

**NEW RECORDS OF THE CHALCID WASPS OF THE FAMILY
PTEROMALIDAE (HYMENOPTERA: CHALCIDOIDEA)
FROM SOUTH KOREA**

E. V. Tselikh^{1,*}, J. Lee², D-S. Ku²

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

2) The Science Museum of Natural Enemies, Geochang 50147, South Korea. E-mail: wogus0913@naver.com, bracon2700@hanmail.net

Summary. An annotated list of 41 species from 23 genera in three subfamilies of Pteromalidae is given. Five genera *Capellia* Delucchi, 1958, *Globimesosoma* Xiao et Hui, 2001, *Lyubana* Bouček, 1915, *Tachingousa* Tselikh, 2018 and *Thinodytes* Graham, 1956 and twenty-one species of Pteromalidae are recorded for the first time for the fauna of South Korea. A new data of host-parasitic association of *Gastracanthus nigrescens* Kamiyo, 1960 is given.

Key words: Chalcidoidea, Pteromalidae, parasitoids, fauna, new records, new host record, annotated list, Eastern Palearctic.

Е. В. Целих, Дж. Ли, Д-С. Ку. Новые находки хальцид семейства Pteromalidae (Hymenoptera: Chalcidoidea) в Южной Корее // Дальневосточный энтомолог. 2022. N 462. С. 8-19.

Резюме. Приведен аннотированный список 41 видов хальцид из 23 родов из 3 подсемейств семейства Pteromalidae. Для фауны Южной Кореи впервые указываются пять родов: *Capellia* Delucchi, 1958, *Globimesosoma* Xiao et Hui, 2001, *Lyubana* Bouček, 1915, *Tachingousa* Tselikh, 2018, *Thinodytes* Graham, 1956 и 21 вид птеромалид. Для вида *Gastracanthus nigrescens* Kamiyo, 1960 приводятся новые хозяино-паразитные связи.

INTRODUCTION

The South Korean fauna of pteromalid wasps has been studied very fragmentarily. Up to this study the list of Pteromalidae distributed in the South Korea includes only 90 species in 53 genera from 6 subfamilies (Paik, 1978, 1994; Kamiyo & Grissell, 1982; Kamiyo, 1983; Chang & Youn, 1983, 1986; Ryoo *et al.*, 1990; Chun *et al.*, 1993; Rueda & Roh Ryu, 1997; Shin *et al.*, 2000; Mitroiu, 2011; Cho *et al.*, 2014; Tselikh & Lee, 2015; Ko & Lee, 2016; Ko *et al.*, 2018; Tselikh *et al.*, 2016, 2017; Lee *et al.*, 2019; Tselikh, 2020; Lee, 2021).

During the study of the new material of Chalcidoidea of the family Pteromalidae twenty-one species were recorded for the first time for the fauna of South Korea. Many species have

a new data on distribution in the regions of South Korea. An annotated list of forty species in three subfamilies (Miscogasterinae, Pteromalinae and Spalangiinae) of pteromalid wasps of the fauna of South Korea is given below.

MATERIAL AND METHODS

The study is based on examination of extensive material in the collection the Science Museum Natural Enemy (Geochang, South Korea), Korea National Arboretum (Pocheon, Korea), Department of Agro-food Safety and Crop Protection, Industrial Insect and Sericulture Division belonging to National Institute of Agricultural Sciences (Wanju, South Korea). Specimens were examined using an Olympus SZX7-ILLTQ microscope.

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

Data on the distribution are cited after Noyes (2019) and Tselikh (2019), with account of taxonomic and faunistic publications on some pteromalid groups (Lee *et al.*, 2019; Tselikh, 2020, 2022).

Abbreviations for collections are as follows. KNA – Korea National Arboretum, Korea; NIAS—National Institute of Agricultural Sciences, Korea; SMNE – Science Museum of Natural Enemies, Korea; YPT – yellow pan trap; MT – Malaise trap. Abbreviations of Korean provinces used in this paper as follows: GW – Gangwon-do; JN – Jeollanam-do; GB – Gyeongsangbuk-do; GG – Gyeonggi-do; GN – Gyeongsangnam-do; JJ – Jeju-do. New records of the species from South Korea are asterisked (*).

LIST OF THE SPECIES

Subfamily Asaphinae Ashmead, 1904

Asaphes suspensus (Nees, 1834)

MATERIAL EXAMINED. South Korea: GW, Mandae-ri, Haeam-myeon, Yanggu-Gun, Gangwon-do, MT, 15.V 2014, 31.V 2014, 30.VI 2014, 6 ♀, 8 ♂, coll. H.T. Shin; same locality, 5.VII–11.VIII 2021, 8.IX–6.X 2021, 2 ♀, coll. Y.H. Park, M.H. Kim, D.H. Park, J.Y. Kim, (KNA); GG, Soheul-eup, Pocheon-si, Gyeonggi-do, 37°45'24.1" N, 127°09'46.1" E, 10.V–24.V 2017, 37°44'55.8" N, 127°08'51.2" E, 24.V–12.VI 2017, 37°45'1.6" N, 127°08'34.9" E, 12.VI–30.VI 2017, 4 ♀, coll. Kim, Kim, Nam; same locality, 37°45'29.2" N, 127°10'0.4" E, 15.V 2015, 15.VI 2015, 15.VII 2015, 4 ♀, coll. Park, Choi, Nam, Shin, Kim, (KNA); GN, Daedong-ri, Mari-myeon, Geochang-gun, MT, 23.IX–6.X 2021, 3 ♀, coll. Lee Jaehyeon, Jeong Hyojin; Muchon-ri, Namsang-gun, Geochang-gun, MT, 8.IX–23.IX 2021, 1 ♀, coll. Lee Jaehyeon, Jeong Hyojin, (SMNE). JN, Eojeon-ri, Geumsan-myeon, Geogyeum-do, MT, 16.VIII–29.VIII 2020, 1 ♀, 1 ♂, coll. Ku Deokseo, Lee Jaehyeon, (SMNE).

