Pteromalidae (Hymenoptera) from Korea, with description of four new species*

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Abstract — This paper deals with 33 species of Pteromalidae from Korea, including three unidentified species. Four new species are described: Chlorocytus koreanus, Cleonymus longinervus, Trichomalopsis closterae and T. pappi, all of which also occur in Japan. Fifteen species are new to Korea; three of these are new to Japan. Distribution and host records are included. With 13 figures.

The present study is based on the collections made by the Hungarian Natural History Museum expeditions in the Democratic People's Republic of Korea in 1970 and 1971, and on Mr. J. C. Paik's collection submitted to me for identification. The collection of the Museum expeditions consists of about 28 genera and 96 specimens. However, a number of specimens remain unidentified, because they are represented by single specimens (often males) or belong to difficult genera such as Pteromalus, Mesopolobus and Systasis. In this paper 33 species belonging to 25 genera are treated, of these four are new to science and 15 are new to Korea. New records of distribution are followed by an asterisk (*). The genera and species are arranged alphabetically.

Acknowledgement — I would like to thank Dr. Jenő Papp, Hungarian Natural History Museum, Budapest, for his kindness in giving me the opportunity to study the Korean Pteromalidae; and Mr. J. C. Paik, Office of Rural Development, Suweon, for offering many valuable specimens. Thanks are also due to Dr. Z. Bouček, Commonwealth Institute of Entomology, London, for his helpful advice as regards certain species.

Asaphes suspensus (Nees)

Chrysolampus suspensus Nees, 1834, Hym. Ichneum. affin. Monog., 2:127.


Distribution — Korea, Japan, Pakistan, India, Europe.

Biology — Hyperparasitic on various aphids. Paik (1978) recorded six Aphidiidae from Korea as hosts of A. suspensus. Some of the above examined specimens have been reared from Paeusia salignae (Watanabe) on Tuberolachnus salignus (Gmelin) and Aphidius sp. on Macrosiphum avenae.

*Zoological Collectings by the Hungarian Natural History Museum in Korea, No. 69.
Caenacis peroni Kamiyo


Material examined — Gwangneung, 1 ♀ 2 ♂, em. 3. x. 1975, leg. PAIK.

Distribution — Korea, Japan.

Biology — Parasitic in various cynipid galls on Quercus spp. The above specimens have been reared from galls of an unidentified cynipid on Quercus sp.

Callitula fulvipes Kamiyo


Material examined — Prov. South Phenan : Bong-ha ri, on the river Te-dong, 45 km E from Pyongan, 1 ♀, 23 v 1970 (No. 19), leg. MAHUNKA, & STEINMANN. Suweon 1 ♂, 21 vi 1974, 1 ♀, 8 viii 1974, 1 ♀ 2 ♂, 29 viii 1974; Iri, 1 ♀, 24 x 1974.

Distribution — Korea*, Japan.

Biology — Unknown. The above specimens except the one from South Phenan were swept from paddy field including roadsides.

Chlorocyclus koreanus sp. n. ♀ ♂

(Figs. 1 — 4)

Female — Body bluish green to dark green with golden reflections on thoracic dorsum. Scape brownish yellow with apex darker; pedicel and flagellum dark brown. Legs pale brownish yellow, fore coxae basally, mid coxae more or less, and hind coxae mainly, bluish green; tarsi darker apically. Tegulae and veins pale brownish yellow; wings subhyaline. Body length 2.1-2.7 mm.

Head nearly 1.2 times as broad as thorax, in dorsal view 1.89 times as broad as long; temples 0.37 times length of eyes; POL 1.3 to 1.4 times OOL. Head in front view (Fig. 1) 1.17 times as broad as high; eyes separated by 1.27 to 1.34 times their height, with inner orbits diverging below; malar space 0.47 times height of eye; anterior margin of clypeus truncate. Head finely reticulate, with clypeus radiately strigose. Antennae (Fig. 2) inserted high, lower edge of their toruli much nearer to anterior margin of median ocellus than to anterior margin of clypeus (7 : 10.5); scape a little shorter than height of eye, and distinctively longer than transverse diameter of eye, reaching above level of vertex; pedicel slightly more than twice as long as broad; combined length of pedicel and flagellum 1.3 to 1.37 times breadth of head; first funicle segment a little longer and very slightly thicker than pedicel, fully twice as long as broad; three following segments nearly as long as first; sixth a little shorter than first, about 1.5 times as long as broad; club as long as two preceding segments combined, symmetrical in profile. Sensilla disposed in two rows on each segment.

