

## A systematic study of Ichneumonidae (Hymenoptera) from North Korea I. Subfamily Mesochorinae\*

by JONG-WOOK LEE & KYONG-IN SUH, Kyongsan

LEE, J.-W. & SUH, K.-I.: A systematic study of Ichneumonidae (Hymenoptera) from North Korea I. Subfamily Mesochorinae. – *Annls hist.-nat. Mus. natn. hung.* 1993, 85: 141-153.

**Abstract** – Fifteen species of the subfamily Mesochorinae belonging to 3 genera are recorded from North Korea. Of these, *Astiphromma dorsalis*, *Mesochorus disciurgus*, *M. minowai*, *M. sylvorum*, *M. vittator*, *M. politus*, *M. mandibularis* also occur in South Korea, *A. strenuum*, *M. jihyetanus* are recorded from Korea for the first time. *Mesochorus pektusanus* sp. n., *M. kumganensis* sp. n., *M. cuspidatus* sp. n., *M. rugatus* sp. n., *Stictopisthus delicatus* sp. n. and *S. sagamensis* sp. n. are described. With 16 figures.

### INTRODUCTION

Mesochorinae have a worldwide distribution. They are found most abundantly in the temperate and subarctic regions of the World but range into the tropics and subtropics at higher elevations (DASCH 1974).

This paper is a report of North Korean Mesochorinae based on materials collected from North Korea by Dr. J. PAPP and other scientists in the period 1970 through 1980. Up to the present, eleven species have been recorded from South Korea (LEE 1991, 1992, LEE & SUH 1991). In this study, we report 15 species including 6 new species. All species of the subfamily Mesochorinae are recorded for the first time from North Korea.

The morphological terminology used is mostly that of TOWNES (1969) and GUPTA & TIKAR (1976).

All specimens, including types of the new species, are preserved in the Hungarian Natural History Museum, Budapest.

### KEY TO THE NORTH KOREAN SPECIES OF THE GENUS *ASTIPHROMMA*

– Head 1.36X as wide as high. Ocelli medium sized, distance between lateral ocellus and ocular as long as the maximum diameter of the lateral ocellus. Pronotum polished with fine sparse punctures. Scutellum with an apical tubercle. Areola of propodeum incomplete. Ovipositor sheath 8.50X as long as wide

***A. dorsalis*** (HOLMGREN)

– Head 0.95X as wide as high. Ocelli rather small, distance between lateral ocellus and ocular 1.40X the maximum diameter of the lateral ocellus. Pronotum almost impunctate. Scutellum without apical tubercle. Areola of propodeum complete with diamond shape. Ovipositor sheath 6.75X as long as wide

***A. strenuum*** (Holmgren)

\* Zoological Collectings by the Hungarian Natural History Museum in Korea, No. 114.

**Astiphromma dorsalis (HOLMGREN)**

*Mesochorus dorsalis* HOLMGREN, 1858, K. Vet. Akad. Handl. 2 (8): 117.

*Mesochorus scutellus* BRISCHKE, 1880, Schr. Nat. Ges. Danz.: 179.

*Mesochorus hirsutus* BRIDGMAN, 1883, Trans. Ent. Soc. 1883: 168.

*Astiphrommus dorsalis*: THOMSON, 1885, Ann. Soc. Ent. France 1885: 328.

*Astiphromma dorsalis*: LEE, 1992, Oriental Insects 26: 217-219.

Specimen examined: Korea, Prov. Kangwon, Kungang-san, in the woods around Oe-kumgang resthouse, 24.IX.1978, A. VOJNITS & L. ZOMBORI, 1 female.

Distribution: C.I.S, England, France, Germany, Japan, North and South Korea, Taiwan.

**Astiphromma strenuum (HOLMGREN)**

*Mesochorus strenuum* HOLMGREN, 1860, Svenska Vetensk. Akad. Handl. (n.f.) 2 (8): 119.

*Astiphromma sachalinense* UCHIDA, 1933, Ins. Mats. 8: 57.

*Astiphromma kiotense* UCHIDA, 1933, Ins. Mats. 8: 57.

*Astiphromma strenuum*: DASCH, 1971, Mem. Amer. Ent. Inst., 16: 27.

Specimen examined: Korea, Prov. Ryanggang, Chann-Pay plateau, Sam-zi-yan, 1700 m, 24.VII.1975, J. PAPP & A. VOJNITS, 1 female.

Distribution: England, France, Germany, Japan, North Korea, Taiwan, C.I.S.

KEY TO THE NORTH KOREAN SPECIES OF THE GENUS *MESOCHORUS*

- 1 Scutellum moderately strongly convex with apical tubercle. Ocelli large. Distance between lateral ocellus and occipital carina less than 0.30X as long as maximum diameter of lateral ocellus 2
  - Scutellum without apical tubercle. Ocelli usually not large. Distance between lateral ocellus and occipital carina more than 0.40X as long as maximum diameter of lateral ocellus 3
- 2 Antenna with 33 flagellar segments. Hind wing with 1 basal hamulus. Ovipositor sheaths slender, 8.66X as long as wide M. politus GRAVENHORST
  - Antenna with 41 flagellar segments. Hind wing with 4 basal hamuli. Ovipositor sheaths less slender, 5.80X as long as wide M. jihyetanus KUSIGEMATI
- 3 Mandible small to medium sized. Malar space more than 0.50X as long as basal width of mandible 4
  - Mandible stout. Malar space more than 0.40X as long as basal width of mandible 8
- 4 Antenna with 28 flagellar segments. Areola of propodeum 1.33X as long as wide at costula, petiolar area 1.16X as long as wide. Nervulus distad to basal vein M. discitergus (SAY)
  - Antenna with more than 31 flagellar segments. Areola of propodeum more than 1.60X as long as wide at costula, petiolar area less than 0.91X as long as wide. Nervulus opposite or basad to basal vein 5
- 5 Head 1.10X as wide as high. Ocelli small. Interocellar distance about as long as the maximum diameter of the lateral ocellus. Temple strongly flattened in female, slightly convex in male. Second tergite of abdomen 1.05X as long as its basal width M. vittator (ZETTERSTEDT)