DISTRIBUTION. Europe, Russia, North Africa, Turkey, Israel, Iran, Kazakhstan, Kyrgyzstan, Pakistan, China, South Korea, Japan, North America, India, South America.

BIOLOGY. Primary parasitoid of dipterans *Liriomyza congesta* (Becker, 1903) (Agromyzidae) and *Cecidomyia salicistrobiloides* Osten, 1878 (Cecidomyiidae), many species of aphids of the family Aphididae; secondary parasitoid of hymenopterans of the families Aphidiidae, Encyrtidae, Figitidae and Megaspilidae.

Hyperimerus pusillus (Walker, 1833)

MATERIAL EXAMINED. South Korea: GG, Soheul-eup, Pocheon-si, Gyeonggi-do, 37°44'16.56" N, 127°08'54.5" E, 23.X 2009, 1 ♀, coll. S.Y. Park; same locality, 37°45'1.6" N, 127°08'34.9" E, 10.V–24.V 2017, 24.V–12.VI 2017, 12.VI–30.VI 2017, 30.VI–17.VII 2017, 13 ♀, coll. Kim, Kim, Nam, (KNA).

DISTRIBUTION. Europe, Russia, Iran, China, South Korea, North America.

BIOLOGY. Primary parasitoid of hemipterans of the families Pseudococcidae and Psyllidae.

Subfamily Miscogasterinae Walker, 1833

***Merismus megapterus* Walker, 1833**

MATERIAL EXAMINED. South Korea: GW, Mandae-ri, Hae-an-myeon, Yanggu-Gun, 3.V–9.VI 2021, 15.VI–30.VI 2020, 8.IX–30.VI 2021, 4 ♀, coll. Y.H. Park, M.H. Kim, D.H. Park, J.Y. Kim, (KNA); GB, Daehyeon-ri, Bukhu-myeon, Andong-si, MT, 16.VI–30.VI 2021, 1 ♂, coll. Gwon Gimyeon; JN, Oenarodo, Bongnae-myeon, Goheung-gun, MT, 16.VII–29.VIII 2020, 1 ♂, coll. Ku Deokseo, Lee Jaehyeon, (SMNE); JJ, Geumak-ri, Hanllim-eup, Jeju-si, MT, 16.VI–14.VII 2021, 16.VI–13.X 2021, 1 ♀, 1 ♂, coll. Y.H. Park, M.H. Kim, D.H. Park, J.Y. Kim, (KNA).

DISTRIBUTION. Europe, Russia, Kazakhstan, Mongolia, China, South Korea, North America.

BIOLOGY. Primary parasitoid of dipterans of the family Agromyzidae and lepidopterans of the family Elachistidae.

****Merismus splendens* Graham, 1969**

MATERIAL EXAMINED. South Korea: GW, Mandae-ri, Hae-an-myeon, Yanggu-gun, Gangwon-do, from collection of Korea National Arboretum, DMZ, 31.V 2014, 1 ♀, coll. H.T. Shin, (KNA).

DISTRIBUTION. Europe, Russia, *South Korea, Japan.

BIOLOGY. Primary parasitoid of dipterans of the family Agromyzidae.

****Thinodytes cyzicus* (Walker, 1839)**

MATERIAL EXAMINED. South Korea: GB, Hakpo-ri, Seo-myeon, Ulleung-gun, MT, 1.VII–15.VII 2017, 15.VII–31.VII 2017, 5 ♀, coll. Ku Deokseo, (SMNE).

DISTRIBUTION. Europe, Russia, Turkey, Iraq, Kazakhstan, China, *South Korea, Japan, India.

BIOLOGY. Primary parasitoid of dipterans of the family Agromyzidae.

Subfamily Pteromalinae Dalman, 1820

****Callitula bicolor* Spinola, 1811**

MATERIAL EXAMINED. South Korea: GW, Mandae-ri, Hae-an-myeon, Yanggu-Gun, Gangwon-do, MT, 9.VI–5.VII 2021, 1 ♀, 1 ♂, coll. Y.H. Park, M.H. Kim, D.H. Park, J.Y. Kim, (KNA); GB, Hakpo-ri, Seo-myeon, Ulleung-gun, MT, 15.VII–31.VII 2017, 1 ♀, coll. Ku Deokseo, (SMNE).

DISTRIBUTION. Europe, Russia, North Africa, Azerbaijan, Iran, Kazakhstan, China, *South Korea, North America.

BIOLOGY. Primary parasitoid of dipterans of the families Cecidomyiidae, Chloropidae, Opomyzidae; secondary parasitoid of hymenopterans of the family Platygasteridae.

****Callitula elongata* (Thomson, 1878)**

MATERIAL EXAMINED. South Korea: GB, Hakpo-ri, Seo-myeon, Ulleung-gun, MT, 1.VII–15.VII 2017, 15.VII–31.VII 2017, 2 ♀, 1 ♂, coll. Ku Deokseo, (SMNE).

DISTRIBUTION. Europe, China, *South Korea.

BIOLOGY. Primary parasitoid of *Oscinella* sp. (Diptera, Chloropidae).

