Far Eastern Entomologist

Number 482: 10-21 ISSN 1026-051X (print edition) ISSN 2713-2196 (online edition) August 2023

https://doi.org/10.25221/fee.482.2
https://elibrary.ru/gjyens
https://zoobank.org/References/38CE52FB-4E96-47D1-8C36-09A885F32D0E

NEW DATA ON THE CHALCID WASPS OF THE FAMILY PTEROMALIDAE HYMENOPTERA: CHALCIDOIDEA) FROM SOUTH KOREA

E. V. Tselikh[1,*)], J. Lee[2)], D-S. Ku[3)]

1) *Zoological Institute, Russian Academy of Sciences, Universitetskaya nab. 1, St. Petersburg 199034, Russia. *Corresponding author, E-mail: tselikhk@gmail.com*

2) *Department of Plant Medicine, Gyeongsang National University, Jinju 52828, South Korea. E-mail: wogus0913@naver.com*

3) *The Science Museum of Natural Enemies, Geochang 50147, South Korea. E-mail: bracon2700@hanmail.net*

Summary. An annotated list of 22 species from 16 genera in the subfamilies Miscogasterinae, Pteromalinae and Trigonoderinae is given. Four genera (*Glyphognathus* Graham, 1956, *Norbanus* Walker, 1843, *Oxysychus* Delucchi, 1956 and *Roptrocerus* Ratzeburg, 1848) and 18 species of Pteromalidae are newly recorded from the fauna of South Korea. The males of *Janssoniella kawabatai* Tselikh, 2020 and *Miscogasteriella vladimiri* Tselikh, Lee et Ku, 2023 are described for the first time. Currently Pteromalidae of South Korea comprises 106 species belonging to 57 genera of four subfamilies.

Key words: Chalcidoidea, Pteromalidae, fauna, parasitoids, new records, annotated list, Eastern Palaearctic.

Е. В. Целих, Дж. Ли, Д-С. Ку. Новые данные о хальцидах семейства Pteromalidae (Hymenoptera: Chalcidoidea) Южной Кореи // Дальневосточный энтомолог. 2023. N 482. С. 10-21.

Резюме. Приведен аннотированный список 22 видов из 16 родов подсемейств Miscogasterinae, Pteromalinae и Trigonoderinae. Для фауны Южной Кореи впервые указываются четыре рода (*Glyphognathus* Graham, 1956, *Norbanus* Walker, 1843, *Oxysychus* Delucchi, 1956 and *Roptrocerus* Ratzeburg, 1848) и 18 видов птеромалид. Для видов *Janssoniella kawabatai* Tselikh, 2020 и *Miscogasteriella vladimiri* Tselikh, Lee & Ku, 2023 впервые описаны самцы. В настоящее время Pteromalidae Южной Кореи насчитывают 106 видов из 57 родов четырех подсемейств.

INTRODUCTION

Pteromalidae is one of the largest families of parasitic Hymenoptera with worldwide distribution. It currently comprises eight subfamilies and 424 genera. The South Korean pteromalid wasp fauna has been studied only fragmentarily. So far, the list of Pteromalidae in the contemporary sense (Burks *et al.*, 2022) distributed in South Korea includes only 88 species in 53 genera from four subfamilies (Paik, 1978, 1994; Kamijo & Grissell, 1982;

Kamijo, 1983; Chang & Youn, 1983, 1986; Ryoo *et al.*, 1990; Chun *et al.*, 1993; Rueda & Roh Ryu, 1997; Shin *et al.*, 2000; Cho *et al.*, 2014; Tselikh & Lee, 2015; Ko & Lee, 2016; Ko *et al.*, 2018; Tselikh *et al.*, 2016, 2017, 2022, 2023; Lee *et al.*, 2019; Tselikh, 2019; 2020a; 2020b, 2022; Lee, 2021).

During our study of new material many species were recorded for the first time for the fauna of South Korea. The annotated list below substantially fills a gap in the data on the taxonomic composition of the Pteromalidae of one of the most interesting areas of the Eastern Palaearctic.

MATERIAL AND METHODS

The material was obtained by Malaise trap, sweeping-net methods of collecting and rearing pteromalid wasps from hosts in the wood (xylobionts).

Abbreviations for collections are as follows. NIBR – National Institute of Biological Resources (Incheon, South Korea), SMNE – Science Museum of Natural Enemies (Geochang, South Korea), ZISP – Zoological Institute of the Russian Academy of Sciences (St. Petersburg, Russia). Abbreviations of Korean provinces used in this paper as follows: CB – Chungcheongbuk-do, GB – Gyeongsangbuk-do, GG – Gyeonggi-do, GN – Gyeongsangnam-do, GW – Gangwon-do, JJ – Jeju-do, JN – Jeollanam-do.

Morphological terminology, including sculpture and wing venation nomenclature, follows Bouček and Rasplus (1991) and Gibson (1997). The flagellum consists of two anelli, the funicle is composed of six funicular segments and the clava. The following abbreviations are used: POL – posterior ocellar line, the minimum distance between the posterior ocelli; OOL – ocello–ocular line, the minimum distance between a posterior ocellus and compound eye; *PST* – parastigma; *M* – marginal vein; *S* – stigmal vein; *PM* – postmarginal vein; F1–F6 – funicular segments. The scape is measured without the radicle; the pedicel is measured in lateral view. The distance between the clypeal lower margin and the toruli is measured from the lower margins of the toruli. Eye height is measured as maximum diameter, eye length as minimum diameter.

