°1'58.52''N 128°27'54.19''E, Hyung-Keun Lee leg., 1 ♀ (NIBR); Jirisan, Hamyang-gun, Macheon-Myon, Samjeong-Li, 700m, 35°20'55''N, 127°38'21''E, 15.IX–13.X.2002, MT in forest, 1 ♀ (ZISP); Odaesan, Dongsan-Li, near Woljeongsa, 19.VII–18.VIII.2003, MT in Korean fir forest, 1 ♀ (ZISP).

DISTRIBUTION. Russia (Far East), *South Korea.

Acanopsilus curvicalvus Chemyreva et Ku, **sp.n.** Figs 1–6, 8–11.

MATERIAL. Holotype, ♀: South Korea (GW) Mt. Jeombong, Jindong-ri, Girin-myeon, Inje-gun, 38°2'58.31''N 128°28'52.10''E, 22.VI–20.VII.2017, MT, Hyung-Keun Lee

leg. (NIBR). Paratypes: the same locality, coordinates, collector and data as holotype, 1 ♂; same locality, collector and data as holotype 38°1'58.52''N 128°27'18.68''E, 1 ♀; South Korea, Gyeongsangnam-do, Changchon-ri, Ilbanseong-myeon, Jinju-si, MT, 13.VIII–10.IX.2022, Tae-Ho An leg., 1 ♀ (SMNE, ZISP).

DIAGNOSIS. Medium size (2.5–3.0) species with dark body. Moderately pubescent specimens: occipital carina medially and mesopleuron above epicnemial pit bare; base of T2 with dense bunch of setae laterally; eyes bare. Mandibles curved, pressed to head, pleurostomal carinae form acute angle with each other or almost parallel. Female antennae 14-segmented; A1 very long with simple apical rim; A1–A10 pale brown; A11–A14 almost black and compressed; apex of A14 in lateral view strongly curved dorsally. Male A3 with very shallow emargination and keel extending to 0.45 of the segment length. Radial cell absent; basal vein distinct; marginal vein shorter than distance from it to basal vein. Axillar depression each with two verricules (Fig. 5). T2 with small lateral bunch of setae, totally without lateral corners and with three deep grooves: medial one distinctly longer than lateral one; S2 without protuberances anteriorly; apical segments of female metasoma elongate and compressed.

DESCRIPTION. Female. Body length 2.9 mm; fore wing length 2.4 mm; antennae length 1.8 mm. Body and A11–A14 dark brown; legs, venation, tegulae, A1–A10 and mandibles pale brown; palpi yellow.

Head in dorsal view, 0.9 times as long as wide, 0.9 times as wide as mesosoma, smooth and covered by long scattered setae, with strongly protruding antennal shelf. Temples gradually receding behind eye. Occipital flange narrow, pubescent laterally, bare and sculptured dorsally (Fig. 6). Head in lateral view 1.1 times as high as long. Eyes bare, its largest diameter 1.15 times as long as malar space length. Antennal shelf in frontal view pustulate, face below smooth. Head in frontal view with mouth conus (Fig. 1). Clypeus 0.7 times as high as wide. Tentorial pits distinct. Labrum small, semicircular, distinctly visible. Mandibles simple, bidentate and symmetrical.

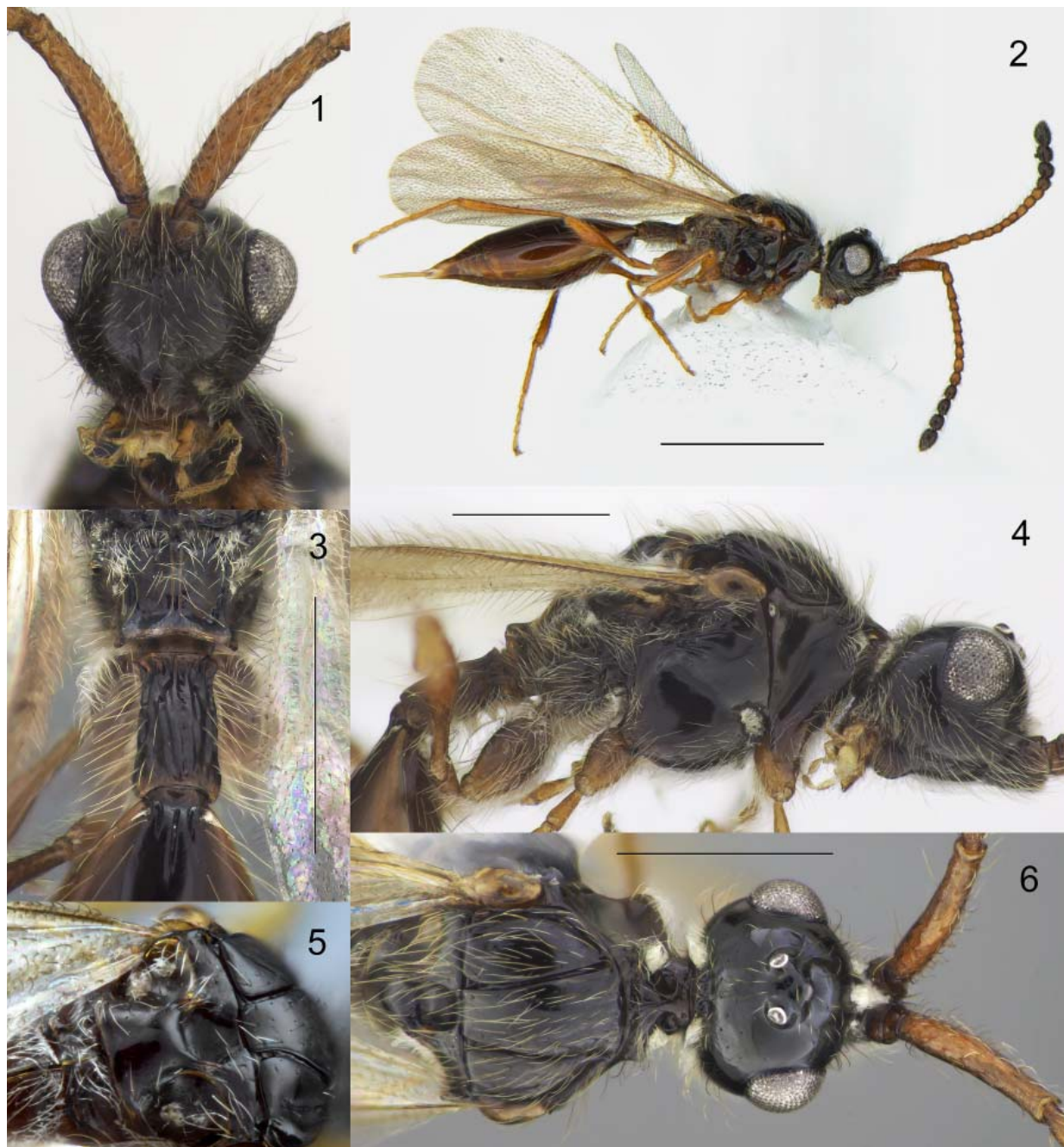
Antennae slender, gradually and weakly broadened apically. A1 0.77 times as long as width of head. Ratios of length to width of A1–A14 in dorsal and lateral views shown on Fig. 9.