- Head 1.23-1.48X as wide as high. Ocelli moderate sized. Interocellar distance about 0.40-0.70X as long as the maximum diameter of the lateral ocellus. Temple not strongly flattened. Second tergite of abdomen 1.25-1.40X as long as its basal width 6
- 6 Apical teeth of mandible equal in length. Areola of propodeum 2.40X as long as wide at costula. 1.52X as long as petiolar area. Subgenital plate entirely membranous. Thorax entirely tawny-rufous **M. minowai** UCHIDA
- Apical teeth of mandible unequal in length. Lower tooth of mandible a little smaller than the upper. Areola of propodeum 1.83-2.10X as long as wide at costula, 1.11-1.28X as long as petiolar area. Subgenital plate chitinized. Thorax entirely black 7
- 7 Temple narrow and flat, 0.54X as wide as maximum eye width. Inner margin of eyes convergent ventrally. Hind tarsal claws weakly pectinated at base. Ovipositor sheaths rather elongate, 6.00X as long as wide **M. kumganensis** sp. n.
- Temple wider and weakly convex, 1.16X as wide as maximum eye width. Inner margin of eyes parallel-sided. Hind tarsal claws strongly pectinated with 5 pectinal teeth. Ovipositor sheaths short and broad, 2.58X as long as wide **M. sylvorum** CURTIS
- 8 Head more than 1.50X as wide as long. Face brown to dark brown. Mesoscutum ferruginous with apical 3 dark brown bands 9
- Head less than 1.35X as wide as long. Face black except clypeus. Mesoscutum entirely black 10
- 9 Propodeal carinae complete, petiolar area 1.62X as wide as areola. Ovipositor sheaths rather broader, 5.66X as long as wide. Abdomen tawny except first, second tergite and basal 1/3 of third tergite blackish brown **M. mandibularis** LEE et SUH
- Propodeal carinae incomplete, basal transverse carina lacking, petiolar area 2.50X as wide as areola. Ovipositor sheaths straight, very narrow, 9.25X as long as wide. Abdomen black with apical margin of abdominal segments yellow band **M. cuspidatus** sp. n.
- 10 Temple 0.78X as wide as maximum eye width. Nervulus opposite to basal vein. Length of *Rs* between *R1* and *irm* in hind wing 2.00X as long as *irm* between *Rs* and *M*. Dorsal apex of first tergite without wrinkles **M. pektusanus** sp. n.
- Temple 1.10X as wide as maximum eye width. Nervulus basad to basal vein. Length of *Rs* between *R1* and *irm* in hind wing 1.71X as long as *irm* between *Rs* and *M*. Dorsal apex of first tergite with several fine wrinkles **M. rugatus** sp. n.

### **Mesochorus politus** GRAVENHORST

*Mesochorus politus* GRAVENHORST, 1829, Ichneumonologia europaea 2: 974.

*Mesochorus politus*: LEE et SUH, 1991, Entomol. Res. Bull. (Korea) 17: 19.

Specimen examined: Korea, Prov. North Pyongan, Mt. Myohyang-san, 13.IX.1980, Forró & Tó-pál, 1 female.

Distribution: Germany, Japan, North and South Korea.

**Mesochorus jihyetanus KUSIGEMATI**

*Mesochorus jihyetanus* KUSIGEMATI, 1985, Mem. Kagoshima Univ. Res. Center S. Pac. 6 (1): 139-141.

**Specimens examined:** Korea, Prov. Gang-von, district On-dzong, Kum-gang san, near Hotel Gosong, 250 m, 5.VIII.1975, J. PAPP & A. VOJNITS, 1 female.

**Distribution:** Taiwan, North Korea.

**Mesochorus discitergus (SAY)**

*Cryptus discitergus* SAY, 1836, Boston J. Nat. Hist. 1: 231.

*Mesochorus vitreus* WALSH, 1861, Trans. Illinois State Agr. Soc. 4: 368. [female.]

*Mesochorus obliquus* CRESSON, 1872, Canad. Ent. 4: 24. [female.]

*Mesochorus facialis* BRIDGMAN, 1884, Trans. Ent. Soc. London 1884: 431.

*Mesochorus pulchellus* COOK et DAVIS, 1891, Bul. Michigan Agr. Exp. Sta. 73: 10.

*Mesochorus frontalis* ASHMEAD, 1899, Fur seals and fur-seal islands 4: 336.

*Mesochorus nigrisignus* VIERECK, 1911, Proc. U.S. Natl. Mus. 40: 192.

*Mesochorus infernalis* VIERECK, 1911, Proc. U.S. Natl. Mus. 40: 192.

*Mesochorus concinnatus* WILKINSON, 1829, Bul. Ent. Res. 20: 105.

*Mesochorus narangae* UCHIDA, 1930, Ins. Mats. 4: 129.

*Mesochorus facialis* var. *nigristemmaticus* UCHIDA, 1931, Ins. Mats. 5: 158.

*Mesochorus havrylenkoi* HAVRYLENKO et WINTERHALTER, 1949, Ins. parque nac. Nahuel Huapi 48.

*Mesochorus discitergus*: LEE et SUH, 1991, Entomol. Res. Bull. (Korea) 17: 15.

**Specimens examined:** Korea, prov. South Pyongan, Pyongyang, Hotel garden, 10.VIII.1971, S. HORVATOVICH & J. PAPP, 1 female, 14.VIII.1971, S. HORVATOVICH & J. PAPP, 1 male, 15.VIII.1971, S. HORVATOVICH & J. PAPP, 1 female, 17.VIII.1971, S. HORVATOVICH & J. PAPP, 6 females, 1 male, 19.VIII.1971, S. HORVATOVICH & J. PAPP, 2 females, 2 males, 31.VIII.1971, S. HORVATOVICH & J. PAPP, 3 females, 2 males; Prov. South Pyongan, Pyongyang, Nung-re do, 17.VIII.1971, S. HORVATOVICH & J. PAPP, 1 female; Prov. South Pyongan, Nampo, 19.VII.1975, J. PAPP & A. VOJNITS, 1 male; Prov. South Pyongan, Nampo Waudo, 23.IX.1979, H. STEINMANN & T. VÁSÁRHELYI, 1 female; Prov. South Pyongan, De-sang san, 12 km of Pyongyang, 21.V.1970, S. MAHUNKA & H. STEINMANN, 1 female, 7.VIII.1971, S. HORVATOVICH & J. PAPP, 1 male; Pyongyang City, Mt. Daesong-san, 20.IX.1979, H. STEINMANN & T. VÁSÁRHELYI, 1 male, Prov. South Pyongan, Taesong-ho, 26.IX.1978, A. VOJNITS & L. ZOMBORI, 1 male; Prov. Kangwon, Wonsan, seashore, 20.IX.1980, L. FORRÓ and GY. TOPÁL, 2 males; Prov. Kangwon, Kumgang-san, environs of Hotel Go-song, 29.V.1970, S. MAHUNKA & H. STEINMANN, 1 male; Prov. Gang-von, district On-dzong, Kum-gang san, near Hotel Go-song, 250 m, 4.VIII.1975, J. PAPP & A. VOJNITS, 1 male; Prov. Kangwon, Kumgang-san, 12.X.1978, A. VOJNITS & L. ZOMBORI, 1 female; Prov. Ryanggang, Plateau Chann-Pay, Mt. Pektusan, Mu-do-dong, 2100-2200 m, 25.VII.1975, J. PAPP & A. VOJNITS, 1 female, 1 male.