The study is based on examination of extensive material in the collection of NIBR, SMNE and ZISP. Specimens were examined using an Olympus SZX7-ILLTQ microscope.

Data on the biology are cited after (Noyes, 2019; Tselikh, 2019).

New records of the species from South Korea are asterisked (*).

LIST OF THE SPECIES

Subfamily Miscogasterinae Walker, 1833

***Glyphognathus sinuatus* Kamijo, 1960**

MATERIAL EXAMINED. South Korea: CB, Yeongdeok-ri, Sancheok-myeon, Chungju-si, Malaise trap, 05.VII–19.VII 2017, 1 ♀, coll. H.G. Lee (SMNE); GN, Science Museum Natural Enemy, Geochang-gun, Malaise trap, 20.V–03.VI 2021, 1 ♀, coll. D.S. Ku, J.H. Lee, H.J. Jeong (NIBR); Waryong-ri, Sinwon-myeon, Geochang-gun, Malaise trap, 21.V–04.VI 2022, 1 ♀, coll. D.S. Ku, J.H. Lee, H.J. Jeong (SMNE).

DISTRIBUTION. Russia (Far East), Japan (Noyes, 2019; Tselikh, 2019), South Korea.

BIOLOGY. Unknown.

REMARKS. The genus *Glyphognathus* Graham, 1956 is newly recorded from South Korea.

***Halticoptera circulus* (Walker, 1833)**

MATERIAL EXAMINED. South Korea: JJ, Mt. 78-2, Bonggae-dong, Jeju-si, 5.VIII 2022, 2 ♂, coll. D.S. Ku (SMNE).

DISTRIBUTION. Europe, Russia (European part, Far East), Armenia, Azerbaijan, Turkey, Iraq, Jordan, Iran, Kazakhstan, China, South Korea, Japan, North America, Afrotropics, South America (Kamijo, 1983; Noyes, 2019; Tselikh, 2019).

BIOLOGY. Primary parasitoid of dipterans of the families Agromyzidae, Cecidomyiidae, Chloropidae and Opomyzidae.

**** Halticoptera laevigata* Thomson, 1876**

MATERIAL EXAMINED. South Korea: GB, Buk-myeon, Inje-gun, Mt. Seoraksan, 26.VIII 2022, 1 ♀, coll. J.H. Lee (NIBR).

DISTRIBUTION. Europe, Russia (European part, Eastern Siberia), Turkey, Kyrgyzstan, Kazakhstan, China, (Noyes, 2019; Tselikh, 2019, 2020a), South Korea.

BIOLOGY. Primary parasitoid of dipterans of the family Tephritidae.

****Halticoptera patellana* (Dalman, 1818)**

MATERIAL EXAMINED. South Korea: GN, Sirubong Peak, Jinhae-gu, Changwon-si, sweeping, 19.IX 2022, 2 ♀, coll. J.H. Lee (NIBR, SMNE).

DISTRIBUTION. Europe, Russia (European part, Far East), Turkey, China, Japan, North America, South America (Noyes, 2019; Tselikh, 2019), South Korea.

BIOLOGY. Primary parasitoid of coleopterans of the subfamily Scolytinae, dipterans of the families Agromyzidae, Cecidomyiidae, Chloropidae, Drosophilidae, Tephritidae and lepidopterans of the family Lyonetiidae.

***Lamprotatus duplicatus* (Kamijo, 1960)**

MATERIAL EXAMINED. South Korea: JN, Daemun-ri, Gunoe-myeon, Wando-gun, Malaise trap, 31.V–18.VI 2017, 09.IX–12.X 2017, 2 ♀, coll. H.G. Lee (SMNE).

DISTRIBUTION. Russian Far East, South Korea, Japan (Tselikh *et al*., 2016; Noyes, 2019; Tselikh, 2019).

BIOLOGY. Unknown.

****Lamprotatus cariniferum* Kamijo, 1960**

MATERIAL EXAMINED. South Korea: JN, Daemun-ri, Gunoe-myeon, Wando-gun, Malaise trap, 09.IX–12.X 2017, 1 ♀, coll. H.G. Lee (SMNE).

DISTRIBUTION. Russian Far East, North Korea, Japan (Kamijo, 1983; Noyes, 2019; Tselikh, 2019), South Korea.

BIOLOGY. Unknown.

****Seladerma breve* Walker, 1834**

MATERIAL EXAMINED. South Korea: GB, Juwangsan-myeon, Cheongsong-gun, 12.V 2022, 1 ♀, 1 ♂, coll. J.H. Lee (SMNE).

DISTRIBUTION. Europe (Noyes, 2019), South Korea.

BIOLOGY. Primary parasitoid of *Norellisoma spinimanum* (Fallén, 1819) (Diptera, Cordyluridae).

***Stictomischus japonicus* Kamijo, 1960**

MATERIAL EXAMINED. South Korea: GB, Seokpo-ri, Seokpo-myeon, Bongwha-gun, Malaise trap, 31.IX 2016, 1 ♀, coll. J.H. Lee (NIBR).

DISTRIBUTION. Russian Far East, Japan (Noyes, 2019; Tselikh, 2019), South Korea.

BIOLOGY. Unknown.