Mesosoma slightly compressed, 1.1 times as high as wide. Neck and pronotal collar situated almost in same plane (Fig. 4). Pronotal anterior corners weakly prominent, sharpened. Pronotal collar, corners and pronotal pits covered by scattered long setae; neck dorsally and sides of pronotum bare (Figs 4, 6). Mesoscutum 0.8 times as long as wide, convex, covered by scattered long setae. Notauli deep and complete throughout. Anterior scutellar pit deep, large, rounded and bare inside. Scutellum large, convex, widened posteriorly. Mesopleuron mainly bare, subalar bridge postero-dorsally distinguishable but without a hole beneath; epicnemial bridge antero-ventrally absent; epicnemial pit deep and pubescent; mesopleural pit absent (Fig. 3). Metanotum short, metanotal trough smooth and bare; metascutellum pubescent with three short longitudinal keels, median keel the highest. Propodeum in dorsal view 0.55 times as long as wide, sparsely pubescent posteriorly and denser anteriorly; median propodeal keel simple, plicae complete and not projecting posteriorly (Fig. 4). Side of propodeum below plica and metapleura entirely pubescent, with small propodeal spiracle, metapleural carina and metapleural epicoxal carina. Legs slender. Fore wing with distinct costal, subcostal, marginal and short stigmal veins. Radial cell absent. Marginal vein 0.9 times as long as distance from it to basal vein (parastigma) and 5 times longer than its wide. Stigmal vein twice as long as wide of marginal vein (Fig. 8). Basal vein

visible as a trace. Poststigmal and radial veins almost invisible. Postmarginal vein absent.