***Callitula fulvipes* Kamijo, 1981**

MATERIAL EXAMINED. South Korea: GW, Mandae-ri, Hae-an-myeon, Yanggu-Gun, Gangwon-do, 30.VI 2014, 15.VII 2014, 30.VII 2014, 18.VIII 2014, 01.IX 2014, 5 ♀, 17 ♂, coll. H.T. Shin; same locality, MT, 15.VI–30.VI 2020, 1 ♀, 2 ♂, coll. Kim Ilkwon; same locality, MT, 30.VI–21.VII 2020, 21.VII–18.VIII 2020, 5.VII–11.VIII 2021, 11.VIII–6.X 2021, 14 ♂, coll. Y.H. Park, M.H. Kim, D.H. Park, J.Y. Kim, (KNA); GG, Suwon, Seodun, Mt. Yeogisan, YPT, 3.IV 1998, 1 ♀, coll. June Yeol Choi; Soheul-eup, Pocheon-si, Gyeonggi-do, 37°45'16.46" N, 127°57'41" E, 6.VII 2009, 11.IX 2009, 2 ♀, 3 ♂, coll. S.Y. Park; Korea, Korea National Arboretum, Gwangneung, Gyeonggi-do, 37°45'16.46" N, 127°57'41" E, 09.X 2009, 1 ♂, coll. S.Y. Park, (KNA); GB, Na-ri, Buk-myeon, Ulleung-gun, MT, 23.V–7.VI 2017, 3 ♀, coll. Ku Deokseo; Hakpo-ri, Seo-myeon, Ulleung-gun, MT, 1.VII–15.VII 2017, 15.VII–31.VII 2017, 3 ♀, coll. Ku Deokseo, (SMNE).

DISTRIBUTION. Russia, South Korea, Japan.

BIOLOGY. Unknown.

****Capellia cecidomyiae* (Ratzeburg, 1844)**

MATERIAL EXAMINED. South Korea: GB, Daehyeon-ri, Bukhu-myeon, Andong-si, MT, 16.VI–30.VI 2021, 1 ♀, coll. Gwon Gimyeon, (SMNE); GN, Daedong-ri, Mari-myeon, Geochang-gun, MT, 23.IX–6.X 2021, 1 ♀, coll. Lee Jaehyeon, Jeong Hyojin, (SMNE).

DISTRIBUTION. Europe, Russia, Iran, *South Korea, Japan.

BIOLOGY. Primary parasitoid of *Cecidomyia pini* (De Geer, 1776) (Diptera, Cecidomyiidae).

****Chlorocytus circumcinctus* Xiao et Huang, 2000**

MATERIAL EXAMINED. South Korea: GN, Daedong-ri, Mari-myeon, Geochang-gun, MT, 30.VI–21.VII 2020, 1 ♀, coll. Kim Ilkwon, (SMNE).

DISTRIBUTION. China, *South Korea.

BIOLOGY. Unknown.

****Chlorocytus jaculatorius* Xiao et Huang, 2000**

MATERIAL EXAMINED. South Korea: GW, Mandae-ri, Hae-an-myeon, Yanggu-Gun, Gangwon-do, 18.VII 2014, 1 ♀, coll. H.T. Shin, (KNA); GG, Soheul-eup, Pocheon-si, Gyeonggi-do, 37°45'29.2" N, 127°10'0.4" E, 31.VIII–15.IX 2015, 1 ♀, coll. Park, Choi, Nam, Shin, Kim; same locality, MT, 11.VIII–8.IX 2021, 1 ♀, coll. Y.H. Park, M.H. Kim, D.H. Park, J.Y. Kim, (KNA); GB, Daehyeon-ri, Bukhu-myeon, Andong-si, MT, 16.VI–30.VI 2021, 1 ♀, coll. Gwon Gimyeon, (SMNE); Dokdo-ri, Ulleung-eup, Ulleung-gun, swiping, IX 2017, 1 ♀, coll. Ku Deokseo, Lee Hyerin, (SMNE); Hakpo-ri, Seo-myeon, Ulleung-gun, MT, 15.VII–31.VII 2017, 2 ♀, coll. Ku Deokseo, (SMNE); GN, Daedong-ri, Mari-myeon, Geochang-gun, MT, 22.V–15.VI 2020, 15.VI–30.VI 2020, 2 ♀, coll. Lee Jaehyeon, Jeong Hyojin, (SMNE).

DISTRIBUTION. China, *South Korea.

BIOLOGY. Unknown.

****Chlorocytus murriensis* Graham, 1965**

MATERIAL EXAMINED. South Korea: GB, Na-ri, Buk-myeon, Ulleung-gun, MT, 23.V–7.VI 2017, 1 ♀, coll. Ku Deokseo; Hakpo-ri, Seo-myeon, Ulleung-gun, MT, 15.VII–31.VII 2017, 4 ♀, coll. Ku Deokseo, (SMNE); JJ, Hannam-ri, Namwon-eup, Seogwipo-si, MT, 16.VI–14.VII 2021, 1 ♀, coll. Y.H. Park, M.H. Kim, D.H. Park, J.Y. Kim, (KNA).

DISTRIBUTION. Pakistan, China, *South Korea.

BIOLOGY. Primary parasitoid of dipterans of the family Agromyzidae.

***Chlorocytus phalaridis Graham, 1965**

MATERIAL EXAMINED. South Korea: GW, Mandae-ri, Hae-an-myeon, Yanggu-Gun, MT, 30.VIII–15.IX 2020, 1 ♀, coll. Kim Ilkwon, (KNA).

DISTRIBUTION. Europe, Russia, Turkey, Kazakhstan, China, *South Korea.

BIOLOGY. Primary parasitoid of *Tetramesa longicornis* (Walker, 1832) (Hymenoptera, Eurytomidae).