Subfamily Pteromalinae Dalman, 1820

***Coelopisthia pseudaletia* Jiao et Xiao, 2014**

MATERIAL EXAMINED. South Korea: GG, Soheul-eup, Pocheon-si, Gyeonggi-do, 15.III–14.IV 2017, 37°44′55.8″N, 127°08′51.2″E, 1 ♀, coll. Kim, Kim & Nam (NIBR).

DISTRIBUTION. China (Yunnan) (Jiao & Xiao, 2014), South Korea.

BIOLOGY. Primary parasitoid of *Mythimna separata* (Walker, 1865) (Lepidoptera, Noctuidae).

***Dibrachys confusus* (Girault, 1916)**

MATERIAL EXAMINED. South Korea: GW, Mandae-ri, Haean-myeon, Yanggu-gun, 5.VII–11.VIII 2021, Malaise trap, 1 ♀, coll. Y.H. Park, M.H. Kim, D.H. Park & J.Y. Kim (NIBR); GB, Buk-myeon, Inje-gun, Mt. Seoraksan, 26.VIII 2022, 1 ♀, coll. J.H. Lee (ZISP).

DISTRIBUTION. China, North America, South America (Noyes, 2019, Xiao & Huang, 2019), South Korea.

BIOLOGY. Primary parasitoid of *Megachile rotundata* (Fabricius, 1787) and *Megachile* sp. (Hymenoptera, Megachilidae).

***Globimesosoma yaoarum* Xiao et Huang, 2001**

MATERIAL EXAMINED. South Korea: GG, Soheul-eup, Pocheon-si, Gyeonggi-do, 15.IX–30.IX 2015, 37°45′29.2″N, 127°10′0.4″E, 1 ♀, coll. Park, Choi, Nam, Shin & Kim (NIBR).

DISTRIBUTION. China (Guangxi) (Xiao & Huang, 2001), South Korea.

BIOLOGY. Unknown.

***Mokrzeckia lazoensis* Tselikh, 2012**

MATERIAL EXAMINED. South Korea: GB, Seokpo-ri, Seokpo-myeon, Bongwha-gun, Malaise trap, 31.IX 2016, 3 ♀, coll. H.G. Lee (SMNE); GN, Jeoncheok-ri, Namsang-myeon, Geochang-gun, 14.VI 2022, 1 ♀, coll. D.S. Ku, J.H. Lee & H.J. Jeong (SMNE).

DISTRIBUTION. Russian Far East, South Korea (Lee *et al*., 2019; Tselikh 2019).

BIOLOGY. Unknown.

***Norbanus malabarensis* Sureshan, 2003**

MATERIAL EXAMINED. South Korea: GW, Mandae-ri, Haean-myeon, Yuggu-gun, Gangwon-do, 15.V 2014, 30.VI 2014, 1 ♀, 1 ♂, coll. H.T. Shin (NIBR, SMNE).

DISTRIBUTION. India (Kerala) (Sureshan, 2003), South Korea.

BIOLOGY. Unknown.

REMARKS. The genus *Norbanus* Walker, 1843 is newly recorded from South Korea.

***Oxysychus mori* Yang, 1996**

MATERIAL EXAMINED. South Korea: GN, Sirubong Peak, Jinhae-gu, Changwon-si, sweeping, 19.IX 2022, 1 ♀, coll. J.H. Lee (NIBR).

DISTRIBUTION. Russian Far East, China, South Korea (Noyes, 2019; Tselikh, 2019).

BIOLOGY. Primary parasitoid of coleopterans of the families Curculionidae.

REMARKS. The genus *Oxysychus* Delucchi, 1956 is newly recorded from South Korea.

***Oxysychus silvestrii* (Masi, 1922)**

MATERIAL EXAMINED. South Korea: GW, Nae-myeon, Hongcheon-gun, Mt. Odaesan, 27.VIII 2022, 1 ♀, coll. J.H. Lee (NIBR).

DISTRIBUTION. Europe, China (Noyes, 2019; Xiao & Huang, 2019), South Korea.

BIOLOGY. Unknown.

***Oxysychus scolyti* Yang, 1996**

MATERIAL EXAMINED. South Korea: GG, Mt. Yeogisan, Seodun, Suwon, 21–23.VIII 1999, 1 ♀, coll. J.Y. Choi (ZISP); GB, Hakpo-ri, Seo-myeon, Ulleung-gun, Malaise trap, 1.VII–15.VII 2017, 2 ♀, coll. D.S. Ku (NIBR).

DISTRIBUTION. Russian Far East, China (Noyes, 2019; Tselikh, 2019), South Korea.

BIOLOGY. Primary parasitoid of *Scolytus seulensis* Murayama, 1930 and *Cryphalus* sp. (Curculionidae: Scolytinae).

***Rhopalicus* tutela (Walker, 1836)**

MATERIAL EXAMINED. South Korea: GN, Sancheong-gun, 30 km NNW Jinju (Chinju) City, forest, H=800 m, 29.VI 2002, 2 ♀, coll. S.A. Belokobylskij (ZISP); Jeoncheok-ri, Namsang-myeon, Geochang-gun, 35°37′15.3″N, 127°57′51.4″E, 26.VI 2022, 5 ♀, 7 ♂, coll. E.V. Tselikh (NIBR, SMNE, ZISP).