Thorax about 1.8 times as long as broad. Pronotal collar medially long, 0.17 to 0.18 times length of mesoscutum, sharply margined except at sides. Mesoscutum 1.7 to 1.8 times as broad as long, strongly reticulate. Scutellum convex, slightly longer than broad, reticulate as mesoscutum, frenal furrow vaguely indicated. Dorsellum strongly transverse, weakly sculptured or almost smooth. Propodeum two-thirds as long as scutellum, distinctly produced beyond hind edges of supracoxal flange; median panels medially, transversely raised and reticulate, this raised area usually delimited by an irregular, transverse carina anteriorly; area in front of the carina weakly reticulate or almost smooth, with a few longitudinal carinulae; area in front of nucha broadly depressed and smooth; median carina distinct,
sometimes effacing medially; plicae strong posteriorly, nearly reaching the transverse carina, and represented anteriorly by basal foveae which are deep and elongate, reaching the transverse carina, with the bottom smooth; outer edge of basal fovea strongly margined and inner edge weakly so; nucha represented by an almost smooth strip, rather long, occupying nearly one-fifth length of propodeum; callus sparsely hairy, with a large, round fovea just behind spiracle, hind edge of the fovea sharp. Mesepimeron with a deep, transverse fovea medially; lower mesepimeron coarsely and deeply reticulate, upper one mainly smooth.

Legs slender; spur of mid tibia more than half length of the first tarsal segment. Fore wing slender, 2.7 times as long as broad; costal cell narrow, its upper surface bare; basal cell bare, open below; basal vein with six to seven hairs; speculum broadly open below; veins thin, marginal vein nearly 1.3 times as long as postmarginal, 2.6 times as long as stigmal.

Gaster slightly longer than thorax, twice as long as broad, acute apically; first tergite occupying nearly one-third length of gaster, with hind margin slightly emarginate at middle.

**Male** — Differs from female as follows: Body bluish green; gaster with a large brown spot. Body length 1.6–2.0 mm. Head thick, in dorsal view (Fig. 3) about 1.6 times as broad as long; temples about half length of eyes. Eyes separated by about 1.5 times their height, with inner orbits hardly diverging below. Malar space 0.53 to 0.56 times height of eye. Face strongly convex. Scape fully as long as height of eye, reaching well above level of vertex, with a small boss on its front edge apically; combined length of pedicel and flagellum 1.51 to 1.67 times breadth of head; flagellum filiform (Fig. 4); first funicle segment not thicker than pedicel in lateral view, 2.2 to 2.7 times as long as broad; sixth 1.6 to 1.8 times as long as broad; club distinctly longer than two preceding segments combined, about four times as long as broad; hairs on flagellum somewhat decumbent, nearly as long as breadth of segments that bear them. Sensilla sparse, disposed in one row on each segment. Thorax slender,

Figs. 1–4. Chlorocytus koreanus sp. n.: 1 = ♀, head in frontal view, 2 = ♀, antenna, 3 = ♂, head in dorsal view, 4 = ♂, antenna
about twice as long as broad. Mesoscutum 1.5 to 1.6 times as broad as long. Propodeum more or less reticulate anteriorly and posteriorly, with transverse carina usually indistinct laterally. Upper mesepimeron smaller, sculptured posteriorly. Gaster shorter or a little longer than thorax, about as broad as thorax, 1.7 to 2.2 times as long as broad.

**Holotype (♀):** Suweon, 23 v 1974. — **Paratypes:** Prov. Kanwon: Kumi-gangsan, Sam-il po, 1 ♀, 29 v 1970 (No. 56), 1 ♂, 1 vi 1970 (No. 87), leg. MAHUNKA, S. & H. STEINMANN. Suweon, 1 ♀ 2 ♂, with same data as holotype. — The holotype and paratypes from Suweon are deposited in the Entomological Institute, Hokkaido University, Sapporo; and the other paratypes in the Hungarian Natural History Museum, Budapest, Hym. Typ. No. 6932–6933.

**Distribution** — Korea.

**Biology** — Unknown.

Chlorocytus koreanus sp. n. shares with *C. longiscapus* GRAHAM the high insertion of the antennae, the long scape and the slender flagellum. However, *C. koreanus* differs from *C. longiscapus* in having the propodeum more irregularly sculptured and more or less smooth anteriorly and posteriorly, antennae inserted much higher on face, lower edge of their toruli much nearer to median ocellus than to anterior margin of clypeus (lower edge of toruli situated half way in *C. longiscapus*), and head thick, in female 1.9 times and in male 1.6 times as broad as long in dorsal view.

**Cleonymus longinervus** sp. n. ♀ ♂

(Figs. 5—7)

**Female** — Dark bluish green with coppery or bronzy reflections on head and thorax: first tergite shining bluish green; remainder of gaster purplish black with smooth hind bands on third to fifth tergites slightly greenish. Scape yellowish brown; pedicel and flagellum yellowish brown to dark brown, with club infuscate. Legs yellowish brown except for hind coxae which are concolorous with the thorax in greater part. Fore wing subhyaline with fuscous clouds below parastigma and postmarginal vein, which are almost joined in the middle of the wing; hairs on disc just below marginal vein pale, forming a hyaline patch, two other patches present below and beyond apical cloud (Fig. 5). Body length 4.0–4.1 mm.