Coruna clavata Walker, 1833

MATERIAL EXAMINED. South Korea: GW, Mandae-ri, Hae-an-myeon, Yanggu-Gun, Gangwon-do, 30.VI 2014, 1 ♀, coll. H.T. Shin, (KNA); GG, Souheul-eup, Pocheon-si, Gyeonggi-do, 37°45'9.6" N, 127°09'34.9" E, 12.VI–30.VI 2017, 1 ♀, coll. Kim, Kim, Nam, (KNA).

DISTRIBUTION. Europe, Russia, Kazakhstan, South Korea, Japan, North America, India.

BIOLOGY. Primary parasitoid of hemipterans of the family Aphididae; secondary parasitoid of hymenopterans of the families Aphelinidae, Braconidae and Megaspilidae.

Diconocara petiolata Dzhankmen, 1986

MATERIAL EXAMINED. South Korea: GN, Daedong-ri, Mari-myeon, Geochang-gun, MT, 8.IX–23.IX 2021, 1 ♀, coll. Lee Jaehyeon, Jeong Hyojin, (SMNE); JJ, Hannam-ri, Namwon-eup, Seogwipo-si, MT, 16.VI–14.VII 2021, 1 ♀, coll. Y.H. Park, M.H. Kim, D.H. Park, J.Y. Kim, (KNA).

DISTRIBUTION. Russia, South Korea.

BIOLOGY. Unknown.

***Gastracanthus longigaster Tselikh, 2022**

MATERIAL EXAMINED. South Korea: GB, Na-ri, Buk-myeon, Ulleung-gun, 31.V 2011, 1 ♀, coll. Young-bo Lee, (NIAS).

DISTRIBUTION. Russia, *South Korea.

BIOLOGY. Unknown.

Gastracanthus nigrescens Kamijo, 1960

MATERIAL EXAMINED. South Korea: GG, Souheul-eup, Pocheon-si, Gyeonggi-do, 37°45'1.6" N, 127°08'04" E, 30.VI–17.VII 2017, 1 ♀, coll. Kim, Kim, Nam, (KNA).

DISTRIBUTION. Russia, South Korea, Japan.

BIOLOGY. Primary parasitoid of *Agrilus asiaticus* Kerremans, 1898 (Coleoptera, Buprestidae), new record.

***Globimesosoma amurense Tselikh, 2020**

MATERIAL EXAMINED. South Korea: GW, Mandae-ri, Hae-an-myeon, Yanggu-Gun, Gangwon-do, MT, 5.VII–11.VIII 2021, 2 ♀, coll. Y.H. Park, M.H. Kim., D.H. Park, J.Y. Kim, (KNA); GG, Soheul-eup, Pocheon-si, Gyeonggi-do, 37°45'16.46" N, 127°57'41" E, 15.X 2009, 1 ♀, coll. S.Y. Park, (KNA).

DISTRIBUTION. South Korea: Russia, *South Korea.

BIOLOGY. Unknown.

****Homoporus apharetus* (Walker, 1839)**

MATERIAL EXAMINED. South Korea: GB, Hakpo-ri, Seo-myeon, Ulleung-gun, MT, 15.VIII–31.VIII 2017, 1 ♀, coll. Ku Deokseo, (SMNE); GN, Muchon-ri, Namsang-gun, Geochang-gun, MT, 8.IX–23.IX 2021, 1 ♀, coll. Lee Jaehyeon, Jeong Hyojin, (SMNE).

DISTRIBUTION. Europe, Russia, Kyrgyzstan, Kazakhstan, China, *South Korea.

BIOLOGY. Primary parasitoid of *Tetramesa brevicornis* (Walker, 1832) and *T. linearis* (Walker, 1832) (Hymenoptera, Eurytomidae).

***Homoporus luniger* (Nees, 1834)**

MATERIAL EXAMINED. South Korea: GW, Mandae-ri, Hae-an-myeon, Yanggu-Gun, Gangwon-do, 15.IX 2014, 1 ♀, coll. H.T. Shin; same locality, MT, 22.V–15.VI 2020, 2 ♀, coll. Kim Ilkwon; same locality, MT, 3.V–9.VI 2021, 1 ♀, coll. Y.H. Park, M.H. Kim, D.H. Park, J.Y. Kim, (KNA).

DISTRIBUTION. Europe, Russia, Kazakhstan, China, South Korea.

BIOLOGY. Primary parasitoid of dipterans of the family Cecidomyiidae, hymenopterans of the family Eurytomidae and lepidopterans of the family Elachistidae.

****Lyubana longa* Xiao et Huang, 1997**

MATERIAL EXAMINED. South Korea: GG, Soheul-eup, Pocheon-si, Gyeonggi-do, 7°45'9.6" N, 127°09'0.4" E, 31.VII–16.VIII 2017, 2 ♀, coll. Kim, Kim, Nam; same locality, 7°45'1.6" N, 127°08'34.9" E, 30.VI–17.VII 2017, 1 ♀, coll. Kim, Kim, Nam, (KNA).

DISTRIBUTION. Russia, China, *South Korea.

BIOLOGY. Unknown.

***Notoglyptus scutellaris* (Dodd et Girault, 1915)**

MATERIAL EXAMINED. South Korea: GN, Daedong-ri, Mari-myeon, Geochang-gun, MT, 8.IX–23.IX 2021, 1 ♀, coll. Lee Jaehyeon, Jeong Hyojin, (SMNE).

DISTRIBUTION. Europe, North Africa, Kazakhstan, China, South Korea, Japan, North America, India, South-Eastern Asia, Afrotropics, Australasia.