DISTRIBUTION. Europe, Russia (European part, Ural, Eastern Siberia, Far East), Armenia, Turkey, Kyrgyzstan, Kazakhstan, Japan, North America, Australasia (Noyes, 2019; Tselikh, 2019), South Korea.

BIOLOGY. Primary parasitoid of coleopterans of the families Bostrychidae, Curculionidae and dipterans of the family Cecidomyiidae.

***Roptrocerus mirus* (Walker, 1834)**

MATERIAL EXAMINED. South Korea: GN, Jeoncheok-ri, Namsang-myeon, Geochang-gun, reared from Scolytinae, 22.VI 2023, 1 ♀, coll. E.V. Tselikh, S.A. Belokobylskij, J.H. Lee (NIBR).

DISTRIBUTION. Europe, Russia (European part, Ural, Eastern Siberia, Far East), China, Japan (Noyes, 2019; Tselikh, 2019, 2020a), South Korea.

BIOLOGY. Primary parasitoid of coleopterans of the family Curculionidae and lepidopterans of the families Lymantriidae, Notodontidae.

REMARKS. The genus *Roptrocerus* Ratzeburg, 1848 is newly recorded from South Korea.

***Spaniopus dissimilis* Walker, 1833**

MATERIAL EXAMINED. South Korea: GB, Juwangsan-myeon, Cheongsong-gun, Juwangsan, 21.IV 2023, 18.VI 2023, 5 ♀, coll. J.H. Lee (NIBR, SMNE); GN, Namsan-ri,

Hoengcheon-myeon, Hadong-gun, sweeping, 22.VI 2022, 3 ♀, coll. J.H. Lee (SMNE); Wolpyeong-ri, Hoengcheon-myeon, Hadong-gun, sweeping, 22.VI 2022, 3 ♀, coll. J.H. Lee (SMNE); Sirubong Peak, Jinhae-gu, Changwon-si, sweeping, 19–26.IX 2022, 8 ♀, coll. J.H. Lee (SMNE); Majin-ri, Daegok-myeon, Jinju-si, sweeping, 10.V 2023, 2 ♀, coll. J.H. Lee (SMNE); Bangchon-ri, Sabong-myeon, Jinju-si, sweeping, 31.V 2023, 1 ♀, coll. J.H. Lee (SMNE).

DISTRIBUTION. Europe, Russian Far East, North America (Noyes, 2019; Tselikh, 2019), South Korea.

BIOLOGY. Primary parasitoid of dipterans of the families Cecidomyiidae, Chloropidae, hymenopterans of the family Cynipidae, lepidopterans of the families Coleophoridae, Elachistidae and Araneae of the family Liniphyidae. Secondary parasitoid of hymenopterans of the families Braconidae and Platygastridae.

***Spaniopus nigriceps* Kamijo, 1981**

MATERIAL EXAMINED. South Korea: GN, Bongwha-ri, Samdong-myeon, Namhae-gun, 34°45′10.0″N, 128°01′20.8″E, 25.VI 2022, 11 ♀, 5 ♂, coll. E.V. Tselikh (NIBR, SMNE).

DISTRIBUTION. Russian Far East, Japan (Noyes, 2019; Tselikh, 2019), South Korea.

BIOLOGY. Unknown.

Subfamily Trigonoderinae Bouček, 1964

***Janssoniella kawabatai* Tselikh, 2020**
Figs 1–7

MATERIAL EXAMINED. South Korea: GB, Juwangsan-myeon, Cheongsong-gun, Mt. Juwangsan, 12.V 2022, 1 ♀, 1 ♂, coll. J.H. Lee (SMNE, ZISP).

DESCRIPTION. Male (hitherto unknown). Body length 2.30 mm; fore wing length 1.90 mm. Head and mesosoma dark metallic green with diffuse coppery lustre. Antenna with scape and pedicel brown. All coxae brown; femur, tibia and tarsus yellowish-brown. Fore wing hyaline, venation yellowish-brown. Metasoma yellowish-brown.

Sculpture of head weakly reticulate, clypeus smooth and shining. Mesosoma with pronotum and propodeum weakly reticulate; mesoscutum and frenum reticulate; axillae and scutellum finely reticulate. Petiole and metasoma alutaceous.

Head in dorsal view 2.06 × as broad as long and 1.50 × as broad as mesoscutum; in frontal view 1.32 × broader than high. POL 1.36 × OOL. Eye height 1,27 × eye length and 2.75 × as long as malar space. Distance between antennal toruli and lower margin of clypeus 0.77 × distance between antennal toruli and median ocellus. Antenna with scape 0.60 × as long as eye height and 0.77 × as long as eye length; pedicel as long as broad and 0.30 × as long as F1; combined length of pedicel and flagellum 2.12 × breadth of head; flagellum almost filiform; all anelli transverse; F1 3.35 × as long as broad, with two of dense sensilla; F2–F6 longer than broad; clava 4.00 × as long as broad.