**Head** much broader than thorax (30.5: 25), in dorsal view 2.2 times as broad as long; POL nearly twice as long as OOL, which is 1.2 times as long as lateral ocellus. Vertex irregularly and strongly reticulate; frons more weakly so, with area just in front of ocelli densely rugulose-reticulate or weakly reticulate. Eyes large, separated by their own height. Malar space 0.61 to 0.63 times as long as height of eye. Antennal scrobes shallow. Scape about as long as pedicel and first four flagellar segments combined; pedicel plus flagellum (Fig. 6) shorter than breadth of head (25: 30.5); pedicel distinctly longer than two following segments combined; flagellum with first and second segments distinctly transverse, the fourth slightly longer than broad; projection of eighth segment nearly reaching three-quarters of club.

**Thorax** twice as long as broad. Pronotum medially only slightly broader than long (19: 17), weakly sloping anteriorly, densely and deeply reticulate, covered with dense and pale hairs. Mesoscutum more coarsely reticulate, with hairs as in pronotum. Scutellum 1.1 times as long as broad, more weakly reticulate than mesoscutum. Dorsellum smooth. Propodeum medially 0.55 times as long as scutellum; median panels weakly but distinctly reticulate, becoming superficial anteriorly; besides depressions at metanotal margin, longitudinal and shallow depressions present along median carina, which is rather weak; spiracular sulci shallow. Fore wing 2.6 to 2.7 times as long as broad; upper surface of costal cell
anteriorly with a row of hairs, becoming double apically; marginal vein fully 2.5 times as long as stigmal vein; relative length of \( sm : m : pm : s \) as 35 : 24 : 15 : 9.5.

Gaster 1.1 times as long as head plus thorax, nearly 2.5 times as long as broad; fifth tergite 1.3 times as broad as long, medially 2.2 times as long as fourth tergite, and slightly longer than second to fourth tergites combined; first tergite almost smooth and polished; second to fifth rather uniformly and strongly reticulate (Fig. 5) with a smooth band posteriorly.

**Male** — Differs from female as follows: Scape dark brown with a metallic tinge, lighter basally; pedicel and flagellum blackish. Legs yellowish brown: fore and mid coxae mainly darker with metallic reflections; hind coxae concolorous with thorax; mid femora ventrally and mid tarsi apically darker; hind tibiae usually darker in greater part. Fore wing slightly infumate, with a faint cloud below stigmal vein; all hairs on disc dark. Petiole and first tergite basally bluish, remainder of gaster purplish black. Body length 2.3–3.0 mm.

Frons in front of ocelli with engraved reticulation. Antennae (Fig. 7) with scape about 2.2 times as long as broad, much shorter than pedicel, anellus, and first two funicle segments combined; combined length of pedicel and flagellum as long as or longer than breadth of head; pedicel a little longer than first funicle segment; anellus 1.5 to 2.0 times as broad as long, much narrower than, and half as long as, first funicle segment; funicle segments about equal in length, the first subquadrate, following segments distinctly transverse; club nearly as long as three preceding segments combined. Flagellum covered with dense hairs. Thorax

Figs. 5–7. *Cleonymus longinervus* sp. n.: 5 = ♀, body and fore wing, 6 = ♂, antenna excluding scape, 7 = ♂, antenna
more slender: pronotum quadrate, scutellum 1.3 times as long as broad. Fore wing 2.4 times as long as broad; marginal vein 1.4 to 1.6 times as long as postmarginal, 2.1 to 2.5 times stigmal vein. Petiole quadrate, nearly smooth. Gaster as long as thorax; fifth tergite twice as long as the fourth; first and second tergites smooth; third and fourth tergites rather deeply reticulate, with smooth band posteriorly; the fifth anteriorly reticulate as in the third and fourth, becoming weaker posteriorly.

— The female paratype and one male paratype are deposited in the Hungarian Natural History Museum, Budapest, Hym. Typ. No. 6930–6931; further types in the Entomological Institute, Hokkaido University, Sapporo.

Distribution — Korea, Japan.

Biology — Unknown.

Cleonymus longinervus sp. n. is close to C. laticornis Walker, from which it differs in having the marginal vein 2.5 times in female, and more than twice in male, as long as stigmal vein, fifth tergite fully twice as long as fourth tergite in both sexes, and second to fifth tergites in female and third to fifth in male strongly reticulate. It shares with C. balcanicus Bouček the relatively long marginal vein and the long fifth tergite with strong reticulation; but it may be distinguished from C. balcanicus by the weaker sculpture on the frons in front of the ocelli, the larger eyes (in C. balcanicus the eyes are separated by 1.12 times the height of eyes), the relatively shorter OOL which is only slightly longer than the lateral ocellus (more than 1.5 times in C. balcanicus), and the disc of fore wing with hyaline patches.

