

First Record of *Metapelma* Westwood (Hymenoptera: Eupelmidae: Neanastatinae) from South Korea

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한국산 미기록속 *Metapelma* Westwood (벌목: 벼룩좀벌과: 납작벼룩좀벌아과)에 대한 보고

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ABSTRACT: Neanastatinae Kalina, 1984 is reported for the first time from South Korea with two newly recognized species of *Metapelma* Westwood, 1835: *M. beijingensis* Yang and *M. pacificum* Nikol'skaya. Also, male of *M. pacificum* is discovered and diagnosed for the first time. Key to South Korean species of *Metapelma*, diagnoses and photographs of the diagnostic characters are provided along with a key to species of the genus.

Key words: Chalcidoidea, Eupelmidae, Neanastatinae, Parasitoid

조 록: 큰납작벼룩좀벌속(신칭)의 두 미기록종을 포함한 납작벼룩좀벌아과(신칭)를 한국산으로 처음 보고한다. 큰납작벼룩좀벌(*Metapelma beijingensis* Yang)(신칭) 그리고 긴꼬리큰납작벼룩좀벌(*Metapelma pacificum* Nikol'skaya)(신칭). 또한, 긴꼬리큰납작벼룩좀벌의 수컷 개체가 처음으로 발견되어 보고한다. 한국산 큰납작벼룩좀벌속의 검색표, 진단 그리고 진단형질에 대한 사진을 제공한다.

검색어: 좀벌상과, 벼룩좀벌과, 납작벼룩좀벌아과, 기생벌

Neanastatinae Kalina is a small subfamily in Eupelmidae, consisting of four extant genera (*Eopelma* Gibson, *Lambdobregma* Gibson, *Metapelma* Westwood, and *Neanastatus* Girault) and four extinct genera (*Aspidopleura* Gibson, *Brevivulva* Gibson, *Neanaperiallus* Gibson, and *Propelma* Trjapitzin). *Metapelma*, with 39 species, is the second largest group after *Neanastatus*, with 45 species, in the subfamily. Some species of *Metapelma* are known as parasitoids of xylophagous beetles, but hosts of many species are yet to be known.

The genus *Metapelma* is known from all biogeographic

regions, and only three species are recorded from the eastern Palearctic region (China and Russian Far East): *Metapelma beijingensis* Yang (China), *M. pacificum* Nikol'skaya (Russian Far East), and *M. zhangii* Yang (China). However, it has never been known from Korea and Japan until now (Noyes, 2016). In this paper, two species of *Metapelma* are newly recognized from South Korea. Diagnoses and images of the two species are provided, along with a key to South Korean species

Materials and Methods

Specimens used in this study were collected by malaise trapping, and they are deposited in the Laboratory of Animal

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Specimens were examined with a stereomicroscope of LOMO and photographed with an AxioCam MRc5 camera and Plan Apo S 1.5× FWD 30 mm objective lens attached to a SteREO Discovery V20 stereomicroscope (Zeiss, Germany). Modular Dome Illumination System (Kawada and Buffington, 2016) was used when the images were taken. Serial images were combined using Extended Focus program of AxioVision SE64 software and digitally retouched using Adobe Photoshop CS6.

Acronyms used in this paper are as follows: **MT**, malaise trap; **NWCF**, Northwestern College of Forestry, Yangling 712100, Shaanxi, China; **YNU**, Yeungnam University, Gyeongsan, South Korea; **ZISP**, Zoological Institute of Russian Academy of Sciences, St. Petersburg, Russia; **TS**, Type Species; **TL**, Type Locality; **TD**, Type Depository; **GW**, Gangwon-do; **GG**, Gyeonggi-do; **GB**, Gyeongsangbuk-do; **GN**, Gyeongsangnam-do.

Morphological terms follow Gibson (1989): **OOL**, distance between a posterior ocellus and inner orbit; **POL**, distance between the posterior ocelli; **LOL**, distance between the anterior and a posterior ocellus; **MPOD**, maximum diameter of a posterior ocellus; **cc**, costal cell; **mv**, marginal vein; **pmv**, postmarginal vein; **stv**, stigmal vein.

Systematic accounts

Family Eupelmidae Walker, 1833 벼룩좀벌과

Subfamily Neanastatinae Kalina, 1984 납작벼룩좀벌아과(신칭)

Genus *Metapelma* Westwood, 1835 큰납작벼룩좀벌속(신칭)

Metapelma Westwood, 1835: 69. TS: *Metapelma spectabile* Westwood.

Halidea Förster, 1856: 31. TS: *Halidea nobilis* Förster.