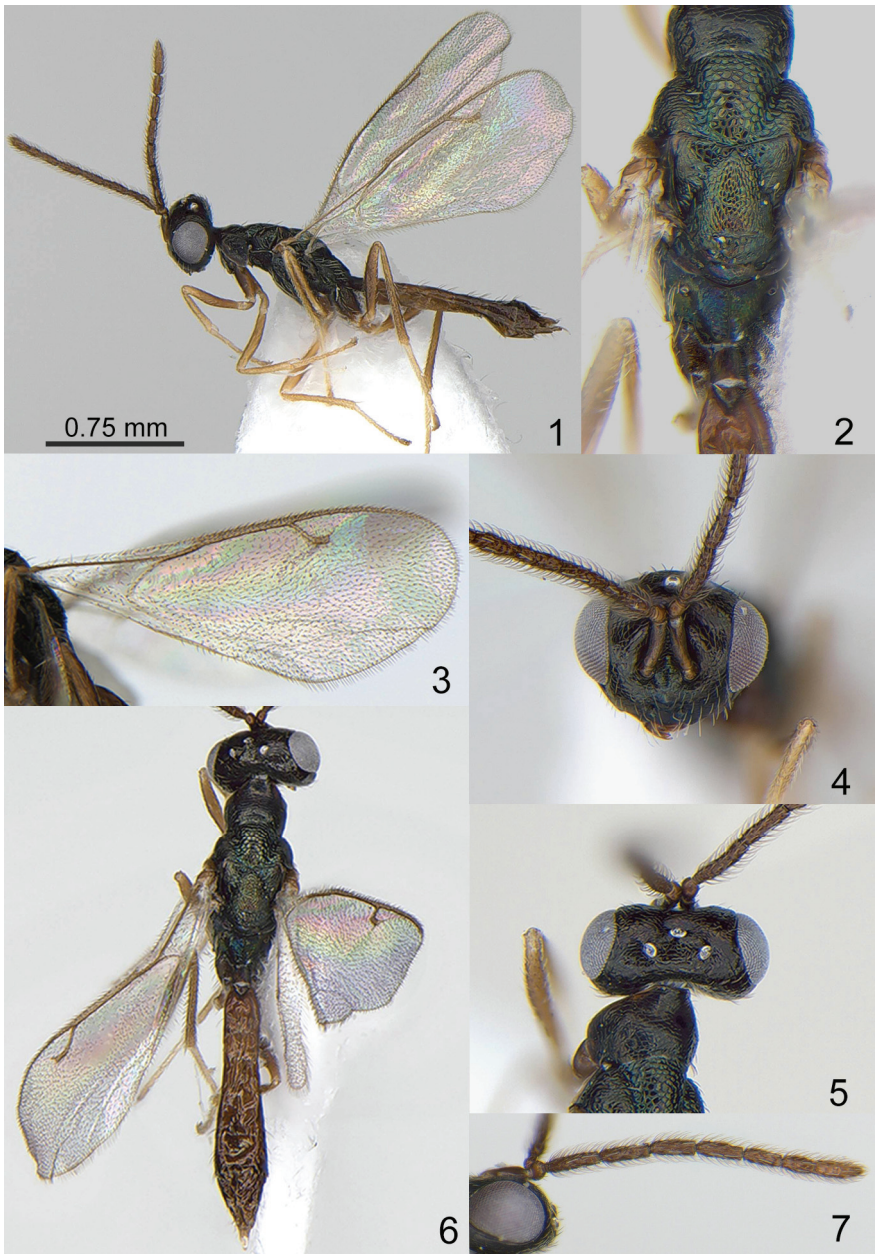
Mesosoma 2.40 × as long as broad. Scutellum 1.28 × as long as broad. Propodeum medially 0.63 × as long as scutellum; median carina complete and straight; nucha absent.

Fore wing 2.80 × as long as maximum width; basal cell pilose; speculum closed; costal cell with two complete rows of setae; PST 0.34 × as long as M, M 0.83 × as long as P and 2.52 × as long as S.