Conomorium patulum (Walker)

Pteromalus patulus Walker, 1835, Ent. Mag., 2: 479.


Distribution — Korea*, Japan, Europe.

Biology — A pupal parasite of various Lepidoptera.

Coruna clavata Walker

Coruna clavata Walker, 1833, Ent. Mag., 1: 380.


Distribution — Korea, Japan, India, Europe, North America.

Biology — Hyperparasitic on various Aphids.
**Dibrachys cavus (WALKER)**

*Pteromalus cavus* WALKER, 1835, Ent. Mag., 2:477.


Material examined — Suweon, 7 ♀ 4 ♂, em. 18 vi 1976, 2 ♀, em. 5 vi 1978, leg. PAIK.

GRAHAM (1969) regards *D. cavus* as distinct from *D. boarmiae* (WALKER), 1863, and gives the diagnostic characters for separating them. Besides the above Korean specimens, I have examined many Japanese specimens reared from several hosts. They have the head 1.9 to 2.0 times as broad as long in dorsal view; the eyes 1.52 to 1.61 times as high as broad, with posterior orbit in profile very shallowly emarginate in the middle; marginal vein 2.0 to 2.4 times in female, 2.2 to 2.5 times in male, as long as stigmal vein, which varies from a little shorter to a little longer than postmarginal vein; stigma small to large; body usually blackish with a bronzy tinge, sometimes dark greenish blue; gaster of male with a pale spot usually distinct, sometimes indistinct. Most of these characters, e. g., the relatively transverse head and the shape of eyes, are in agreement with those of *D. boarmiae*. Nevertheless I prefer to treat the Korean and Japanese form as *cavus* for the present, because the separating characters given by Graham appear to be mostly unreliable and I am not sure whether *D. boarmiae* is a good species.

**Distribution** — Korea, Japan, China, India, Pakistan, Europe, North America.

**Biology** — Primary or secondary parasite of Lepidoptera. I have seen specimens reared from *Galleria mellonella* L. and *Ostrinia furnacalis* GUENÉE in Korea; and *Cymolomia hartigiana* RATZEBURG, *Grapholitha molesta* BUSCK, *Phthorimaea operculella* ZELLER, *Psycholomoides aeriferana* HERRICH—SCHÄFFER (all Lepidoptera), *Hyposoter takagii* UCHIDA, *Tranosema nigricans* MOMOI (Hym., Ichneumonidae), *Apanteles glomeratus* L. and *Macrocentrus resinellae* L. (Hym., Braconidae) in Japan.

**Euneura augarus** WALKER


Material examined — Gyehwado, 1 ♀, 27 vii 1976; Gogsung, Jeonranam-do, 1 ♂, 14 vi 1978, leg PAIK.

**Distribution** — Korea, Japan, Europe.

**Biology** — Hyperparasitic on various aphids. PAIK (1978) reared it from *Cinara formosana* (TAKAHASHI) through *Pauesia pini* (HALIDAY) in Korea.

**Euneura lachni** (ASHMEAD)


Material examined — Suweon, 2 ♂, 20, vi. and 3 vii 1976, leg. PAIK.

**Distribution** — Korea*, Japan, Pakistan, Europe, North America.

**Biology** — Hyperparasitic on various aphids. The above specimens have been reared from *Tuberolachnus salignus* (GMELIN) through *Pauesia salignae* (WATANABE).
Halticoptera circulus (Walker)


Material examined — Suweon, 1 ♂, 25 x 1974; Suweon, 2 ♀ 1 ♂, em. 5 vi 1979, leg. Paik; Iri, 1 ♀ 1 ♂, 24 x 1974; Milyang, 2 ♀'s, 6 x 1974; Gyehwado, 1 ♀, 7 vi 1976, 1 ♀, 30 vii 1976, 1 ♀ 1 ♂, 15 vii 1976.

Distribution — Korea*, Japan, Europe, North America.

Biology — Some of the above specimens have been reared from *Phytomyza horticola* Gourea (Dipt., Agromyzidae).

Mesopolobus yasumatsui Kamijo


Material examined — Suweon, 2 ♀ 3 ♂, em. 10 iii 1977, leg. Paik.

Distribution — Korea, Japan.

Biology — Parasitic in various cynipid galls on oak and chestnut. The above specimens have been reared from cynipid galls on the trunk of oak.

Mockrzeckia pini (Hartig)


Distribution — Korea*, Japan, Europe.

Biology — A hyperparasite of various Lepidoptera through Ichneumonidae and Braconidae.

Notoglyptus virescens Masi


Biology — Unknown. The specimens from Suweon were swept from paddy field including roadsides.
Pachyneuron aphidis (Bouché)


Material examined — Gyehwado, 2 ♀, 7 x 1976; Suncheon, Jeonranam-do, 2 ♂, 10 vi 1978, PAIK; Hongcheon, Gangweon-do, 1 ♀ 1 ♂, em. 14 vi 1978, leg. PAIK; Weontong, Gangweon-do 2 ♂, 13. vi. 1978, leg. PAIK.