**Distribution:** Africa, Argentina, Austria, Brasil, China, C.I.S., Cuba, Denmark, Ecuador, England, Hungary, India, Japan, Mexico, North Korea, Peru, Sakhalin, South Korea, Sweden, USA, Venezuela.

**Mesochorus vittator (ZETTERSTEDT)**

*Tryphon (Mesoleptus) vittator* ZETTERSTEDT, 1838, Insecta Japonica 1: 384.

*Mesochorus vittator*: HOLMGREN, 1860, Svenska Vetensk. Akad. Handl. (n.f.) 2 (8): 126.

*Mesochorus brunneus* BRISCHKE, 1880, Schrift. naturf. Ges. Danzig (n.f.) 4: 184.

*Campoplex pieridicola* PACKARD, 1881, Proc. Boston Soc. Nat. Hist., 21: 20.

*Mesochorus vittator*: LEE & SUH, 1991, Entomol. Res. Bull. (Korea) 17: 20.

**Specimens examined:** Korea, Prov. North Pyongan, Mt. Myohyang-san, 13.IX.1980, L. FORRÓ & GY. TOPÁL, 1 male; Prov. South Pyongan, Pyongyang, Nung-ra do (island), 17.VIII.1971, S. HORVATOVICH & J. PAPP, 1 male; Prov. Kangwon, Kumgang-san, 12.X.1978, A. VOJNITS & L. ZOMBORI, 1 female.

**Distribution:** Australian zones, Bulgaria, Canada, C.I.S., England, Finland, France, Germany, Hungary, Japan, Kuriles, Latvia, North and South Korea, Spain, Sweden, Taiwan, Yugoslavia.

**Mesochorus minowai** UCHIDA

*Mesochorus minowai* UCHIDA, 1992, Ins. Mats. 3: 183.

*Mesochorus igarashii* UCHIDA, 1933, Ins. Mats. 8: 61.

*Mesochorus minowai*: LEE & SUH, 1991, Entomol. Res. Bull. (Korea) 17: 18.

**Specimens examined:** Korea, Prov. Ryang-gang, Plateau Chann-Pay, Sam-zi-yan, 1600 m, 26.VIII.1971, S. HORVATOVICH & J. PAPP, 1 female, 27.VIII.1971, S. HORVATOVICH & J. PAPP, 2 females, 28.VIII.1971, S. HORVATOVICH & J. PAPP, 1 male; Mt. Pektusan, environs Sam-zi-yan Hotel, wood, 18-20.VII.1977, DELY & DRASKOVITS, 1 female; Mt. Pektusan, before Sam-zi-yan Hotel, lakeshore, 19. VII.1977, DELY & DRASKOVITS, 1 male; Prov. Gang-von, district On-dzong, Kum-gang san, near Hotel Go-song, 250 m, 5.VIII.1975, J. PAPP & A. VOJNITS, 1 female.

**Distribution:** Japan, North and South Korea.

**Mesochorus kumganensis** sp. n.

(Figs 5-6)

**Female:** Head 1.23X as wide as high. Antenna longer than fore wing, 1.22X as long as fore wing, and with 35 flagellar segments. First flagellar segment about 1.45X as long as the second, 0.13X as wide as long. Fifth segment about 0.73X as long as the second. Eye 1.85X as long as wide. Ocelli medium sized. Interocellar distance about 0.29X as long as the distance between lateral ocellus and eye, more than 0.40X as long as the maximum diameter of the lateral ocellus. Distance between lateral ocellus and occipital carina less than 0.50X as long as maximum diameter of lateral ocellus. Temple narrow and flat with dense setiferous punctures. 0.54X as wide as maximum eye width. Occipital carina distinct and complete, round mediodorsally. Frons polished, weakly and rather densely punctate laterally. Face 1.35X as wide as high, with large, dense, setiferous punctures, subantennal carina distinct and strongly dipped downward at the center. Inner margins of eyes convergent ventrally. Malar space with a few stria, 0.50X the basal width of mandible. Clypeus with sparse fine setiferous punctures entirely. Apical margin of clypeus almost flat. Mandible rather short, weakly tapering toward apex, 1.66X as long as its basal width, with sparse fine setiferous punctures and transversely striate in basal part. The upper tooth wider than the lower.

Pronotum with fine dense setiferous punctures. Epomia long and rather weak. Mesopleurum densely haired for the most part, bare centrally. Mesoscutum with moderately strong and dense setiferous punctures, and 0.91X as wide as long. Notauli obsolete. Scutellum with sparse setiferous punctures. Propodeum polished, sparsely haired, and distinctly areolated. Basal area small, a short stalk on posterior margin. Areola 1.83X as long as wide at costula, with costula originating from basal 6/11: petiolar area 0.91X as long as wide and 0.90X as long as areola, 1.83X as wide as areola.

Fore trochanter 1.67X as long as trochantellus. Fore femur 4.14X as long as wide. Middle femur 4.25X as long as wide. Hind femur 4.20X as long as wide. Hind tibia 2.08X as long as hind basitarsus. Hind tarsal claws very weakly pectinate at base.

Fore wing with pterostigma narrow, about 4.50X as long as wide. Nervulus opposite to basal vein. Length of *Cu1* between *Cua* and *ImCu* in the fore wing 0.85X as long as *LA* between *Cua* and *Cu1b*.  $2+3m$  0.89X as long as *M* between  $2+3m$  and  $2mCu$ . Length of *Cu1* between *ImCu* and *Cu1a* 0.54X as long as *Cu1b* between *ImCu* and *Cu1a*. Length of *Rs* between *R1* and *irm* in hind wing 1.67X as long as *irm* between *Rs* and *M*. Hind wing with 1 basal hamulus and 4 distal hamuli.

Abdomen polished, the lateral sides of tergites with very sparse, short hairs. First tergite of abdomen slender, 5.33X as long as its basal width, and 1.52X as long as second tergite. Glymma distinct. Second tergite 0.80X as wide as long, 1.31X as long as third tergite. Spiracle of petiole on 0.53 from apex. Subgenital plate moderate sized, chitinized medially. Ovipositor sheaths rather wide, 6.00X as long as wide.