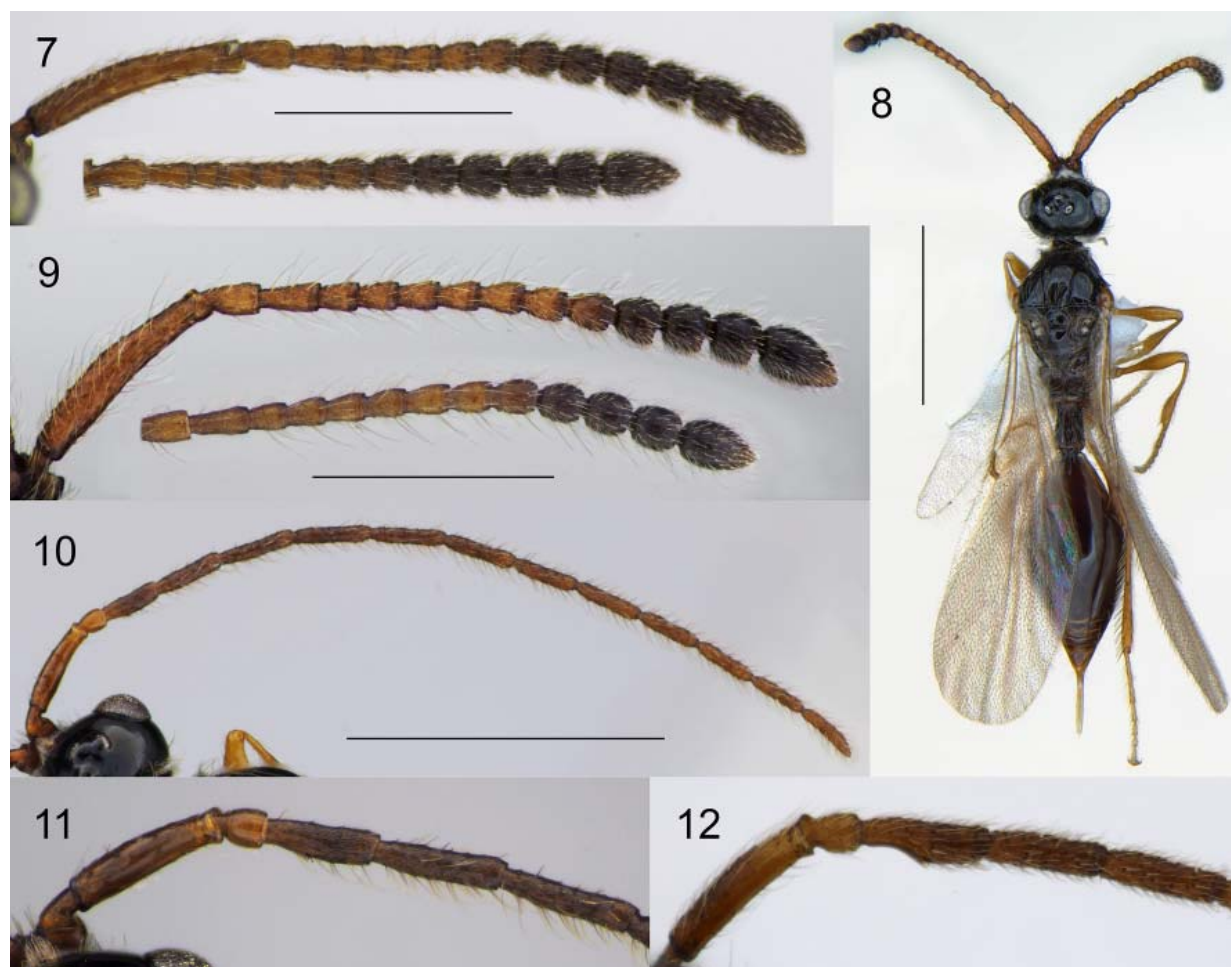
Metasoma. Petiole cylindrical, elongate, 1.7 times as long as wide, longitudinally rugose, with few setae dorsally and densely pubescent laterally and ventrally; posterior margin of petiole not arcuate. Base of T2 with small lateral bunch of setae, without lateral corners and with three grooves, the median one distinctly longer than laterals (Fig. 3); T3–T6 nar-

row, covered with few setae laterally and fine micropunctuation medially; T7 elongate, T8 elongate and compressed laterally, scarcely setose and both covered with micropunctuation. S2 without protuberance anteriorly, with short grooves and pubescence at base and entirely sparsely setose posteriorly; S3–S5 narrow, covered with numerous long setae and micropunctuation medially; S6 scarcely setose, subtriangular and slightly compressed.



Figs 1–6. *Acanopsilus curviclavus* sp.n. holotype (2) and paratype (1, 3–6). 1 — face; 2 — habitus in lateral view; 3 — propodeum and base of metasoma in dorsal view; 4 — head, mesosoma and basal part of metasoma in lateral view; 5 — mesosoma in dorsal view; 6 — head and mesosoma in dorsal view. Scale bars: 1, 3, 4, 6 — 0.5 mm; 2 — 1 mm.

Рис. 1–6. *Acanopsilus curviclavus* sp.n., голотип (2) и паратип (1, 3–6). 1 — лицо; 2 — общий вид сбоку; 3 — проподеум и основание брюшка сверху; 4 — голова, мезосома и базальная часть метасомы сбоку; 5 — мезосома сверху; 6 — голова и мезосома сверху. Масштабные линейки: 1, 3, 4, 6 — 0,5 мм; 2 — 1 мм.



Figs 7–12. *Acanopsilus curviclavus* sp.n. (8–11) and *A. heterocerus* (7, 12). 7, 9 — female antenna in dorsal and lateral views; 8 — habitus of holotype in dorsal view; 10 — male antenna; 11, 12 — base of male antennae. Scale bars: 7, 9, 10 — 0.5 mm; 8 — 1 mm.

Рис. 7–12. *Acanopsilus curviclavus* sp.n. (8–11) и *A. heterocerus* (7, 12). 7, 9 — антенна самки с дорсальной и латеральной сторон; 8 — общий вид голотипа сверху; 10 — антенна самца; 11, 12 — основание антенны самца. Масштабные линейки: 7, 9, 10 — 0,5 мм; 8 — 1 мм.

VARIATION. Three studied female specimens are differed from each other in several characters: head and mesosoma black to reddish brown; plicae almost complete to reduced in anterior half; metapleural epicoxal carina distinct to almost absent.

Male. Body length 2.5 mm. Similar to female except following characters: antenna filiform, slightly longer than body length (2.9 mm); antennomeres cylindrical, covered by long (about 1.2 times longer than width of appropriate antennomere) semi-erect setae; A1 stout, about 0.6 times as long as width of head; A3 with very shallow emargination and carina extending to 0.45 of the segment length (Fig. 11); ratios of length to width of A2–A14 shown on Fig. 10; petiole 1.75 times as long as wide; metasoma not compressed at top; T7 transverse; T8 and S8 semi-circular; S2–S7 with numerous semi-recumbent scattered setae; S8 finely pubescent.