BIOLOGY. Unknown.

***Pachycrepoideus vindemmiae* (Rondani, 1875)**

MATERIAL EXAMINED. South Korea: GG, Soheul-eup, Pocheon-si, Gyeonggi-do, 37°45'29.2" N, 127°10'0.4" E, 15.VI 2015, 1 ♀, coll. Park, Choi, Nam, Shin, Kim; 37°45'29.2" N, 127°10'0.4" E, 29.V 2015, 1 ♀, coll. Park, Choi, Nam, Shin, Kim, (KNA); GB, Hakpo-ri, Seo-myeon, Ulleung-gun, MT, 15.VII–31.VII 2017, 2 ♀, coll. Ku Deokseo, (SMNE); GN, Daedong-ri, Mari-myeon, Geochang-gun, MT, 23.IX–6.X 2021, 1 ♀, coll. Lee Jaehyeon, Jeong Hyojin, (SMNE); JN, Jangioa-ri, Wando-eup, Wando-gun, MT, 16.VIII–29.VIII 2020, 1 ♀, coll. Ku Deokseo, Lee Jaehyeon; Eojeon-ri, Geumsan-myeon, Geogumdo, MT, 16.VIII–29.VIII 2020, 1 ♀, coll. Ku Deokseo, Lee Jaehyeon, (SMNE); JJ, NIAS Korea, YPT, Sanggwi Aewol, Jeju, 19.X 1998, 1 ♀, coll. June Yeol Choi, (NIAS).

DISTRIBUTION. Europe, Russia, North Africa, Turkey, Israel, Iran, Uzbekistan, Kyrgyzstan, Kazakhstan, South Korea, Japan, North America, India, South-Eastern Asia, Afrotropics, South America, Australasia.

BIOLOGY. Primary parasitoid of many families of Diptera, hymenopterans of the family Apidae and lepidopterans of the families Bombycidae and Pyralidae; secondary parasitoid of dipterans of the families Sarcophagidae, Tachinidae and many families of Hymenoptera.

***Pachyneuron aphidis* (Bouche, 1834)**

MATERIAL EXAMINED. South Korea: GW, Mandae-ri, Hae-an-myeon, Yanggu-Gun, Gangwon-do, MT, 5.VII–11.VIII 2021, 2 ♀, coll. Y.H. Park, M.H. Kim, D.H. Park, J.Y. Kim, (KNA); GG, Soheul-eup, Pocheon-si, Gyeonggi-do, 37°45'16.46" N, 127°57'41" E, 15.X 2009, 1 ♀, coll. S.Y. Park, (KNA).

DISTRIBUTION. Europe, Russia, North Africa, Armenia, Turkey, Syria, Iraq, Jordan, Israel, Iran, Pakistan, Turkmenistan, Tajikistan, Kyrgyzstan, Kazakhstan, China, South Korea, Japan, North America, India, Afrotropics, South America, Australasia.

BIOLOGY. Primary parasitoid of coleopterans of the family Coccinellidae, dipterans of the families Agromyzidae, Cecidomyiidae, Syrphidae, hemipterans of the families Aphididae, Coccidae, Kermesidae, Pseudococcidae, Psyllidae, hymenopterans of the family Cynipidae and lepidopterans of the families Gelechiidae and Tortricidae; secondary parasitoid of hymenopterans of the families Aphelinidae, Braconidae, Charipidae, Encyrtidae, Figitidae, and Scelionidae.

***Pachyneuron groenlandicum* (Holmgren, 1872)**

MATERIAL EXAMINED. South Korea: GW, Sokcho, 14.VII 1999, 1 ♀, coll. Heung Sik Lee, (NIAS); Mandae-ri, Hae-an-myeon, Yanggu-Gun, Gangwon-do, 30.VI 2014, 1 ♀, coll. H.T. Shin; same locality, MT, 5.VII–11.VIII 2021, 1 ♀, coll. Y.H. Park, M.H. Kim, D.H. Park, J.Y. Kim, (KNA); GG, Korea National Arboretum, Gwangneung, Gyeonggi-do, 37°45'16.46" N, 127°57'41" E, 09.X 2009, 2 ♀, coll. S.Y. Park, (KNA); Soheul-eup, Pocheon-si, Gyeonggi-do, 37°45'16.46" N, 127°9'57.4" E, 11.IX 2009, 18.IX 2009, 15.X 2009, 3 ♀, coll. S.Y. Park, (KNA); same locality, 37°45'29.2" N, 127°10'0.4" E, 29.V 2015, 15.VI 2015, 15.VII–31.VII 2015, 31.VII–17.VIII 2015, 5 ♀, coll. Park, Choi, Nam, Shin, Kim; same locality, 37°45'1.6" N, 127°08'34.9" E, 12.VI–30.VI 2017, 2 ♀, coll. Kim, Kim, Nam, (KNA); GB, Na-ri, Buk-myeon, Ulleung-gun, MT, 23.V–7.VI 2017, 3 ♀, coll. Ku Deokseo, (SMNE); Hakpo-ri, Seo-myeon, Ulleung-gun, MT, 1.VII–15.VII 2017, 15.VIII–31.VIII 2017, 5 ♀, 2 ♂, coll. Ku Deokseo, (SMNE); Ulleung-eup, Ulleung-gun, swiping, IX 2017, 1 ♀, coll. Ku Deokseo, Lee Hyerin, (SMNE); Daehyeon-ri, Bukhu-myeon, Andong-si, MT, 16.VI–30.VI 2021, 13.VII–28.VII 2021, 2 ♀, coll. Gwon Gimyeon, (SMNE); GN, Geochang-gun, Science Museum Natural Enemy, MT, 21.IV–5.V 2021, 20.V–3.VI 2021, 16.VI–30.VI 2020, 5 ♀, coll. Ku Deokseo, Lee Jaehyeon, (SMNE); Daedong-ri, Mari-myeon, Geochang-gun, MT, 23.VI–6.X 2021, 3 ♀, coll. Lee Jaehyeon, Jeong Hyojin, (SMNE); Muchon-ri, Namsang-gun, MT, 8.IX–23.IX 2021, 3 ♀, coll. Lee Jaehyeon, Jeong Hyojin, (SMNE); JN, Oenarodo, Bongnae-myeon, Goheung-gun, MT, 19.VII–2.VIII 2020, 1 ♀, 1 ♂, coll. Ku Deokseo, Lee Jaehyeon; Eojeon-ri, Geumsan-myeon, Geogumdo, MT, 16.VIII–29.VIII 2020, 1 ♂, coll. Ku Deokseo, Lee Jaehyeon, (SMNE); JJ, Hannam-ri, Namwon-eup, Seogwipo-si, MT, 16.VI–14.VII 2021, 2 ♀, coll. Y.H. Park, M.H. Kim, D.H. Park, J.Y. Kim, (KNA).