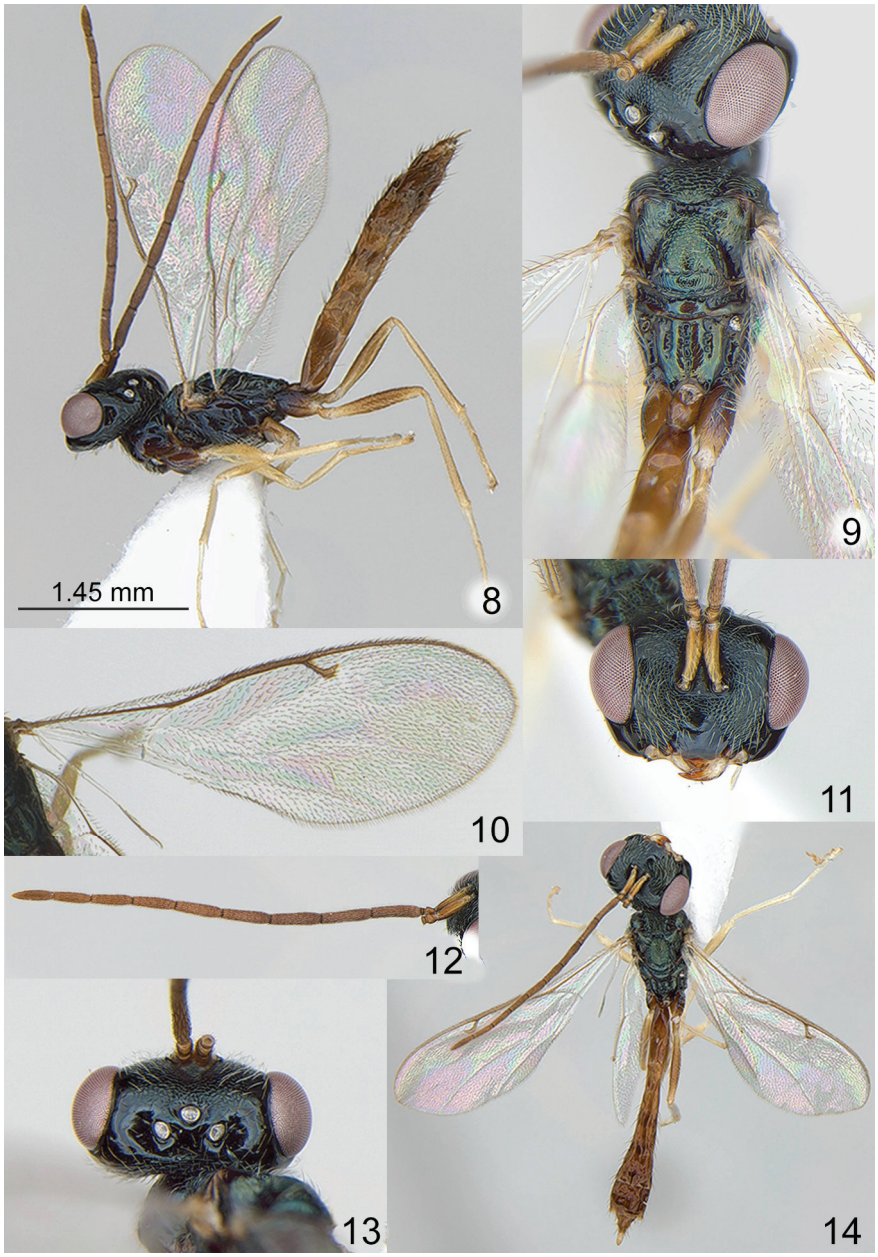
Metasoma lanceolate, 1.32 × as long as mesosoma and 1.04 × as long as mesosoma and head.

DISTRIBUTION. South Korea, Japan (Tselikh, 2020b).

BIOLOGY. Unknown.



Figs 1–7. *Janssoniella kawabatai* Tselikh, 2020, male: 1 – body, lateral view; 2 – mesosoma and petiole, dorsal view; 3 – wing; 4 – head, frontal view; 5 – head, dorsal view; 6 – body, dorsal view; 7 – antenna.



Figs 8–14. *Miscogasteriella vladimiri* Tselikh, Lee et Ku, 2023, male: 8 – body, lateral view; 9 – mesosoma and petiole, dorsal view; 10 – wing; 11– head, frontal view; 12 – antenna; 13 – head, dorsal view; 14 – body, dorsal view.

***Miscogasteriella vladimiri* Tselikh, Lee et Ku, 2023**
Figs 8–14

MATERIAL EXAMINED. South Korea: GN, Nogu-ri, Seo-myeon, Namhae-gun, 13.VIII 2022, 1 ♀, 1 ♂, coll. D.S. Ku, J.H. Lee, H.J. Jeong (NIBR, ZISP).

DESCRIPTION. Male (hitherto unknown). Body length 4.40 mm; fore wing length 3.10 mm. Head black; antenna with scape and pedicel yellowish-brown, flagellum cupreous. Mesosoma dark, in dorsal view with metallic green and diffuse coppery lustre, in lateral view with diffuse violet-coppery lustre. Fore coxa brown, mid yellowish-brown, hind coxa apically dark with diffuse violet-coppery lustre, basally yellowish-brown; fore and mid femur yellowish-brown, hind femur brown; all tibia and tarsus yellowish-brown. Fore wing hyaline, venation yellowish-brown. Metasoma cupreous.

Head in frontal view weakly reticulate, in dorsal view and clypeus smooth and shiny. Mesosoma reticulate, but axilla and frenum alutaceous, dorsellum shiny, propodeum weakly alutaceous. Metasoma weakly alutaceous and shiny.

Head in dorsal view 2.14 × as broad as long and 1.73 × as broad as mesoscutum; in frontal view 1.28 × broader than high. POL 0.83 × OOL. Eye height 1.31 × eye length and 3.50 × as long as malar space. Distance between antennal toruli and lower margin of clypeus 0.88 × distance between antennal toruli and median ocellus. Antenna with scape 0.57 × as long as eye height and 0.75 × as long as eye length; pedicel as long as broad and 0.20 × as long as F1; combined length of pedicel and flagellum 3.13 × breadth of head; flagellum almost filiform; all anelli transverse; F1 4.66 × as long as broad, with seven of dense sensilla; F2–F6 longer than broad; clava with three separate segments.

Mesosoma 2.30 × as long as broad. Scutellum as long as broad. Propodeum without nucha and costula, 0.94 × as long as scutellum; medial longitudinal depression shallow, lateral depressions 0.45 × as long as propodeum.

Fore wing 2.85 × as long as maximum width; basal cell, cubital vein, basal vein pilose; speculum absent; PST 0.75 × as long as M, M 0.53 × as long as P and 2.67 × as long as S.

Metasoma lanceolate, 1.80 × as long as mesosoma and 1.33 × as long as mesosoma and head.

DISTRIBUTION. Japan (Shikoku) (Tselikh *et al*., 2023), South Korea.

BIOLOGY. Unknown.