ETYMOLOGY. The species name is derived from the Latin words *curvum* (curved) and *clava* (club) refers to the asymmetrical shape of the clavamerer in lateral view.

COMPARISON. The new species closely resembles to *Acanopsilus heterocerus* (Haliday) but differs from the latter in following: female antenna covered with heterogeneous, short and long setae (Fig. 9) [covered with homogeneous short setae in

A. heterocerus (Fig. 7)]; A11–A14 black, A1–A10 reddish brown [flagellum gradually darkened to the apex in *A. heterocerus*]; A14 wider than A13 in dorsal view [A14 as wide as A13 in dorsal view in *A. heterocerus*]; in dorsal view A11–A13 oval [cylindrical in *A. heterocerus*]; in lateral view connection between A11–A14 distinctly shift dorsally [very weakly shift dorsally in *A. heterocerus*]; axillar depression with two verricules [without verricules and with homogeneous pubescence in *A. heterocerus*]; base of T2 without lateral corners and with three deep grooves: medial one distinctly longer than lateral one [base of T2 with lateral corners and different sculpture in *A. heterocerus*].

DISTRIBUTION. South Korea.

Genus *Acanosema* Kieffer, 1908

Type species: *Acanosema rufum* Kieffer, 1908, by original designation.

Acanosema rufum Kieffer, 1908

MATERIAL. South Korea, Chungcheongbuk-do, Yeongdeok-ri, Sancheon-myeon, Chungju-si, MT,

37°3'23.14"N 127°58'33.89"E, 10–24.V.2017, Hyung-Keun Lee leg., 1 ♂ (NIBR).

DISTRIBUTION. United Kingdom, Germany, Hungary, Russia (European part), Japan, *South Korea.

Acanosema epicnemium Chemyreva et Kolyada, 2021

MATERIAL. South Korea, Odaesan, Dongsan-ri, near Woljeongsa, MT, fir forest, 19.VII–18.VIII.2003, 1 ♂ (NIBR).

DISTRIBUTION. Russia (Far East), *South Korea.

Genus *Psilomma* Förster, 1856

Type species: *Psilomma fusciscapis* Förster, 1861, by monotypy.

Psilomma calaris Chemyreva et Kolyada, 2021

MATERIAL. South Korea, (GW) Mt. Jeombong, Jindong-ri, Girin-myeon, Inje-gun, MT, 38°1'58.52"N 128°27'54.19"E, 22.VI–20.VII.2017, Hyung-Keun Lee leg., 1 ♂ (NIBR).

DISTRIBUTION. Russia (Far East), Japan (Honshu), *South Korea.

Genus *Synacra* Förster, 1856

Type species: *Diapria brachialis* Nees, 1834 (designated by Ashmead, 1893).

Synacra pontilis Chemyreva et Ku, **sp.n.**
Figs 13–22.

MATERIAL. Holotype, ♀: South Korea, (JJ) Saekdal-dong, Seogwipo-si, MT, 33°21'29"N 126°27'50"E, 23.IX–8.X.2017, Hyung-Keun Lee leg. (NIBR). Paratypes: South Korea, Gyeongsangnam-do, 1–2, Beoppyeong-ri, Chahwang-myeon, Sancheong-gun 35.48604°N, 127.9746°E, 22.VII.2024, S. Belokobylskij leg., 2 ♂♂; Gyeongsangbuk-do, Heungpyeong-ri, Guseong-myeon, Gimcheon-si, 36°4'58.6"N 128°30'30.48"E, 29.VIII–12.IX.2017 and 26.IX–10.X.2017, Hyung-Keun Lee leg., 3 ♂♂; (JJ) The vicinity of Nambyeok, Mt. Hallasan, 1800 m, MT, 33°21'34.92"N 126°31'28.42"E, 1.X–31.X.2017, Hyung-Keun Lee leg., 1 ♂; (JJ) Muljangori, Bonggae-dong, Jeju-si, MT, 33°24'30"N 126°36'26"E, 18.VI–2.VII.2017, Hyung-Keun Lee leg., 1 ♂; (JJ) Seogwipo-si, Saekdal-dong, MT, 33°21'29"N 126°27'50"E, 19.VI–2.VII.2017, Hyung-Keun Lee leg., 1 ♂; (JJ) Eoseungsaengak, Haeando, Jeju-si, MT, 33°24'13"N 126°33'62"E, 15–28.V.2017, Hyung-Keun Lee leg., 1 fem. (ZISP, SMNE).

DIAGNOSIS. *Synacra pontilis* **sp.n.** can be distinguished from all the known *Synacra* species by the combination of the following characters: female and male A1 about as long as the shortest distance between eyes, with apical flange (without lamellae) simple (Figs 13, 15); male A3 emarginated with carina extending to half of A3 length (Fig. 20); marginal vein longer than distance from it to basal vein (parastigma); head weakly nasiform, with temples tapering immediately behind eyes in dorsal view (Fig. 19); mandibles 0.65–0.80 times as long as distances between pleurostomal carinae (Fig. 13); mesopleuron with epicnemial and subalar bridges, the last one strigose sculptured (Fig. 16); propodeum with low plicae and high median carina (Fig. 17); transverse carina along posterior margin of propodeum distinct and complete; sides of propodeum and metapleura with three longitudinal carinae below plica; petiole

cylindrical, weakly elongate and longitudinally carinate, with few semierect setae dorsally and dense semierect setae ventrally; base of T2 with two long and deep grooves medially and a short and wide lateral one (Fig. 17).