DISTRIBUTION. Europe, Russia, Turkey, Iran, China, South Korea, Japan, North America, India.

BIOLOGY. Primary parasitoid of dipterans of the families Chloropidae, Psilidae, Syrphidae, hemipterans of the families Aphididae, Coccidae and lepidopterans of the families Lasiocampidae, Noctuidae, Pieridae and neuropterans of the family Hemerobiidae.

****Plutothrix rugosa* Kamijo, 2004**

MATERIAL EXAMINED. South Korea: GW, Mandae-ri, Hae-an-myeon, Yanggu-Gun, Gangwon-do, MT, 11.VIII–8.IX 2021, 1 ♀, coll. Y.H. Park, M.H. Kim, D.H. Park, J.Y.

Kim, (KNA); GG, Soheul-eup, Pocheon-si, Gyeonggi-do, 37°45'9.6" N, 127°0.9'0.4" E, 30.VI–17.VII 2017, 1 ♀, coll. Kim, Kim, Nam, (KNA).

DISTRIBUTION. Russia, *South Korea, Japan.

BIOLOGY. Unknown.

***Plutothrix trifasciata* (Thomson, 1878)**

MATERIAL EXAMINED. South Korea: GB, Hakpo-ri, Seo-myeon, Ulleung-gun, MT, 1.IX–8.IX 2017, 1 ♂, coll. Ku Deokseo, (SMNE); GN, Geochang-gun, Science Museum Natural Enemy, MT, 21.IV–5.V 2021; 20.V–3.VI 2021, 3.VI–16.VI 2021, 2 ♀, 4 ♂, coll. Ku Deokseo, Lee Jaehyeon, (SMNE); Daedong-ri, Mari-myeon, Geochang-gun, MT, 8.IX–23.IX 2021, 7 ♀, 4 ♂, coll. Lee Jaehyeon, Jeong Hyojin, (SMNE).

DISTRIBUTION. Europe, Russia, South Korea.

BIOLOGY. Unknown.

****Pteromalus berylli* Walker, 1835**

MATERIAL EXAMINED. South Korea: GW, Mandae-ri, Haeon-myeon, Yanggu-Gun, 9.VI–5.VII 2021, MT, 1 ♀, coll. Y.H. Park, M.H. Kim, D.H. Park, J.Y. Kim, (KNA).

DISTRIBUTION. Europe, Russia, *South Korea.

BIOLOGY. Primary parasitoid of dipterans of the family Tephritidae, hymenopterans of the family Cynipidae and lepidopterans of the family Tortricidae.

****Pteromalus chlorospilus* (Walker, 1834)**

MATERIAL EXAMINED. South Korea: GN, Gyeongsangnam-do, Geochang-gun, Namsang-myeon, Jeoncheok-ri, 13.VI 2022, 1 ♀, coll. Tselikh, (SMNE).

DISTRIBUTION. Europe, *South Korea.

BIOLOGY. Primary parasitoid of *Terellia colon* Meigen, 1826 and *Trypeta rufata* (Wulp, 1899) (Diptera, Tephritidae), *Isocolus rogenhoferi* Wachtl, 1880 (Hymenoptera, Cynipidae) and *Metzneria* sp. (Lepidoptera, Gelechiidae).

****Pteromalus intermedius* (Walker, 1834)**

MATERIAL EXAMINED. South Korea: GB, Daehyeon-ri, Bukhu-myeon, Andong-si, MT, 13.VII–28.VII 2021, 2 ♀, coll. Gwon Gimyeon, (SMNE).

DISTRIBUTION. Europe, Russia, Turkey, Iran, Kazakhstan, *South Korea.

BIOLOGY. Primary parasitoid of coleopterans of the family Curculionidae, dipterans of the family Tephritidae and lepidopterans of the family Coleophoridae.

***Pteromalus puparum* (Linnaeus, 1758)**

MATERIAL EXAMINED. South Korea: GN, Geochang-gun Science Museum Natural Enemy, MT, 4.IX–16.IX 2020, 2 ♀, coll. Ku Deokseo, Lee Jaehyeon, (SMNE); JJ, NIAS KOREA, YPT, Sanggwi Aewol, Jeju, 12.IX 1998, 6 ♀, coll. June Yeol Choi, (NIAS).