DISCUSSION

This study significantly increases our knowledge of the fauna and distribution of Pteromalidae parasitoids in the territory of South Korea. Four genera: *Glyphognathus* Graham, 1956, *Norbanus* Walker, 1843, *Oxysychus* Delucchi, 1956 and *Roptrocerus* Ratzeburg, 1848 and 18 species: *Halticoptera laevigata* Thomson, *H. patellana* (Dalman), *Glyphognathus sinuatus* Kamijo, *Lamprotatus cariniferum* Kamijo, *Seladerma breve* Walker, *Stictomischus japonicus* Kamijo (Miscogasterinae), *Coelopisthia pseudaletia* Jiao et Xiao, *Dibrachys confusus* (Girault), *Globimesosoma yaoarum* Xiao et Hui, *Norbanus malabarensis* Sureshan, *Oxysychus mori* Yang, *O. scolyti* Yang, *O. silvestrii* (Masi), *Rhopalicus tutela* (Walker), *Roptrocerus mirus* (Walker), *Spaniopus dissimilis* Walker, *S. nigriceps* Kamijo (Pteromalinae), *Miscogasteriella vladimiri* Tselikh, Lee et Ku (Trigonoderinae) are newly recorded from South Korea. Thus, according to our study and published data up to date, the fauna of the family Pteromalidae, in currently sense (Burks *et al.*, 2022), of South Korea comprises 106 species in 57 genera of four subfamilies.

ACKNOWLEDGEMENTS

This work was supported by a grant from the National Institute of Biological Resources (NIBR), funded by the Ministry of Environment (MOE) of the Republic of Korea (NIBR202304203). And it was partially funded by Russian State Research (project No. 122031100272-3).

REFERENCES

Bouček, Z. & Rasplus, J.-Y. 1991. *Illustrated key to West-Palaearctic genera of Pteromalidae (Hymenoptera: Chalcidoidea)*. Institut National de la Recherche Agronomique, Paris. 140 pp.

Burks, R., Mitroiu, M.-D., Fusu, L., Heraty, J.M., Janšta, P., Heydon, S., Dale-Skey Papilloud, N., Peters, R.S., Tselikh, E.V., Woolley, J.B., Noort, S., Baur, H. & Cruaud, A. 2022. From hell's heart I stab at thee! A determined approach towards a monophyletic Pteromalidae and reclassification of Chalcidoidea (Hymenoptera). *Journal of Hymenoptera Research*, 94: 13–88. DOI: 10.3897/jhr.94.94263

Chang, Y.D. & Youn, Y.N. 1983. A study on the biology of primary parasites of the cow-pea aphid, *Aphis craccivora* Koch (Aphididae, Homo.) and its hyperparasites. *Korean Journal of Plant Protection*, 22(4): 237–243.

Chang, Y.D. & Youn, Y.N. 1986. A study on the primary parasites in the green peach aphid, *Myzus persicae* (Homoptera: Aphididae), and its hyperparasites. *Journal of Agricultural Science Chungnam National University*, 13(2): 176–184.

Cho, B.K., Kim, I.K., Yoon, C.S., Kim, H.G. & Cheong, S.W. 2014. First record on the exotic parasitoids *Anisopteromalus apiovorus* Rasplus (Hymenoptera: Pteromalidae) in Korea. *Journal of Environmental Science International*, 23(8): 1463–1468. DOI: 10.5322/JESI.2014.23.8.1463

Chun, Y.S., Ryoo, M.I. & Shin, S.S. 1993. Effects of host on the life history of parasitoids. *Anisopferomalus calandrae* and *Lariophagus distinguendus* (Pteromalidae, Hymenoptera). *Korean Journal of Entomology*, 23(4): 253–259.

Gibson, G. 1997. Morphology and terminology. P. 16–44. In: Gibson, G.A.P., Huber, J.T., Woolley, J.B. (Eds.), *Annotated Keys to the Genera of Nearctic Chalcidoidea (Hymenoptera)*. NRC Research Press, Ottawa.

Jiao, T.Y. & Xiao, H. 2014. Taxonomic review of the genus *Coelopisthia* Förster (Hymenoptera: Pteromalidae) from China, with four new species. *Zoological Systematics*, 39(4): 545–554.

Kamijo, K. 1983. Pteromalidae (Hymenoptera) from Korea, with description of four new species. *Annales Historico-Naturales Musei Nationalis Hungarici*, 75: 295–311.

Kamijo, K. & Grissell, E.E. 1982. Species of *Trichomalopsis* Crawford (Hymenoptera, Pteromalidae) from rice paddy, associated with descriptions of two new species. *Kontyû*, 50(1): 76–81.

Ko, G.H. & Lee, J.W. 2016. Check list of Pteromalidae (Hymenoptera: Chalcidoidea) in Korea National Park with a newly recorded species from South Korea. *Journal of National Park Research*, 7(3): 154–160.

Ko, G.H., Park, D.Y. & Lee, J.W. 2018. Taxonomic review of subfamily Pteromalinae (Hymenoptera, Chalcidoidea) with 25 newly recorded species in South Korea. *Journal of Asia-Pacific Biodiversity*, 11: 87–122. DOI: 10.1016/j.japb.2017.08.006

Lee, J.W. 2021. Hymenoptera (Pteromalidae). P. 699–704. In: Ko, G.H., Choi, J.K. (Eds.), *Check list of Insects from Korea*. Korean Society of Applied Entomology & The Entomology Society of Korea, South Korea, Daegu.