Distribution — Korea*, Japan, India, Pakistan, Europe, Hawaii.

Biology — Hyperparasitic on various aphids in open fields. The above specimens have been reared from Aphis spiraeacola Patch through Lysiphlebus japonicus Ashmead, and Hyalopterus pruni (Geoffroy) through Ephedrus plagiator (Nees).

Pachyneuron groenlandicum (Holmgren)


Distribution — Korea*, Japan, India, Europe.

Biology — A gregarious, primary parasite of syrphid pupae. Occasionally it attacks, as a solitary hyperparasite, aphids and coccids through Aphidiidae and Encyrtidae, respectively. Some of the above specimens have been reared from Epistrophe baleata (DeGeer) and E. cinctipes Zetterstedt (Dipt., Syrphidae).

Pachyneuron solitarius (Hartig)


Material examined — Milyang, Gyeongsangnam-do, 2 ♀ 1 ♂, 10 vi 1978, leg. PAIK.

Distribution — Korea*, Japan, Sakhalin, Europe.

Biology — A hyperparasite of aphids, coccids and egg of Dendrolimus (Lep., Lasiocampidae). PAIK (1978) records the following species as hosts of this parasite: Aphis craccivora Koch through Trioxys sp. and Schizolachnus orientalis (Takahashi) through Panaeus unilachni (Gahan).

Panstenon oxylus (Walker)

Miscogaster oxylus Walker, 1839, Monographia Chalciditum, 1: 196.


I have seen nine females and nine males collected in Bohemia by Dr. V. Martinez.
In the Korean specimens examined, the propodeum is usually more strongly rugose-reticulate, the female gaster is occasionally mainly brown, and in small males the body is sometimes brown with the gaster darker in apical two-thirds.

**Distribution** — Korea*, Japan*, Europe.

**Biology** — Recorded as a predator on the eggs of *Javesella pellucida* (F.) (Hem., Delphacidae) in Europe. All the Korean specimens were swept from paddy field including roadsides.

**Pteromalus puparum** *(LINNAEUS)*


**Material examined** — Prov. South Pyongan: Pyongyan, Hotel garden, 2♂, 10 and 12 viii 1971 (Nos. 157 and 166) leg. J. PAPP & HORVATOVIČ. Suweon, 7♂, em. 8 v 1979, leg. PAIK.

**Distribution** — Cosmopolitan.

**Biology** — A gregarious parasite of pupae of some Lepidoptera.

**Pteromalus sp.**

**Material examined** — Prov Kanwon: Kum-gang san, environs of Hotel Go-song, 1♂, 29 v 1970 (No. 52), leg. MAHUNKA & STEINMANN. Gyehwado, 2♂, 27 vi 1976. — Japan, Hokkaido: Bibai, 1♂, 20 vii 1979, leg. KAMJO; Oshima-Shiriuchi, 1♂, 12 vii 1976, leg. KAMJO.

This species shares with *Pteromalus squamifer* THOMSON the extremely wide oral fossa and the relatively longer temples, but it differs from *P. squamifer* in having POL nearly 1.4 times OOL, and marginal vein slightly longer than postmarginal, about 1.8 times as long as stigmal vein. The female is unknown.

**Distribution** — Korea, Japan.

**Biology** — Unknown.

**Rakosina deplanata** *BOUČEK*


**Material examined** — Prov. South Phenan: Bong-ha ri, on the river Te-dong, 45 km E from Pyongyan, 1♀, 23 v 1970 (No. 19), leg. MAHUNKA & STEINMANN. Suweon, 1♀, 12 vi 1974, 1♂, 29 viii 1974, 1♀, 4–12 ix 1974; Gyehwado, 1♂, 15 vii 1976; Iri, 1♀, 24 x 1974; Milyang, 1♀, 15–27 v 1974. — Japan, Hokkaido: unlocalized, 2♀, 1♂, 1922, leg. KUWAYAMA. Honshu: Ishikawa-ken, 1♀, 22 vii 1980, leg. TOGASHI.

All the above specimens have the body entirely black instead of metallic green. The male antennae seem to be variable: in a larger specimen (body length 1.9 mm) the antennae are almost identical with the description and figure given by ASKEW & SHAW (1979); however, in small specimens (body length 1.1–1.5 mm) the second anellus is strongly transverse, the third anellus is transverse and half as long as the first funicle segment, which is quadrate and as broad as the second funicle segment, the last funicle segment is weakly transverse, and the combined length of the pedicel and flagellum is sometimes much shorter than the
breadth of the head. — DR. Z. BOUCÈK kindly examined one female specimen from Hokkaido and confirmed my identification.