DISTRIBUTION. Europe, Russia, North Africa, Turkey, Israel, Iraq, Iran, Pakistan, Tajikistan, Uzbekistan, Kyrgyzstan, Kazakhstan, Mongolia, China, South Korea, Japan, North America, India, South-Eastern Asia, Afrotropics, South America, Australasia.

BIOLOGY. Primary parasitoid of coleopterans of the families Bruchidae, Curculionidae, Scolytidae, dipterans of the family Chloropidae, hemipterans of the family Diaspididae, hymenopterans of the families Cynipidae, Sphecidae, Vespidae and many families of Lepidoptera; secondary parasitoid of hymenopterans of the families Braconidae, Ichneumonidae and Pteromalidae.

****Pteromalus semotus* (Walker, 1834)**

MATERIAL EXAMINED. South Korea: GN, Daedong-ri, Mari-myeon, Geochang-gun, MT, 23.IX–6.X 2021, 1 ♀, coll. Lee Jaehyeon, Jeong Hyojin, (SMNE).

DISTRIBUTION. Europe, Russia, North Africa, Turkey, Syria, Pakistan, Turkmenistan, Kazakhstan, China, *South Korea, Japan, North America, India, Australasia.

BIOLOGY. Primary parasitoid of coleopterans of the families Anobiidae, Apionidae, Chrysomelidae, Curculionidae, hymenopterans of the family Diprionidae and many families of Lepidoptera; secondary parasitoid of hymenopterans of the families Braconidae and Ichneumonidae.

****Sphégigaster yunnanensis* Ozdikmen, 2011**

MATERIAL EXAMINED. South Korea: GW, Mandae-ri, Hae-an-myeon, Yanggu-Gun, Gangwon-do, 30.VI 2014, 01.IX 2014, 4 ♀, coll. H.T. Shin; same locality, Malaise Trap, 8.IX–6.X 2021, 1 ♀, coll. Y.H. Park, M.H. Kim, D.H. Park, J.Y. Kim, (KNA); GG, Soheul-eup, Pocheon-si, Gyeonggi-do, 37°45'9.6" N, 127°09'04" E, 12.VI–30.VI 2017, 1 ♀, coll. Kim, Kim, Nam, (KNA); GN, Muchon-ri, Namsang-gun, Geochang-gun, MT, 8.IX–23.IX 2021, 1 ♀, coll. Lee Jaehyeon, Jeong Hyojin; Daedong-ri, Mari-myeon, Geochang-gun, MT, 14.VII–28.VII 2021, 1 ♀, coll. Lee Jaehyeon, Jeong Hyojin, (SMNE).

DISTRIBUTION. Russia, China, *South Korea.

BIOLOGY. Unknown.

***Synedrus kasparyani* Tselikh, 2013**

MATERIAL EXAMINED. GW, Mandae-ri, Hae-an-myeon, Yanggu-Gun, Gangwon-do, 15.IX 2014, 4 ♀, coll. H.T. Shin; same locality, MT, 30.VI–21.VII 2020, 2 ♀, coll. Kim Ilkwon, (KNA); GB, Hakpo-ri, Seo-Myeon, Ulleung-gun, MT, 1.VII–15.VII 2017, 15.VII–31.VII 2017, 1.IX–8.IX 2017, 3 ♀, coll. Ku Deokseo, (SMNE); Daehyeon-ri, Bukhu-myeon, Andong-si, MT, 31.V–16.VI 2021, 1 ♀, coll. Gwon Gimyeon, (SMNE); JJ, Geumak-ri, Hanllim-eup, Jeju-si, MT, 16.VI–13.X 2021, 5 ♀, coll. Y.H. Park, M.H. Kim, D.H. Park, J.Y. Kim, (KNA).

DISTRIBUTION. Russia, South Korea.

BIOLOGY. Unknown.

****Syntomopus incisus* Thomson, 1878**

MATERIAL EXAMINED. South Korea: GG, Soheul-eup, Pocheon-si, Gyeonggi-do, 37°45'29.2" N, 127°10'0.4" E, 15.VI 2015, 1 ♀, coll. Park, Choi, Nam, Shin, Kim, (KNA).

DISTRIBUTION. Europe, Russia, Turkey, Kazakhstan, China, *South Korea.

BIOLOGY. Primary parasitoid of dipterans of the family Agromyzidae and hymenopterans of the family Cynipidae.

***Syntomopus incurvus* Walker, 1833**

MATERIAL EXAMINED. South Korea: GW, Mandae-ri, Hae-an-myeon, Yanggu-Gun, Gangwon-do, 15.V 2014, 1 ♀, coll. H.T. Shin, (KNA).

DISTRIBUTION. Europe, Russia, Turkey, Kazakhstan, China, South Korea.

BIOLOGY. Primary parasitoid of dipterans of the family Agromyzidae and lepidopterans of the family Pterophoridae.

***Syntomopus thoracicus* Walker, 1833**

MATERIAL EXAMINED. South Korea: GW, Mandae-ri, Hae-an-myeon, Yanggu-Gun, Gangwon-do, 30.VI 2014, 1 ♀, coll. H.T. Shin, (KNA).

DISTRIBUTION. Europe, Russia, Kazakhstan, China, South Korea.

BIOLOGY. Primary parasitoid of dipterans of the family Agromyzidae.

****Tachingousa trjapitzini* Tselikh, 2018**

MATERIAL EXAMINED. South Korea: GW, Mandae-ri, Hae-an-myeon, Yanggu-Gun, Gangwon-do, 01.IX 2014, 1 ♀, coll. H.T. Shin, (KNA); GG, Soheul-eup, Pocheon-si, Gyeonggi-do, 37°44'55.8" N, 127°08'51.2" E, 28.IV–10.V 2017, 1 ♀, coll. Kim, Kim, Nam; same locality, 37°45'10.3" N, 127°09'00.7" E, 4.V–15.V 2018, 1 ♀, coll. Kim, Kim, Jo, (KNA).