DESCRIPTION. Female. Body length 2.5 mm; fore wing length 2.4 mm; antennae length 1.8 mm. Head and mesosoma black; metasoma and antennae bark brown; mandibles, legs, palpi, tegula and venation pale brown (Figs 14, 18).

Head in dorsal view 0.9 times as long as wide and as wide as mesosoma, with numerous homogeneous long semierect setae. Head in lateral view 1.2 times as high as long. Malar space as long as largest diameter of eye. Eye oval, 1.4 times as high as wide. Antennal shelf in frontal view with fine rugose sculpture below toruli, face below smooth, pubescent, toruli contiguous (Fig. 13). Genae in frontal view slightly convex and converging toward mouthparts. Clypeus as wide as high. Tentorial pits large. Labrum small, subtriangular. Mandibles slightly curved, bidentate, with apices widely crossing, 0.8 times as long as maximal distances between pleurostomal carinae (Fig. 13). Genae gradually receding behind eye in dorsal view (Fig. 15). Occipital carina sculptured.

Antennae slender, gradually and weakly broadened apically, 12-segmented (Fig. 21). A1 4.7 times as long as wide and as long as A2 and A3 measured together. Apical antennomeres not compressed (as wide as high) and without MGS brush ventrally. Ratios of length to width of A1–A12 in dorsal view as on a Fig. 21

Mesosoma slightly compressed, 1.1 times as high as wide, in dorsal view 1.7 times as long as wide. Sides of pronotum bare, pronotal collar densely setose; pronotal shoulders carinate (Fig. 15); pronotal pit distinct and pubescent (Fig. 15). Mesoscutum transverse 0.8 times as long as wide, convex, with numerous long semierect setae. Notauli complete and deep throughout. Anterior scutellar pit deep, large, rounded and bare inside. Scutellum subquadrate, convex and slightly widened posteriorly. Cuticular bridge between axilla and scutellum carinate sculptured. Axillar depression pubescent with long pale setae, without verrucate tubercle (Fig. 17). Mesopleuron bare medially and scarcely pubescence along margins and ventrally (Fig. 16). Metascutellum short and narrow, pubescent, with three short longitudinal carinas, median one the highest; metanotal trough smooth. Propodeum in dorsal view pubescent along anterior margin, and bare posteriorly. Sides of propodeum and metapleura entirely pubescent, with complete metapleural carina and metapleural epicoxal carina, and incomplete lateral longitudinal carina below plica. Legs slender (Fig. 14). Fore wing with reduced radial cell. Short radial vein present, as long as stigmal vein. Marginal vein slightly longer than distance from it to basal vein (parastigma) (Fig. 19).

Metasoma. Petiole 1.25 times as long as wide and as long as propodeum measured medially. Anterior margin of T2 with only few long setae laterally; T3–T6 narrow, with few setae and fine micropunctuation medially; T7 and T8 long and compressed laterally. Anterior part of S2 with short and deep grooves at base and dense pubescence posteriorly (Fig. 16); S3–S5 narrow, covered with few semierect setae and fine micropunctuation medially; S6 triangular, distinctly elongate and compressed, covered with scattered setae.