Colour: Black, tawny-rufous on lower corners of frons, lateral sides of face, mandible, lower part of temple, tip of pronotal lobe, fore and middle femora, tibiae, tarsi, and apical margins of abdominal segments.

Body length: 4.9 mm. Fore wing length: 4.1 mm.

**Male:** Unknown.

**H o l o t y p e:** female, Korea, Prov. Kang-won, Kumgang-san, 12.X.1978, A. VOJNITS & L. ZOMBORI. –  
**P a r a t y p e s:** Korea, Prov. Kang-won, Kumgang-san, 12.X.1978, A. VOJNITS & L. ZOMBORI, 2 females; Prov. Ryanggang, Plateau Chann-pay, Sam-zi-yan, 1500 m, 24.VIII.1971, S. HORVATOVICH & J. PAPP, 1 female.

**D i s t r i b u t i o n:** North Korea.

**R e m a r k s:** In general structures and colouration this species resembles *Mesochorus pektusanus* sp. n., from which it is readily distinguished by its large ocelli, more narrower and inner margins of eyes convergent ventrally. The tarsal claws are very weakly pectinate at base.

### **Mesochorus sylvarum** CURTIS

*Mesochorus sylvarum* CURTIS, 1833, British entomology 10: 464.

*Mesochorus atriventris* CRESSON, 1872, Canad. Ent. 4: 21.

*Mesochorus polius* PROVANCHER, 1883, Nat. Canad. 14: 4.

*Mesochorus provancheri* DALLA TORRE, 1901. Cat. Hymenopterorum 3: 57.

*Mesochorus sylvarum*: LEE et SUH, 1991, Entomol. Res. Bull. (Korea) 17: 19.

**S p e c i m e n s e x a m i n e d:** Korea, Mt. Pektusan, environs Sam-zi-yan Hotel, wood, 18-20.VII.1977, DELY & DRASKOVITS, 2 females; Prov. Ryanggang, Plateau Chann-Pay, Sam-zi-yan, 1700 m, 24.VII.1975, J. PAPP & A. VOJNITS, 1 male; Mt. Pektusan, before Sam-zi-yan Hotel, lakeshore, 19.VII.1977, DELY & DRASKOVITS, 1 male; Prov. Gang-von, district On-dzong, Kum-gang san, near Hotel Go-song, 250 m, 4.VIII.1975, J. PAPP & A. VOJNITS, 1 male; Prov. Gang-von, district On-dzong, Kum-gang san, near Hotel Go-song, 250 m, 5.VIII.1975, J. PAPP & VOJNITS, 1 female; Prov. Kangwon, Mt. Kumgang-san, near Kuryong Falls, 18.IX.1980, L. FORRÓ & GY. TOPÁL, 1 female, 1 male.

**D i s t r i b u t i o n:** Austria, Canada, Czechoslovakia, England, Germany, Ireland, Italy, Japan, Kamchatka, North and South Korea, Scotland, Sweden.

### **Mesochorus mandibularis** LEE et SUH

*Mesochorus mandibularis* LEE et SUH, 1991, Entomol. Res. Bull. (Korea) 17: 17-18.

**S p e c i m e n s e x a m i n e d:** Korea, Prov. Ryanggang, Plateau Chann-pay, Sam-zi-yan, 1600 m, 28.VI-II.1971, S. HORVATOVICH & J. PAPP, 2 females, 1700 m, 24.VII.1975, J. PAPP & A. VOJNITS 1 female, 2 males; Prov. Ryanggang, Hyesan, hotel garden, 23.VIII.1971, S. HORVATOVICH & J. PAPP 1 female, room of Hotel Hyesan, 23.VII.1975, J. PAPP & A. VOJNITS, 1 female.

**D i s t r i b u t i o n:** North and South Korea.

### **Mesochorus cuspidatus** sp. n.

(Figs 1-4)

**F e m a l e:** Head 1.71X as wide as high. Eye 1.82X as long as wide. Ocelli medium sized. Interocellar distance about 0.83X as long as the distance between lateral ocellus and eye, more than 0.83X as long as the maximum diameter of the lateral ocellus. Distance between lateral ocellus and occipital carina less than 0.67X as long as maximum diameter of ocellus. Temple weakly convex with very dense punctures, 0.64X as wide as maximum eye width. Occipital carina strong laterally, absent dorsally. Frons polished on median area, sparsely punctate lateral area with concavities between antennal socket. Face 1.55X as wide as high, with dense, setiferous punctures, the punctures sparser laterally, subantennal carina distinct and dipped downward at the centre. Inner margins of eyes divergent ventrally. Malar space narrow, 0.30X the basal width of mandible. Clypeus large, polished. Apical margin of clypeus slightly convex. Mandible very stout, slightly tapering toward apex, 2.25X as long as its basal width and with sparse long hairs. Teeth equal in length.

Pronotum finely and densely punctate entirely. Epomia strong. Mesopleurum rather densely haired largely, bare dorsally. Mesoscutum finely and densely punctate, and 0.89X as wide as long. Notauli indistinct, present on about basal 3/4. Scutellum with sparse fine setiferous punctures. Propodeum with hairs denser laterally, sparser dorsally, areola bare. Propodeal carinae incomplete. Basal transverse carina lacking. Petiolar area 0.80X as long as wide and 2.50X as wide as areola.

Fore trochanter 3.25X as long as trochantellus. Fore femur 4.20X as long as wide. Middle femur 4.60X as long as wide. Hind femur 6.30X as long as wide. Hind tibia 2.34X as long as hind basitarsus. Hind tarsal claws strongly pectinated with 6 pectinal teeth.

Fore wing with pterostigma large, about 3.63X as long as wide. Nervulus opposite to basal vein. Length of *Cu1* between *Cua* and *1mCu* in the fore wing 0.80X as long as *1A* between *Cua* and *Cu1b*.  $2+3m$  1.16X as long as *M* between  $2+3m$  and  $2mCu$ . Length of *Cu1* between *1mCu* and *Cu1a* 1.50X as long as *Cu1b* between *1mCu* and *Cu1a*. *Rs* of hind wing complete. Length of *Rs* between *R1* and *irm* in hind wing 2.13X as long as *irm* between *Rs* and *M*. Hind wing with 1 basal hamulus and 5 distal hamuli.