**Distribution** — Korea*, Japan*, Europe.

**Biology** — Recorded in Europe as reared from *Elachiptera cornuta* (FALLÉN) (Dipt., Chloropidae) and a dipterous puparium in a stem of *Phragmites*. The specimens from Hokkaido, Japan, have been reared from puparia of a chloropid, probably *Calamoncosis* sp.

**Rhicnocoelia constans** (WALKER)

*Pteromalus constans* WALKER, 1836, Ent. Mag., 3: 468.

**Material examined** — Prov. Ryang-gang: Plateau Chann-Pay, Sam-zi-yan, 1600 m, 1 ♀, 25 viii 1971 (No. 197), leg. J. PAPP & HORVATOVICH.

I have seen the type of this species in the British Museum (Nat. Hist.). The present specimen agrees with the type except that the gaster is much shorter than the thorax (26 : 39), 1.4 times as long as broad, and the first tergite is weakly emarginate medially. These differences appear to be within the range of variation.

**Distribution** — Korea*, Europe.

**Biology** — Unknown.

**Skeloceras cariniferum** KAMIJO


**Material examined** — Prov. Ryang-gang: Plateau Chann-Pay, Sam-zi-yan, 1700 m, 1 ♀, 27 viii 1971 (No. 206), leg. J. PAPP & HORVATOVICH.

**Distribution** — Korea*, Japan.

**Biology** — Unknown.

**Spalangia nigra** LATREILLE


**Material examined** — Prov. South Pyongan: Pyongan, Nung-ra do, 1 ♀, 14 viii 1971 (No. 175), leg. J. PAPP & HORVATOVICH.

**Distribution** — Korea*, Japan, Europe, North America, Hawaii.

**Biology** — Parasite of some Muscidae, Anthomyiidae and Trypetidae.

**Sapniopus japonicus** KAMIJO


**Material examined** — Suweon, 1 ♀, 11 vii 1974.

**Distribution** — Korea*, Japan.

**Biology** — A primary or secondary parasite of Diptera and Lepidoptera.
Sphegigaster hamugurivora ISHII


Material examined — Prov. Kanwon: Kum-gang san, environs of Hotel Go-song, 1 ♀, 29 v 1970 (No. 52), leg. MAHUNKA & STEINMANN. Suweon, 2 ♀ 3 ♂, 21–28 vi 1974; Suweon, 1 ♀, em. 5 VI 1979, leg. PAIK.

Distribution — Korea, Japan.

Biology — A parasite of Phytomyza horticola GOUREA (Dipt., Agromyzidae).

Syntomopus sp.

Material examined — Prov. South Pyongan: De-sang san, 12 km NE from Pyongyan, 1 ♀, 7 viii 1971 (No. 145), leg. J. PAPP & HORVATOVICH. Suweon, 1 ♀, 10x 1977, leg. PAIK; Iri, 3 ♂, 24 x 1974; Gyechwado, 2 ♀, 7 x 1976.

This species is very close to, or might be the same as, S. incisus THOMSON.

Distribution — Korea.

Biology — The specimen from Suweon has been reared from Melanagromyza sojae ZEHNTER (Dipt., Agromyzidae) on bean.

Trichomalopsis apanteloctena (CRAWFORD)


Material examined — Prov. Kanwon: Si-sung-ho, 50 km S of Wonsan, seashore, 2 ♀, 29 v 1970 (No. 49), leg. MAHUNKA & STEINMANN; Kum-gang san, environs of Hotel Go-song, 1 ♂, 29 v 1970 (No. 52), leg. MAHUNKA & STEINMANN. Prov. South Phenan: Bong-ha ri, on the river Te-dong, 45 km E from Pyongyan, 2 ♀, 23 v 1970 (No. 19), leg. MAHUNKA & STEINMANN; Sa-gam po, 30 km N from Pyongyan, 1 ♀, 24 v 1970 (No. 29) leg. MAHUNKA & STEINMANN. Prov. South Pyongan: Pyongyan, Hotel garden, 1 ♀, 31 vii 1971 (No. 225), leg. J. PAPP & HORVATOVICH. Suweon, 2 ♀, 8 viii 1974, 3 ♀ 1 ♂, 4–12 ix 1974; Gyechwado, 2 ♀, 10–27 vii 1976; Suweon, 11 ♀ 3 ♂, 18 vii 1977, leg. PAIK.

Distribution — Korea, Japan, Formosa, Philippines, Eastern and Western Malaysia, Bangladesh, India.

Biology — Primary or secondary parasite of various insects in paddy field and other open fields. KAMIO & GRISSELL (1982) give a list of its hosts.