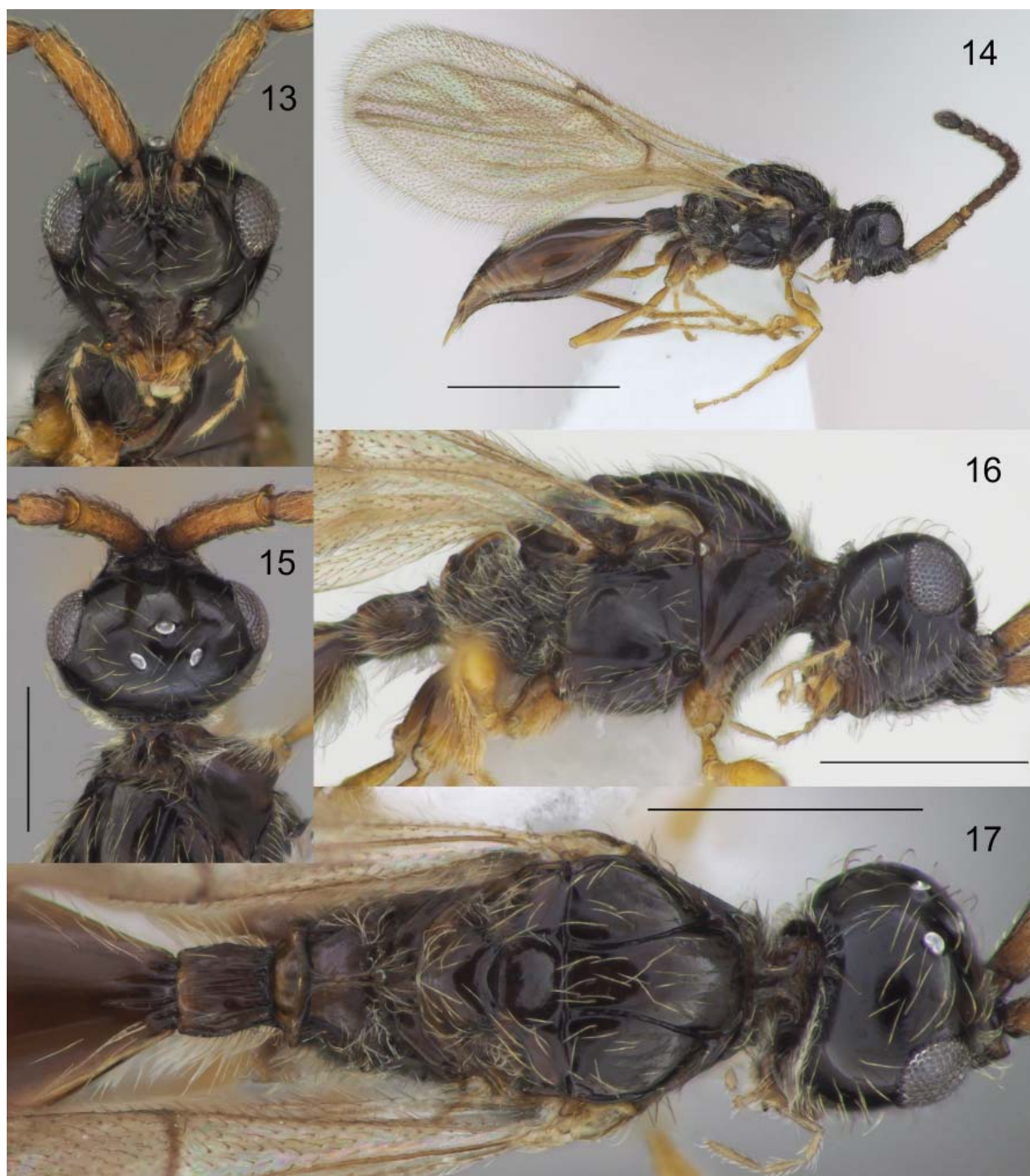
Male. Body length 2.3–2.8 mm. Similar to female except for following: antenna filiform, as long as to slightly longer than body (Fig. 22); A1 and A2 brown, A3–A14 dark brown; antennomeres cylindrical, covered by homogeneous long pubescent, about as long as the corresponding antennomere width; A1 four times as long as wide, pustulate sculptured; A3 emarginated, with keel extending to 0.4 of the segment length (Fig. 20); ratios of length to width of A1–A14 in lateral view

shown on Fig. 22; petiole about 1.5 times as long as wide; T3–T7 and S3–S7 narrow, with scattered erect setae; T8 and S8 subtriangular, rounded apically. Nine studied male specimens are differed from each other in several characters: metasoma black to brown; flagellum dark brown to yellowish; anterior scutellar pit smooth or shortly carinate posteriorly; lateral longitudinal carina of propodeum completely absent to developed

as short carina posteriorly; base of T2 with an additional very shallow groove medially (between two long and deep ones) or without it.

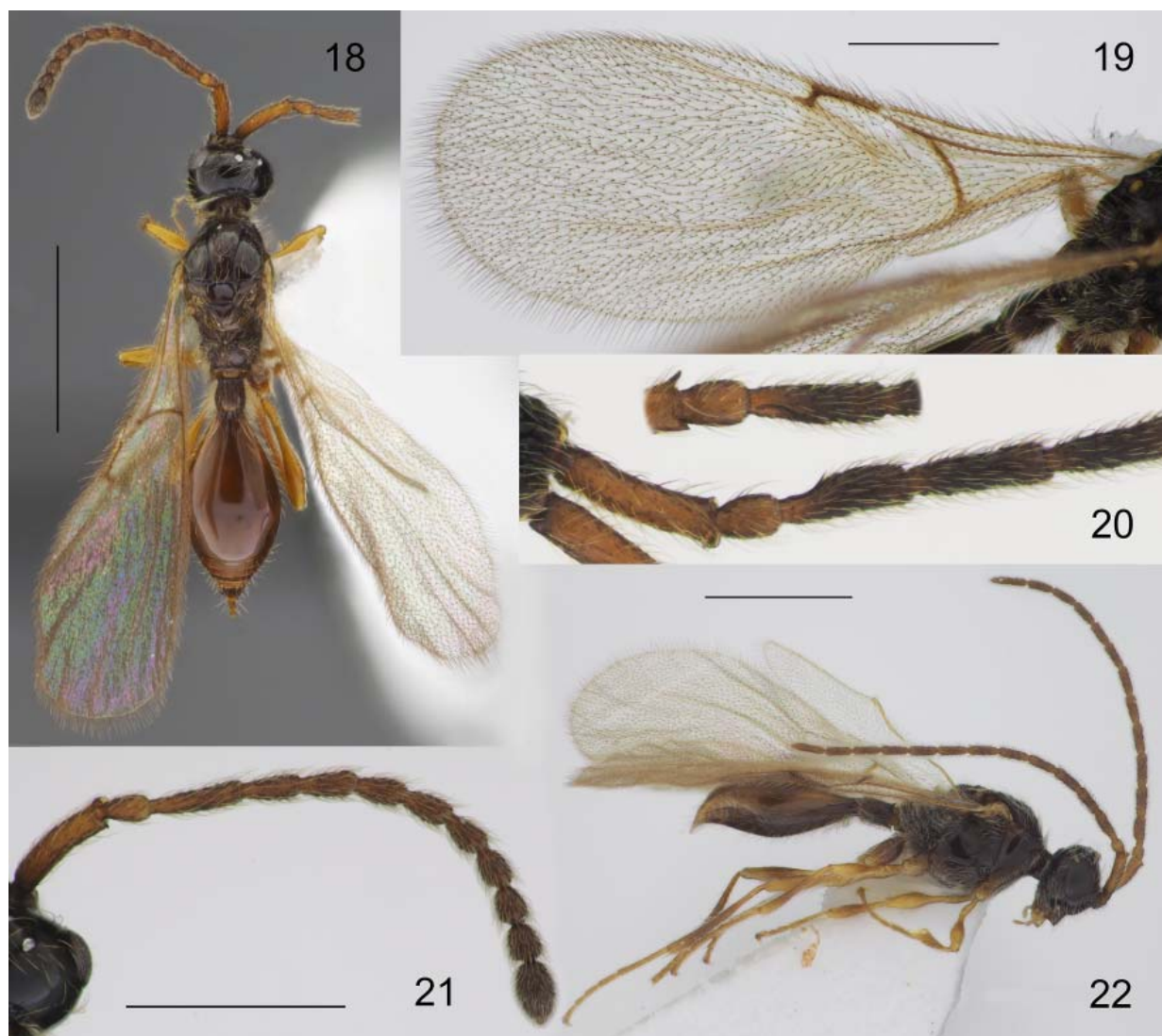
ETYMOLOGY. This species name is derived from the Latin *pontus* (bridge) in refers to the presence of the both: epicnemial and subalar bridges on the mesopleuron.