Lee, J.W., Choi, J.K. & Ko, G.H. 2019. Pteromalinae. Arthropoda: Insecta: Hymenoptera: Pteromalidae. P. 1–234. In: Yum, J., Hur, J., Kim, S.Y. (Eds.), *Insect Fauna of Korea*, 13(12). National Institute of Biological Resources, South Korea, Incheon.

Noyes, J.S. 2019. Universal Chalcidoidea Database – World Wide Web Electronic Publication. https://www.nhm.ac.uk/our-science/data/chalcidoids/database/ [Accessed on 10.05.2021].

Paik, J.C. 1978. A list of Chalcidoidea, Hymenoptera from Korea. *Korean Journal of Plant Protection*, 17: 167–185.

Paik, J.C. 1994. Hymenopteran parasitoids of Korea (1): pteromalid hyperparasitoids on aphid. *Korean Journal of Applied Entomology*, 33(4): 257–262.

Rueda, L.M. & Roh Ryu, J.L. 1997. Pupal Parasitoids (Hymenoptera: Pteromalidae) of Filth Flies (Diptera: Muscidae, Calliphoridae) Breeding in Refuse and Poultry and Livestock Manure in South Korea. *Journal of Medical Entomology*, 34(1): 82–85.

Ryoo, M.I., Cho, H.W. & Kim, Y.B. 1990. Ecological Successions of Arthropod Communities in Stored Rough Rice, Polished Rice and Brown Rice. *Korean Journal of Applied Entomology*, 29(1): 31–41.

Shin, E.H., Lee, H.I., Lee, W.K., Kim, C.L. & Lee, J.S. 2000. Distribution and relative abundance of fly pupal parasitoids associated with accumulations of domestic animal manure in Korea. *Korean Journal of Entomology*, 30(1): 51–56.

Sureshan, P.M. 2003. *Pteromalinae (Pteromalidae: Chalcidoidea: Hymenoptera) of Indian subcontinent*. Records of the Zoological Survey of India, Occasional Paper 205, iii + 170 pp.

Tselikh, E.V. 2019. 38. Family Pteromalidae. P. 83–111. In: Belokobylskij, S.A., Samartsev, K.G., Il'inskaya, A.S. (Eds.), *Annotated catalogue of the Hymenoptera of Russia. Volume II. Apocrita: Parasitica*. Zoological Institute RAS, St Petersburg. DOI: 10.31610/trudyzin/2019.supl.8.5

Tselikh, E.V. 2020a. New data on the pteromalid wasps (Hymenoptera, Chalcidoidea: Pteromalidae) of Eastern Siberia with description of a new genus. *Entomological Review*, 100(5): 714–726. DOI: 10.1134/S0013873820050127

Tselikh, E.V. 2020b. Review of the eastern Palaearctic species of *Janssoniella* (Hymenoptera: Pteromalidae), with descriptions of four new species. *Zoosystematica Rossica*, 29(2): 301–315. DOI: 10.31610/zsr/2020.29.2.301

Tselikh, E.V. 2022. Review of the genus *Gastracanthus* Westwood, 1833 (Hymenoptera, Pteromalidae) with a key to Palaearctic species. *Entomological Review*, 102(2): 248–256. DOI: 10.1134/S0013873822020105

Tselikh, E.V., Ko, G.H., Lee, G.S., Park, H.C. & Lee, J.W. 2016. Eight newly recorded species of the Subfamilies Pteromalinae and Miscogastrinae (Hymenoptera: Pteromalidae) from South Korea. *Korean Journal of Applied Entomology*, 55(2): 161–170. DOI: 10.5656/KSAE.2016.03.0.002

Tselikh, E.V., Ko, G.H. & Lee, J.W. 2017. First record of the tribe Trigonoderini (Hymenoptera: Pteromalidae) from South Korea with descriptions of two new species. *Entomological Research*, 47: 11–20. DOI: 10.1111/1748-5967.12188

Tselikh, E.V. & Lee, J.W. 2015. New data about fauna of the Eastern-Palearctic Pteromalidae. P. 53. In: *The 70th Annual Meeting of the Korean Association of Biological Sciences (Present and Future of Genetic and Ecological Resources).* South Korea, Seoul, 12.08.2015–13.08.2015.

Tselikh, E.V., Lee, J.H. & Ku, D.S. 2022. New records of the chalcid wasps of the family Pteromalidae (Hymenoptera: Chalcidoidea) from South Korea. *Far Eastern Entomologist*, 462: 8–19. DOI: 10.25221/fee.462.2

Tselikh, E.V., Lee, J.H. & Ku, D.S. 2023. Review of the Palaearctic species of *Miscogasteriella* Girault, 1915 (Chalcidoidea, Pteromalidae). *ZooKeys*, 1154: 33–47. DOI: 10.3897/zookeys.1154.101189

Xiao, H. & Huang, D.W. 2001. Two new genera and two newly recorded genera of Pteromalidae (Hymenoptera: Chalcidoidea) from China, with descriptions of two new species. *Transactions of the American Entomological Society*, 127(2): 229–237.

Xiao, H. & Huang, D.W. 2019. Chalcidoidea Pteromalidae (II) Pteromalinae. P. 1–495. In: *Fauna Sinica Insecta. Volume 64*. Science Press, Beijing.