DISTRIBUTION. Russia, *South Korea.

BIOLOGY. Unknown.

***Vrestovia fidenas* (Walker, 1848)**

MATERIAL EXAMINED. South Korea: GW, Mandae-ri, Hae-an-myeon, Yanggu-Gun, Gangwon-do, MT, 5.VII–11.VIII 2021, 1 ♀, coll. Y.H. Park, M.H. Kim, D.H. Park, J.Y. Kim, (KNA); GN, Geochang-gun, Namsang-myeon, Jeoncheok-ri, 13.VI 2022, 2 ♀, coll. Tselikh, (SMNE).

DISTRIBUTION. Europe, South Korea.

BIOLOGY. Unknown.

Subfamily Spalangiinae Haliday, 1833

***Spalangia simplex* Perkins, 1910**

MATERIAL EXAMINED. South Korea: GW, Mandae-ri, Hae-an-myeon, Yanggu-Gun, Gangwon-do, 30.VI 2014, 1 ♀, coll. H.T. Shin, (KNA); GN, Geochang-gun, Namsang-myeon, Jeoncheok-ri, 13.VI 2022, 1 ♀, coll. Tselikh, (SMNE).

DISTRIBUTION. China, South Korea (reported by Mircea-Dan Mitroiu in the project "Parasitoids of synanthropic flies: advanced identification methods using an integrated approach"), India, South East Asia, Afrotropics, Australasia.

BIOLOGY. Unknown.

***Spalangia nigra* Latreille, 1805**

MATERIAL EXAMINED. South Korea: GG, NIAS KOREA, YPT, Mt. Yeogisan, Seodun, Suwon, 21–23.VIII 1999, 1 ♀, coll. June Yeol Choi, (NIAS); GN, Geochang-gun, Science Museum Natural Enemy, MT, 21.IV–5.V 2021, 1 ♂, coll. Ku Deokseo, Lee Jaehyeon, (SMNE); Daedong-ri, Mari-myeon, Geochang-gun, MT, 28.VII–15.VIII 2021, 1 ♀, coll. Lee Jaehyeon, Jeong Hyojin, (SMNE).

DISTRIBUTION. Europe, Russia, North Africa, China, South Korea, Japan, North America, India, South America, Australasia.

BIOLOGY. Primary parasitoid of coleopterans of the family Scarabaeidae, dipterans of the families Anthomyiidae, Calliphoridae, Chloropidae, Muscidae, Phoridae, Sarcophagidae, Sepsidae, Syrphidae, Tephritidae, hymenopterans of the family Diprionidae and lepidopterans of the families Coleophoridae, Pyralidae.

DISCUSSION

The study performed has considerably supplemented our knowledge of the pteromalid fauna of South Korea. Five genera: *Capellia* Delucchi, 1958, *Globimesosoma* Xiao et Hui, 2001, *Lyubana* Bouček, 1915, *Tachingousa* Tselikh, 2018 and *Thinodytes* Graham, 1956 and twenty-one species: *Merismus splendens* Graham, *Thinodytes cyzicus* (Walker) (Miscogasterinae); *Callitula bicolor* Spinola, *C. elongata* (Thomson), *Capellia cecidomyiae* (Ratzeburg), *Chlorocyclus circumcinctus* Xiao and Huang, *Ch. jaculatorius* Xiao and Huang, *Ch. murriensis* Graham, *Ch. phalaridis* Graham, *Gastracanthus longigaster* Tselikh, *Globimesosoma amurense* Tselikh, *Homoporus apharetus* (Walker), *Lyubana longa* Xiao et Huang, *Plutothrix rugosa* Kamijo, *Pteromalus berylli* Walker, *P. chlorospilus* (Walker), *P. intermedius* (Walker), *P. semotus* (Walker), *Sphegigaster yunnanensis* Ozdikmen, *Syntomopus incisus* Thomson, *Tachingousa trjapitzini* Tselikh (Pteromalinae) are recorded for the first time for the fauna of South Korea.

Thus, according to our study and published data (Paik, 1978, 1994; Kamijo, Grissell, 1993; Rueda, Roh Ryu, 1997; Shin *et al.*, 2000; Mitroiu, 2011; Cho *et al.*, 2014, Tselikh, Lee, 2015; Ko, Lee, 2016; Tselikh *et al.*, 2016, 2017; Lee *et al.*, 2019; Tselikh, 2020; Lee, 2021) up to date, the pteromalid fauna of South Korea comprises 111 species belonging to 58 genera of 6 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 (NIBR 202203201). It was also supported by the Korea National Arboretum (KNA1-1-20, 16-1) and it was partially funded by Russian State Research (project No. 122031100272-3).

REFERENCES

- Chang, Y.D. & Youn, Y.N. 1983. A Study on the Biology of Primary Parasites of the Cowpea aphid, *Aphis craccivora* Koch (Aphididae, Homoptera) 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. *Anisopteromalus calandrae* and *Lariophagus distinguendus* (Pteromalidae, Hymenoptera). *Korean Journal of Entomology*, 23(4): 253–259.
- 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.
- Mitroiu, M.-D. 2011. New Pireninae (Hymenoptera: Pteromalidae) from south-east Asia. *Zootaxa*, 3065: 1–13. DOI: 10.11646/zootaxa.3065.1.1
- 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.
- 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. 2020. 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-Palaearctic Pteromalidae. 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. P. 53.