Abdomen polished. First tergite of abdomen, 8.00X as long as its basal width, and 1.41X as long as second tergite. Glymma small but deep. Second tergite 0.73X as wide as long, 0.78X as long as third tergite. Spiracle of petiole on 0.52 from apex. Subgenital plate large, entirely membranous. Ovipositor sheaths straight, very narrow, 9.25X as long as wide, densely haired ventrally.

Colour: Black. Face yellowish brown laterally, dark brown medially. Lower part of temple brown. Thorax ferruginous. Mesoscutum with 3 longitudinal dark brown bands, pronotum and mesopleurum weakly tinged with black to blackish brown. Apical margin of abdominal segments pale yellow.

Body length: 6.6 mm. Fore wing length: 4.3 mm.

Male: Face 1.64X as wide as high. Mandible 1.80X as long as its basal width. Hind femur 5.20X as long as wide. Clasper weakly curved, 2.88X as long as hind tibia. Body length 6.6 mm. Fore wing length: 5.3 mm

Holotype: female, Korea, Prov. North Pyongan, Mt. Myohyang-san, 13.IX.1980, L. FORRÓ & GY. TOPÁL. (Antenna lacking.) – Paratype: Korea, Prov. North Pyongan, Mt. Myohyang-san, 13.IX.1980, L. FORRÓ & GY. TOPÁL, 1 male.

Distribution: North Korea.

Remarks: This species is similar to *M. mandibularis* LEE et SUH, 1991, differing from it by its colouration, dorsal apex of first tergite without wrinkles, and the basal transverse carina of propodeum incomplete.

### Mesochorus pektusanus sp. n.

(Figs 9-12)

Female: Head 1.34X as wide as high. Antenna 1.15X as long as fore wing, and with 31 flagellar segments. First flagellar segment about 1.50X as long as the second, 0.20X as wide as long. Fifth segment about 0.75X as long as the second. Eye 1.91X as long as wide. Ocelli small. Interocellar distance about 0.50X as long as the distance between lateral ocellus and eye, more than 1.00X as long as the maximum diameter of the lateral ocellus. Distance between lateral ocellus and occipital carina less than 1.00X as long as maximum diameter of lateral ocellus. Temple weakly convex with sparse setiferous punctures, 0.78X as wide as maximum eye width. Occipital carina round mediadorsally. Frons polished, finely and rather sparsely punctate laterally and dorsally with a shallow vertical groove. Face 1.57X as wide as high, with dense, setiferous punctures, subantennal carina distinct and dipped downward at the centre. Inner margins of eyes parallel-sided. Malar space 0.40X the basal width of mandible. Clypeus medium sized, with sparse fine setiferous punctures entirely. Apical margin of clypeus weakly convex. Mandible moderately stout, rather strongly tapering toward apex, 1.80X as long as its basal width, and with sparse setiferous punctures in basal part. Teeth equal in length.

Pronotum with sparse setiferous punctures. Epomia strong. Mesopleurum almost entirely densely haired except marginal area. Mesoscutum with dense, fine, setiferous punctures entirely, and 0.90X as wide as long. Notauli indistinct but complete. Scutellum with sparse fine setiferous punctures. Propodeal carinae complete. Basal area small, the posterior margin pointed: areola 1.83X as long as wide at costula, with costula originating from basal 4/11: petiolar area 0.78X as long as wide and 0.64X as long as areola.

Fore trochanter 2.33X as long as trochantellus. Fore femur 3.57X as long as wide. Middle femur 4.14X as long as wide. Hind femur 4.22X as long as wide. Hind tibia 2.14X as long as hind basitarsus. Hind tarsal claws strongly pectinated with 5 pectinal teeth.

Fore wing with pterostigma narrow and short. Nervulus opposite to basal vein. Length of *Cu1* between *Cua* and *1mCu* in the fore wing 0.86X as long as *1A* between *Cua* and *Cu1b*. Length of *Cu1* between *1mCu* and *Cu1a* 0.50X as long as *Cu1b* between *1mCu* and *Cu1a*. *Rs* of hind wing short and incomplete. Length of *Rs* between *R1* and *irm* in hind wing 2.00X as long as *irm* between *Rs* and *M*. Hind wing with 1 basal hamulus and 5 distal hamuli.

Abdomen polished. First tergite of abdomen slender, 6.00X as long as its basal width, and 2.14X as long as second tergite. Glymma distinct. Second tergite 0.68X as wide as long, 1.22X as long as third tergite. Spiracle of petiole on 0.50 from apex. Subgenital plate small, membranous. Ovipositor sheaths slender and long, 9.20X as long as wide, and densely haired entirely.

Colour: Black. Clypeus dark brown. Mandible yellowish brown except for mandible teeth dark brown. Apical 1/4 of second and basal 2/5 of third tergite brown. Legs brown, the hind coxa a little darker.

Body length: 4.1 mm. Fore wing length: 3.3 mm.

**M a l e:** Antenna with 34 flagellar segments. Clasper short and slender, 0.30X as long as hind tibia. Colouration as in female except colour of abdomen rather paler than female. Body length: 3.8 mm. Fore wing length: 3.4 mm.

**H o l o t y p e:** female, Korea, Mt. Pektusan, environs Sam-zi-yan Hotel, lakeshore, 19.VII.1977, DELY & DRASKOVITS. — **P a r a t y p e s:** Korea, Prov. Ryanggang, Plateau Chann-pay, Sam-zi-yan, 1500 m, 24.VI-II.1971, S. HORVATOVICH & J. PAPP, 3 females, 1 male, 1700 m, 27.VIII.1971, S. HORVATOVICH & J. PAPP, 1 female; Prov. Ryanggang, Chann-pay plateau, 24 km NW from Sam-zi-yan, road to Mt. Pektusan, 2000 m, 24.VII.1975, J. PAPP & A. VOJNITS, 1 female.

**D i s t r i b u t i o n:** North Korea.

**R e m a r k s:** This species is most closely related to *M. atricoxalis* KUSIGEMATI, 1985. It differs from it by the hind tarsal claws strongly pectinated, nervulus opposite to basal vein.