Trichomalopsis closterae sp. n. ♀ ♂

(Figs. 8—10)

Female — Black: clypeus, thorax laterally and propodeum sometimes with a faint bluish tinge; first tergite mainly dark blue; occasionally whole gaster brown. Scape, pedicel and often first anellus brownish yellow; remaining antennae blackish brown. Legs brownish yellow; coxae varying from brownish yellow to black; femora often slightly darker medially; tarsi darker apically. Wings hyaline; tegulae and venation brownish yellow. Body length 1.7–2.5 mm.
Head 1.2 times as broad as thorax, in dorsal view 2.1 times as broad as long; temples 0.28 to 0.33 times length of eye, strongly converging behind eyes; POL 1.4 to 1.58 times OOL; occipital carina weak. Head in front view (Fig. 8) 1.2 times as broad as high; eyes small, separated by 1.3 to 1.4 times their height; malar space 0.5 to 0.55 times height of eye; anterior margin of clypeus hardly emarginate. Both mandibles with four teeth. Head moderately reticulate, with clypeus striate, smooth anteriorly. Antennal toruli separated by half their diameter, with lower edge of toruli at level of ventral edge of eyes; scape a little shorter than height of eye, not reaching median ocellus; combined length of pedicel and flagellum 0.88 to 0.92 times breadth of head; pedicel 2.1 to 2.4 times as long as broad, about twice as long as second funicle segment; flagellum only weakly clavate distally (Fig. 9); first funicle segment shorter than, or as long as, second segment, varying from distinctly transverse to a little longer than broad; sometimes virtually anelliform in small specimens; second segment slightly longer than broad; sixth quadrate to slightly transverse; club slightly more than twice as long as broad. Sensilla disposed in one row on each segment.

Thorax 1.45 to 1.55 times as long as broad. Pronotal collar often weakly and irregularly margined medially, with smooth strip posteriorly. Mesoscutum 1.85 to 2.2 times as broad as long, somewhat weakly and coarsely reticulate. Scutellum convex, slightly transverse, more densely reticulate than mid lobe of mesoscutum. Propodeum medially 0.73 to 0.83 times as long as scutellum; median panels reticulate much as scutellum; nucha strongly convex, occupying two-fifths length of propodeum, coarsely and strongly reticulate; median carina complete; plicae distinct; spiracular sulci present, though sometimes shallow; callus moderately hairy. Fore wing 2.3 times as long as broad; basal vein and basal cell bare; speculum open below; marginal vein 1.4 to 1.8 times as long as stigmal vein, a little longer than postmarginal.

Gaster a little longer than thorax, about 1.6 times as long as broad, acute apically; first tergite occupying one-third length of gaster or less, with several hairs at each side; first four tergites smooth dorsally.

Male — Differs from female as follows: Bluish green, gaster brownish black with a weak greenish tinge; scape and pedicel brownish yellow, flagellum only slightly darker. Body length 1.3—1.9 mm. Scape as long as height of eye, fully reaching median ocellus; flagellum hardly clavate (Fig. 10), covered with longer hairs; first funicle segment shorter than second, strongly transverse to quadrate; following segments longer than broad; club about three times as long as broad. Thorax nearly 1.6 times as long as broad. Gaster much shorter than thorax, about 1.3 times as long as broad; first tergite occupying more than one-third length of gaster.

Figs 8–10. *Trichomalopsis closterae* sp. n.: 8 = ♀, head in frontal view, 9 = ♂, antenna, 10 = ♂, antenna

Distribution — Korea, Japan.

Biology — Reared from young larvae of Clostera anastomosis tristis Staudinger (Lep., Notodontidae) overwintering on trunks of poplar at Bibai, and from undetermined lepidopterous larvae on Pyrus in Suweon.

Trichomalopsis closterae sp. n. shares the low insertion of the antennae with T. maura (Graham) and the fucicola-group: T. fucicola (Walker), T. albopilosa (Graham) and T. littoralis (Graham) (all comb. n.). The new species is distinguished from T. maura by the only weakly margined pronotal collar, the longer funicle segments, and the relatively longer temples. It appears to be close to T. fucicola, but differs in having the temples nearly one-third as long as eyes, female scape shorter than height of eye and not reaching median ocellus, second funicle segment slightly longer than broad in female, and scape and pedicel brownish yellow. It differs from T. albopilosa in having the calyx less densely hairy, malar space 0.5 to 0.55 times height of eye, and scape and pedicel brownish yellow; and from T. littoralis in having POL 1.4 to 1.58 times OOL, scape relatively shorter, marginal vein longer than postmarginal, both mandibles with four teeth, and head in dorsal view less transverse in male.

Trichomalopsis oryzae Kamijo et Grisell

Trichomalopsis oryzae Kamijo et Grisell, 1982, Kontyû, 50: 82—84.


Distribution — Korea, Japan.

Biology — A primary or secondary parasite attacking some Coleoptera, Diptera, Lepidoptera and cocoons of Braconidae associated mainly with rice plant.

Trichomalopsis pappi sp. n. ♀

(Figs. 11—13)

Female — Blackish with a faint bronzy tinge on thoracic dorsum: first tergite blue-black. Scape brownish yellow, becoming darker apically; pedicel and flagellum dark brown. Coxae concolorous with thorax, remainder of legs brownish yellow. Wings subhyaline; tegulae and venation brownish yellow. Body length 1.9 — 2.1 mm.