DISTRIBUTION. South Korea.



Figs 13–17. *Synacra pontilis* sp.n. female, holotype. 13 — face; 14 — habitus in lateral view; 15 — head in dorsal view; 16, 17 — head, mesosoma and base of metasoma in lateral (16) and dorsal (17) views. Scale bars: 14 — 1 mm; 15 — 0.3 mm; 16, 17 — 0.5 mm.

Рис. 13–17. *Synacra pontilis* sp.n. самка, голотип. 13 — лицо; 14 — общий вид сбоку; 15 — голова сверху; 16, 17 — голова, мезосома и основание метасомы сбоку (16) и сверху (17). Масштабные линейки: 14 — 1 мм; 15 — 0,3 мм; 16, 17 — 0,5 мм.



Figs 18–22. *Synacra pontilis* **sp.n.** female, holotype (18, 19, 21) and male, paratype (20, 22). 18 — habitus in dorsal view; 19 — fore wing; 20 — base of male antennae and sexual segment (A3); 21 — antennae in dorsal view; 22 — habitus in lateral view. Scale bars: 18, 22 — 1 mm; 19, 21 — 0.5 mm.

Рис. 18–22. *Synacra pontilis* **sp.n.** самка, голотип (18, 19, 21) и самец, паратип (20, 22). 18 — общий вид сверху; 19 — переднее крыло; 20 — основание антенны и половой сегмент (A3); 21 — антенна сверху; 22 — общий вид сбоку. Масштабные линейки: 18, 22 — 1 мм; 19, 21 — 0,5 мм.

Discussion

As a result of this research, four of the six genera of the subtribe Psilommina were found in the South Korean fauna (*Acanopsilus* Kieffer, 1908, *Acanosema* Kieffer, 1908, *Psilomma* Förster, 1856 and *Synacra* Förster, 1856), and only species of the species-poor genus *Polypeza* Förster and the monotypic genus *Psilomacra* Macek were not found in the South Korean fauna. According to the results of this study, the South Korean fauna consists of 10 species of the subtribe Psilommina. Unfortunately, we were not able to re-examine the material identified by Kim and Lee [Kim, Lee, 2016a, b]. The female shown in the photo (fig. 1 in Kim & Lee

[2016a]) and identified by the authors as *Acanopsilus heterocerus* Kieffer, actually belongs to the new species *Acanopsilus curviclavus* **sp.n.** described above, and the main differences (antenna characters, pubescence of the axillar depression and sculpture of the base of T2) can be observed in this photo. The determination of the male (see figs 2 and 3 in Kim & Lee [2016a]) is more difficult because it is not photographed dorsally and some diagnostic characters are not visible, but the antennae of this male indicate that this specimen does not belong to the new species *A. curviclavus* **sp.n.**

Acanopsilus heterocerus, in the modern understanding of this species [Macek, 1990], is most likely a species complex characterised by very subtle morphologi-

cal differences. This preliminary conclusion is based on the three reasons. Firstly, there is considerable morphological variability of the species even within the European fauna. Secondly, there is the barcoding data, some of which are stored and accessible online on the BOLD platform (<https://v3.boldsystems.org/>). Thirdly, the first author of this article has studied of barcoded voucher specimens of *A. heterocerus* s.l. with significantly different COI sequences (unpublished data). Nevertheless, the specimens of the genus *Acanopsilus* discovered in the present study are undoubtedly distinct from existing forms of *A. heterocerus* and belong to a new species. The morphological characteristics described in the diagnosis were not observed in the known forms of *A. heterocerus*, considering the known spectrum of morphological variability of this taxon.