### Mesochorus rugatus sp. n.

(Figs 7-8)

**F e m a l e:** Head 1.14X as wide as high. Antenna shorter than fore wing, 0.97X as long as fore wing, and with 33 flagellar segments. First flagellar segment about 1.50X as long as the second, 0.16X as wide as long. Fifth segment about 0.81X as long as the second. Eye 2.00X as long as wide. Ocelli small. Interocellar distance about 0.57X as long as the distance between lateral ocellus and eye, more than 1.33X as long as the maximum diameter of the lateral ocellus. Distance between lateral ocellus and occipital carina less than 0.66X as long as maximum diameter of lateral ocellus. Temple wide and rather convex with dense setiferous punctures, 1.10X as wide as maximum eye width. Occipital carina round mediodorsally. Frons polished, weakly convex medially, with sparse setiferous punctures. Face 1.66X as wide as high, with distinct, rather dense setiferous punctures, the punctures sparser dorsolaterally. Subantennal carina moderately strongly dipped downward at the centre. Inner margins of eyes weakly divergent ventrally. Malar space finely striate, 0.44X the basal width of mandible. Clypeus large, with sparse fine setiferous punctures entirely. Apical margin of clypeus almost flat. Mandible stout, rather weakly tapering toward apex, 1.55X as long as its basal width. The lower tooth a little shorter and smaller than the upper.

Pronotum finely and densely punctate wholly. Epomia long but not strong. Mesopleurum with dense, fine, setiferous punctures, polished posterodorsally. Mesoscutum with very dense, setiferous punctures entirely, and 0.90X as wide as long. Notauli obsolete. Scutellum finely punctate. Propodeum sparsely haired entirely. Propodeal carina complete. Basal area small, areola 1.57X as long as wide at costula, with costula originating from basal 1/2: petiolar area 0.90X as long as wide and 0.90X as long as areola.

Fore trochanter 1.50X as long as trochantellus. Fore femur 3.86X as long as wide. Middle femur 4.40X as long as wide. Hind femur 4.40X as long as wide. Hind tibia 2.59X as long as hind basitarsus. Hind tarsal claws strongly pectinated with 4 pectinal teeth.



Fore wing with pterostigma about 2.60X as long as wide. Nervulus slightly basal to basal vein. Length of *Cu1* between *Cua* and *1mCu* in the fore wing 0.81X as long as *1A* between *Cua* and *Cu1b*. *2+3m* 1.10X as long as *M* between *2+3m* and *2mCu*. Length of *Cu1* between *1mCu* and *Cu1a* 0.50X as long as *Cu1b* between *1mCu* and *Cu1a*. Length of *Rs* between *R1* and *irm* in hind wing 1.71X as long as *irm* between *Rs* and *M*. Hind wing with 1 basal hamulus and 6 distal hamuli.

Abdomen polished. Dorsal apex of first tergite with sparse setiferous punctures and several fine wrinkles, 5.50X as long as its basal width, and 1.57X as long as second tergite. Glymma distinct. Second tergite 0.57X as wide as long, 0.95X as long as third tergite. Spiracle of petiole on 0.55 from apex. Subgenital plate large, membranous. Ovipositor sheaths slender, 9.66X as long as wide, and densely haired, the hairs a little sparser dorsally.

Colour: Black. Ferruginous on lateral occiput. Mandible brown except for mandible teeth dark brown. Apical margin of second tergite, third and basal 1/5 of fourth tergite brown. Legs brown, the hind coxa dark brown.

Body length: 5.2 mm. Fore wing length: 5.5 mm.

Male: Unknown.

Holotype: female, Korea, Mt. Pektusan, Explosion-Lake, 2000-2500 m, 18.VII.1977, DELY & DRASKOVITS.

Distribution: North Korea.

Remarks: This species is recognizable by the broad face, the lower tooth a little shorter and smaller than the upper. Dorsal apex of first tergite with several fine wrinkles.

#### KEY TO THE NORTH KOREAN SPECIES OF THE GENUS *STICTOPISTHUS*

- Head 1.47X as wide as high. Eye 1.79X as long as wide. Mandible rather stout, weakly tapering toward apex, 1.80X as long as its basal width. Dorsal apex of first tergite without longitudinal striae, 5.67X as long as its basal width, and 1.42X as long as second tergite

*S. delicatus* sp. n.

- Head 1.72X as wide as high. Eye 1.41X as long as wide. Mandible of moderate size, strongly tapering toward apex, 2.75X as long as its basal width. Dorsal apex of first tergite with longitudinal striae, 4.75X as long as its basal width, and 1.05X as long as second tergite

*S. sagamensis* sp. n.

#### *Stictopisthus delicatus* sp. n.

(Figs 13-14)

Female: Head 1.47X as wide as high. Antenna shorter than fore wing, 0.93X as long as fore wing, and with 27 flagellar segments. First flagellar segment about 1.40X as long as the second, 0.29X as wide as long. Fifth segment about 0.80X as long as the second. Eye 1.79X as long as wide. Ocelli small. Interocellar distance about 0.40X as long as the distance between lateral ocellus and eye, 0.80X as long as the maximum diameter of the lateral ocellus. Distance between lateral ocellus and occipital carina equally as long as maximum diameter of lateral ocellus. Temple polished dorsally, sparsely punctate laterally, 1.66X as wide as maximum eye width. Occipital carina distinct and complete. Frons polished and impunctate, with a pair of vertical carinae that extend laterally to median ocellus. Face 1.45X as wide as high, with distinct, rather dense, setiferous punctures. Subantennal carina transverse. Inner margins of eyes parallel-sided. Malar space 0.63X the basal width of mandible. Clypeus with sparse fine setiferous punctures entirely. Apical margin of clypeus almost

flat. Mandible rather stout, weakly tapering toward apex, 1.80X as long as its basal width. The lower tooth smaller than the upper.

Pronotum impunctate. Epomia weak. Mesopleurum finely and rather sparsely punctate. Mesoscutum with very dense, setiferous punctures entirely, and 1.07X as wide as long. Notauli slightly impressed, reaching to the centre. Scutellum impunctate. Propodeum sparsely haired entirely. Median longitudinal carina subparallel, slightly widened at costula, median basal area and areola continuous. Petiolar area 0.83X as long as wide and 1.66X as wide as areola.

Fore femur 3.50X as long as wide. Middle femur 4.00X as long as wide. Hind femur 2.86X as long as wide. Hind tibia 1.92X as long as hind basitarsus. Hind tarsal claws weakly pectinated.

Fore wing with pterostigma about 3.75X as long as wide. Nervulus strongly distad to basal vein. Length of *Cu1* between *Cua* and *ImCu* in the fore wing 0.80X as long as *1A* between *Cua* and *Cu1b*.  $2+3m$  1.25X as long as *M* between  $2+3m$  and  $2mCu$ . Length of *Cu1* between *Imcu* and *Cu1a* equally as long as *Cu1b* between *Imcu* and *Cu1a*. Length of *Rs* between *RI* and *irm* in hind wing 0.67X as long as *irm* between *Rs* and *M*.