Head nearly 1.25 times as broad as thorax, in dorsal view (Fig. 11) twice as broad as long or slightly less; temples strongly receding behind eyes, a little less than a quarter length of eyes; POL about 1.3 times OOL; occiput weakly margined. Head in front view (Fig. 12) nearly 1.3 times as broad as high; eyes separated by 1.15 to 1.23 times their height, with inner orbits diverging below; genae strongly converging towards mouth; malar space 0.37 to 0.45 times height of eye; anterior margin of elypeus weakly emarginate. Both mandibles with four
teeth. Clypeus strigose; head otherwise moderately reticulate. Antennal toruli separated by half their diameter, situated distinctly nearer to anterior margin of median ocellus than to anterior margin of clypeus (8:11); scape slightly shorter than height of eye, reaching well above level of vertex; combined length of pedicel and flagellum 1.05 to 1.1 times breadth of head; pedicel twice as long as broad; flagellum very slender (Fig. 13); first funicle segment as long as or slightly longer than pedicel, nearly twice as long as broad; sixth segment about 1.3 times as long as broad; club 3.3 times as long as broad. Sensilla disposed in irregular two rows on first to fifth funicle segments.

Thorax robust. 1.4 to 1.47 times as long as broad. Pronotal collar immargined or very weakly margined medially, with smooth strip posteriorly. Mesoscutum 2.17 times as broad as long, rather strongly reticulate. Scutellum strongly convex, slightly transverse, reticulate as mesoscutum; frenal furrow indistinct. Propodeum medially 0.66 times as long as scutellum; median area including nucha 1.4 times as broad as long, strongly reticulate; nucha occupying two-fifths length of propodeum, reticulate as median panels (in one specimen (No. 19) propodeum elongate, 0.79 times as long as scutellum and median area 1.1 times as broad as long); median carina absent; plicae strong; area between plica and callus evenly reticulate, with no trace of spiracular sulcus; callus moderately hairy. Fore wing 2.4 times as long as broad; basal cell and basal vein bare; marginal vein 1.3 to 1.4 times as long as stigmal vein, as long as or a little shorter than postmarginal.

Gaster as long as thorax, ovate, 1.46 to 1.54 times as long as broad, acuminate apically; first tergite about one-third length of gaster; first four tergites smooth dorsally.

Male — Unknown.

Holotype (♀): Mts. Pakyon, 20 km NE from Kaesong, Prov. South Phenan, 11 ix 1971 (No. 261), leg. J. PAPP & HORVATOVIČ. — Paratypes: Prov. South Phenan, Bong-ha ri, on the river Te-dong, 45 km E from Pyongyan, 1♀ 23 v 1970 (No. 19), leg. MAHUNKA & STEINMANN. Gyehwado, 1♀ 10 vii 1976. — Japan, Honshu: Toyoma, 1♀, 27 viii 1959, leg. TAKAGI. The holotype and one paratype are deposited in the Hungarian Natural History Museum, Budapest; Hym. Typ. No. 6925 (holotype) and No. 6926 (paratype). Further paratypes are in the Entomological Institute, Hokkaido University, Sapporo.

Figs. 11–13. *Trichomalopsis pappi* sp. n., ♀: 11 = head in dorsal view, 12 = head in frontal view, 13 = antenna
Trichomalopsis pappi sp. n. is an isolated species and seems to be related to the hemiptera-group. It may be easily separated from other members of the genus by the high insertion of the antennae, by the long, slender flagellum, the first funicle segment which is as long as or longer than the pedicel, the sensilla which are disposed in two rows on proximal funicle segments, the divergent inner orbits, and the marginal vein which is 1.4 times as long as the postmarginal vein.

Trichomalopsis shirakii CRAWFORD


Distribution — Korea, Japan, Formosa, China.

Biology — A parasite of Oulema oryzae (KUWAYAMA) (Col., Chrysomelidae), dipterous leaf-miners and syrphids on rice plant, and Elachista sp. (Lep., Elachistidae) on Sasa.

Vrestovia sp.

Material examined — Prov. South Pyongan: Mts. Guk-san-bong, 40 km NE from Nam-po, 1♀, 5 ix 1971 (No. 238), leg. J. PAPP & HORVATOVICH.

This species is close to V. fidenas (WALKER), but differs as follows: antennae with three anelli, third anellus twice as broad as long, about one-third as long as first funicle segment; fifth funicle segment quadrate; head in dorsal view thick, 2.1 times as broad as long; temples short, about one-eighth as long as eye; petiole longer, half as long as propodeum; gaster ovate, equal to thorax in length and breadth, 1.6 times as long as broad; body length 1.8 mm.

Distribution — Korea.

Biology — Unknown.

References


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