Furthermore, the species affiliation of the *Psilomma* specimens collected in South Korea, examined by Kim & Lee [2016b] and identified as *P. dubium*, is doubtful. The female in fig. 1 published by Kim & Lee [2016b] has weakly protruding and rounded anterior pronotal corners (not strongly protruding, sharp and right-angled as it should be in *P. dubium*) [Macek, 1990; Chemyreva, Kolyada, 2021]. So, it is very likely that the *Psilomma* described in this article actually belongs to the species *P. calaris*. The antenna of the male illustrated by Kim & Lee [2016b] is also similar with that of *P. calaris* (see figs 84, 85, 91, 92 in Chemyreva & Kolyada [2021]): the pubescence of the antennae is more raised (less raised in *P. dubium*), A3 with emargination and keel extending to 0.36 of A3 length (extending to more than 0.4 of A3 length in *P. dubium*).

The data presented herein must be considered as inconclusive. The species composition of the subtribe Psilommina within the South Korean fauna is not yet fully established. A comparison with the fauna of the Russian Far East, for instance, reveals that the latter includes more than 16 species. Therefore, we believe that more species of Psilommina will be discovered in South Korea in the future.

Competing interests. The authors declare no competing interests.

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References

- Ashmead W.H. 1893. A monograph of the North American Proctotrupidae // Bulletin of the United States National Museum. Vol.45. P.1–472.
- Ashmead W.H. 1902. Papers from the Harriman Alaska expedition. XXVIII. Hymenoptera // Proceedings of the Washington Academy of Sciences. Vol.4. P.117–274.
- Chemyreva V.G. 2023. *Masnerosema* is a new junior synonym of *Acanopsilus* (Hymenoptera: Diapriidae: Pantolytini) // Zoosystematica Rossica. Vol.32. No.2. P.245–251.
- Chemyreva V.G., Kolyada V.A. 2020. Review of the genus *Synacra* Foerster (Hymenoptera, Diapriidae: Pantolytini) in the Palearctic region, with description of new species // Entomological Review, Vol.99 (for 2019). No.9. P.1–20.
- Chemyreva V.G., Kolyada V.A. 2021. Review of the subtribe Psilommina (Hymenoptera: Diapriidae, Belytinae) from Russian fauna // Far Eastern Entomologist. No. 436. P.1–34.
- Chemyreva V.G., Yun D., Ku D.-S. 2025 (in press). Review of the genus *Pantolyta* (Hymenoptera, Diapriidae, Belytinae, Pantolytini) in South Korea with description of four new species // Far Eastern Entomologist.
- Fouts R.M. 1927. Descriptions of new Nearctic Serphoidea (Hymenoptera) // Proceedings of the Entomological Society of Washington. Vol.29. P.165–179.
- Fouts R.M. 1966. Three new species of Proctotrupoidea (Hymenoptera) // Proceedings of the Entomological Society of Washington. Vol.68. P.17–20.
- Harrington W.H. 1900. Catalogue of Canadian Proctotrupidae // Transactions of the Royal Society of Canada. Vol.5. No.4. P.169–206.
- Kawai R. 2023. First record of the Genus *Acanosema* Kieffer, 1908 (Hymenoptera: Diapriidae: Pantolytini) from Japan // Japanese Journal of Systematic Entomology. Vol.29. No.2. P.367–368.
- Kim C.-J., Lee J.-W. 2016a. First record of the monotypic genus *Acanopsilus* Kieffer, 1908 (Hymenoptera: Diaprioidea: Diapriidae) from the Eastern Palearctic region // Biodiversity Data Journal. Vol.4. Art.e9572.
- Kim C.-J., Lee J.-W. 2016b. First Record of the Genus *Psilomma* Förster (Hymenoptera: Diapriidae) from the Eastern Palearctic Region // Korean Journal of Applied Entomology. Vol.55. No.3. P.293–296.
- Macek J. 1989. Studies on Diapriidae (Hymenoptera, Proctotrupoidea). Part 1. Taxonomic remarks on the subfamily Belytinae with particular reference to the tribus Pantolytini // Annales zoologici. Vol.42. No.17. P.353–362.
- Macek J. 1990. Revision of European Psilommina (Hymenoptera, Diapriidae) 1. *Psilomma* and *Acanosema* complex // Acta entomologica musei nationalis Pragae. Vol.43. P.335–360.
- Macek J. 1993. Revision of Holarctic *Polypeza* (Hymenoptera, Diapriidae) // Folia Heyrovskyana. Vol.1. No.2. P.19–24.
- Macek J. 1995. A Taxonomic Revision of European Psilommina (Hymenoptera: Diapriidae). Part 2. The *Synacra* Complex // European Journal of Entomology. Vol.92. P.469–482.
- Whittaker O. 1930a. Eight new species of Serphoidea (Hymenoptera) from British Columbia // Proceedings of the Entomological Society of Washington. Vol.32. P.129–135.
- Whittaker O. 1930b. Some new species and a new genus of parasitic Hymenoptera from British Columbia // Proceedings of the Entomological Society of Washington. Vol.32. P.67–76.
- Yoder M.J. 2004. Revision of the North American species of the genus *Entomacis* (Hymenoptera: Diapriidae) // The Canadian Entomologist. Vol.136. No.3. P.323–405.
- Yoder M.J., Mikó I., Seltmann K.C., Bertone M.A., Deans A.R. 2010. A gross anatomy ontology for Hymenoptera // PLoS ONE. Vol.5. No.12. Art.e15991.