Abdomen polished. First tergite of abdomen slender, 5.67X as long as its basal width, and 1.42X as long as second tergite. Glymma distinct. Second tergite 0.83X as wide as long, 1.20X as long as third tergite. Spiracle of petiole on 0.53X from apex. Subgenital plate small, membranous entirely. Ovipositor sheaths slightly upturned on ventral margin, 8.67X as long as wide, and sparsely haired.

Colour: Tawny rufous, dark brown to black on mandible teeth, basal 2/3 of propodeum, and abdominal tergites except extreme apex of first tergite, second and basal 1/3 of third tergite yellowish brown.

Body length: 2.9 mm. Fore wing length: 2.3 mm.

Male: Unknown.

Holotype: female, Korea, Prov. Ryanggang, Hyesan, Mt. Ze-dong, 1150 m, 26.VII.1975, J. PAPP & A. VOJNITS.

Distribution: North Korea.

Remarks: This species is similar to *S. punctatus* NAKANISHI, 1968, but it is readily distinguished from the latter by the complete occipital carina, first flagellar segment without sense cones, and mostly yellowish brown thorax.

### *Stictopisthus sagamensis* sp. n.

(Figs 15-16)

Male: Head 1.72X as wide as high. First flagellar segment about 1.28X as long as the second, 0.22X as wide as long. Fifth segment about 0.71X as long as the second. Eye 1.41X as long as wide. Ocelli medium sized. Interocellar distance about 0.22X as long as the distance between lateral ocellus and eye, more than 0.28X as long as the maximum diameter of the lateral ocellus. Distance between lateral ocellus and occipital carina 0.71X as long as maximum diameter of lateral ocellus. Temple flattened, with very sparse, fine setiferous punctures, 0.71X as wide as maximum eye width. Occipital carina weak but complete. Frons shagreen, impunctate. Face rather strongly convex, 1.36X as wide as high, with sparse, fine, setiferous punctures entirely. Subantennal carina transverse. Malar space narrow, 0.30X the basal width of mandible. Clypeus small, with sparse fine setiferous punctures entirely. Apical margin of clypeus subtruncate. Mandible medium sized, strongly tapering toward apex, 2.75X as long as its basal width. Apical teeth approximately equal in length.

Pronotum and mesopleurum weakly and sparsely punctate. Mesoscutum with fine, dense, setiferous punctures entirely, and 1.04X as wide as long. Notauli weakly impressed. Scutellum weakly punctate. Propodeum rather sparsely haired laterally, bared dorsally. Propodeal carinae incomplete. Basal transverse carina lacking, median basal area and areola continuous. Petiolar area 1.30X as long as wide and 1.30X as wide as areola.

Fore trochanter 2.50X as long as trochantellus. Fore femur 3.40X as long as wide. Middle femur 5.00X as long as wide. Hind femur 4.16X as long as wide. Hind tibia 1.76X as long as hind basitarsus. Hind tarsal claws weakly pectinated at base.

Fore wing with pterostigma about 2.83X as long as wide. Nervulus distad to basal vein. Length of *Cu1* between *Cua* and *ImCu* in the fore wing 0.81X as long as *1A* between *Cua* and *Cu1b*.  $2+3m$  1.00X as long as

*M* between  $2+3rm$  and  $2mcu$ . Length of *Cu1* between  $1mcu$  and *Cu1a* 0.83X as long as *Cu1b* between  $1mcu$  and *Cu1a*.

Abdomen polished. Dorsal apex of first tergite with very sparse short hairs, and many longitudinal striae, 4.75X as long as its basal width, and 1.05X as long as second tergite 0.38X as wide as long, 1.20X as long as third tergite. Spiracle of petiole on 0.50 from apex. Clasper long and slender, 0.40X as long as hind tibia.

Colour: Tawny rufous. Brown to dark brown on lateral sides of mesoscutum, apical 1/3 of third and following tergites. Basal area of propodeum and first tergite blackish brown.

Body length: 3.5 mm. Fore wing length: 2.6 mm.

Female: Unknown.

Holotype: male, Korea, Sa Gam, 30-40 km N. Pyongyang, water-basin, wood, 5.VII.1977, DELY & DRASKOVITS.

Distribution: North Korea.

Remarks: This species is very similar to *Stictopisthus delicatus* sp. n. in colouration, but can be distinguished from it by the comparatively strongly convex face and the dorsal apex of first tergite with many longitudinal striae.

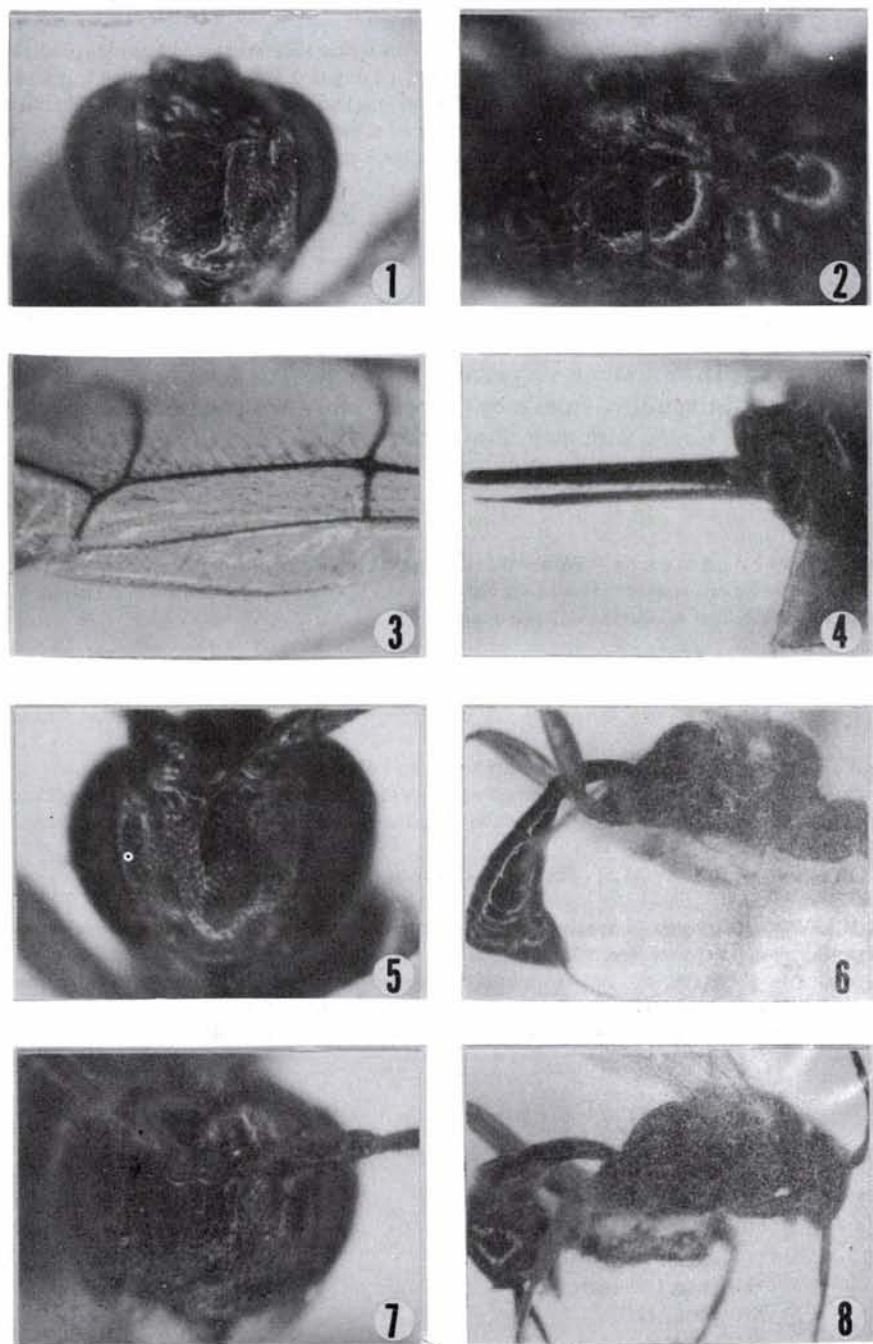
\*\*\*

Acknowledgements - We are thankful to the authorities of Korean Science and Engineering Foundation for financial assistance. Thanks are also due to Dr. J. PAPP (Hungarian Natural History Museum, Budapest) for his kindness in offering valuable material.

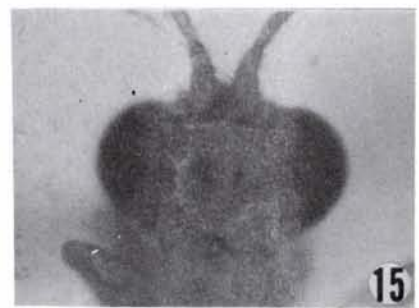
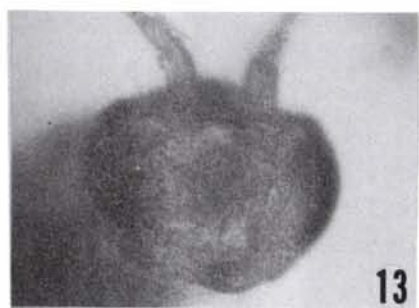
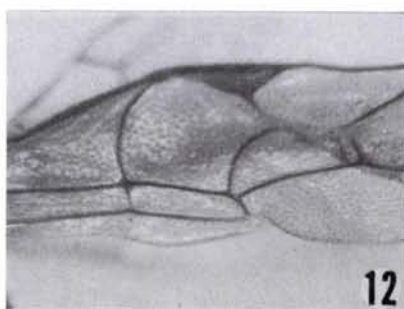
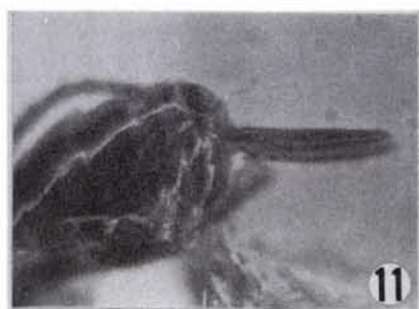
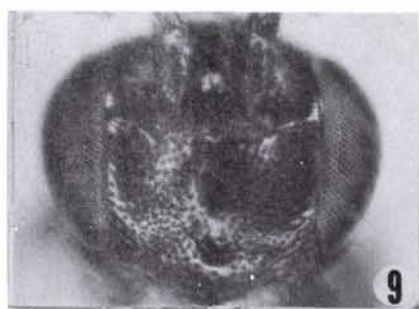
#### References

- DASCH, C. E. (1974): Neotropic Mesochorinae (Hym: Ich). - *Mem. Amer. Ent. Inst.* 22: 1-509.
- GUPTA, V. K. & TIKAR D. T. (1976): Ichneumonologia Orientalia, or a monographic study of the Ichneumonidae of the Oriental Region. Part 1. The tribe Pimplinae (Hymenoptera: Ichneumonidae: Pimplinae). - *Oriental Insects Monogr.* 1: 1-312.
- LEE, J. W. (1991): A Revision of Species Genus *Cidaphus* (Hymenoptera: Ichneumonidae). - *Cont. Amer. Ent. Is.* 26 (5): 1-48.
- LEE, J. W. (1992): A Revision of Species of the B-Group of *Astiphromma* (Hymenoptera: Ichneumonidae: Mesochorinae). - *Oriental Insects* 26: 213-239.
- LEE, J. W. & SUH, K. I. (1991): A systematic study of the Ichneumonidae (Hymenoptera) from Korea XIII. Genus *Mesochorus* (Mesochorinae). - *Entomol. Res. Bull. (Korea)* 17: 11-32.
- TOWNES, H. (1969) Genera of Ichneumonidae 1. - *Mem. Amer. Ent. Inst.* 11: 1-300.

Authors' address: Dr. JONG-WOOK LEE  
Dr. KYONG-IN SUH  
Department of Biology  
Yeungnam University  
Kyongsan, 712-749  
South Korea



Figs 1-4. *Mesochorus cuspidatus* sp. n.: 1 = frontal view of face, 2 = dorsal view of propodeum,  
 3 = fore wing brachial cell, 4 = lateral view of ovipositor sheaths  
 Figs 5-6. *Mesochorus kumganensis* sp. n.: 5 = frontal view of face, 6 = lateral view of whole body  
 Figs 7-8. *Mesochorus rugatus* sp. n.: 7 = frontal view of face, 8 = lateral view of whole body



Figs 9-12. *Mesochorus pektusanus* sp. n.: 9 = frontal view of face, 10 = lateral view of mesopleurum, 11 = lateral view of ovipositor sheaths, 12 = fore wing

Figs 13-14. *Stictopisthus delicatus* sp. n.: 13 = frontal view of face, 14 = lateral view of whole body

Figs 15-16. *Stictopisthus sagamensis* sp. n.: 15 = frontal view of face, 16 = lateral view of whole body