Diagnosis. Head elongated oval-shaped in lateral view, but almost rounded in frontal view; with frons broadened, but gena and malar space relatively short; scrobes separated as vertical depression shortly above each torulus. Mesosoma with pronotum subtriangular in dorsal view; mesoscutum with a distinct longitudinal parapsidal line; scutellum not divided medially by a longitudinal sulcus; acropleuron not extended to metapleuron; mesotibia with a row of pegs, and mesotarsus

with one or two rows of pegs; hind leg with femur and tibia distinctly compressed; tibia with white spot basally in most species. Ovipositor sheath distinctly extended (modified from Gibson, 1989).

Key to South Korean species of *Metapelma* Westwood, 1835

1. Head and mesosoma mostly metallic green. Head in dorsal view with interocular distance about 0.27-0.29× head width. Frons with irregularly and transversely areolate-rugose (Fig. 1D). Ovipositor sheath distinctly shorter than gaster, at most about half length of gaster (Fig. 1A). *M. beijingensis* Yang
- Head and mesosoma mostly metallic blue. Head in dorsal view with interocular distance about 0.37× head width. Frons with distinctly meshlike coriaceous-reticulate (Fig. 2D). Ovipositor sheath distinctly longer than gaster (Fig. 2A). ... *M. pacificum* Nikol'skaya

Metapelma beijingensis Yang, 1996 큰납작벼룩좀벌(신칭)

(Fig. 1A-F)

Metapelma beijingensis Yang, 1996: 237-239. Holotype: ♀, TL: Beijing, China; TD: NWCF.

Diagnosis. Female (habitus: Fig. 1A). Body length 4-6.5 mm, excluding ovipositor. Head (Fig. 1C, D) primarily bright green, frons and vertex dark golden-green to reddish-coppery, and between scrobes green, lower face bright golden-green with coppery luster; vertex areolate-rugose to frons irregularly and transversely areolate-rugose; with white setae hairlike to slightly lanceolate; in dorsal view with interocular distance about 0.27-0.29× head width; OOL: POL: LOL: MPOD = 0.6-0.7: 1.0: 1.0: 1.0. Scape metallic green with golden lusters. Pronotum (Fig. 1F) entirely dark violaceous, but posterior margin purple to golden-green laterally; entirely meshlike coriaceous-imbricate. Mesoscutum (Fig. 1F) bluish-green with notaular line and parapsidal lines dark except anterior region blue to violaceous; meshlike coriaceous-imbricate to coriaceous posteriorly. Acropleuron (Fig. 1E) bright golden-green with greenish-blue, coppery and purple lusters in part; meshlike coriaceous-imbricate. Fore wing (Fig. 1B) hyaline to slightly dark brown with distinct dark infusate area under stigma vein; with cc: mv: pmv: stv = 5.3-5.9: 2.4-2.5: 3.3-3.7: 1.0.

Scutellum (Fig. 1F) mostly dark violaceous to purple except posterior margin golden to metallic green; reticulate-imbricate to meshlike reticulate posteriorly. Metatibia (Fig. 1A) dark except basal one-third white. Gaster (Fig. 1A) slightly shorter than mesosoma; ovipositor sheath less than half of gaster.

Male. Unknown.

Material examined. SOUTH KOREA. **GW:** 1 ♀, Yensei Univ., Maeji-ri, Heungeop-myeon, Wonju-si, N37°16'54.49" E127°53'54.54", 29.v.-5.vii.2015 (M.T.), H.Y.Han; **GG:** 1 ♀, Mt. Ungilsan, Songchon-ri, Choan-myeon, Namyangju-si, N37°34'43.3" E127°18'37.5", 27.v.-10.vi.2009 (M.T.), J.O.Lim; **GB:** 1 ♀, Yeonhwa 2 bridge, 207, Jwaseok-ri, Dansan-myeon, Yeongju-si, N36°59'38.7" E128°34'51.5", 6.viii.-8.ix.2016 (M.T.), Y.J.Kim; 2 ♀, Namsan-ri, Hyeongok-myeon, Kyeongju-

si, 18.vii.-25.viii.2005 (M.T.), J.T.Man; 1 ♀, ditto, 2.ix.-8.ix.2005 (M.T.), J.T.Man.

Distribution. South Korea (new record), China (Beijing).

Biology. Yang (1996) reported that *M. beijingensis* is probably a larval and pupal parasitoid of *Scolytus schevyrewi* Semenov (= *S. seulensis* Murayama) on *Prunus persica* (L.) Batsch and *P. dulcis* (Mill.) D.A. Webb (= *P. amygdalus* Batsch).

Remarks. Yang (1996) mentioned that the length of the ovipositor sheath of *M. beijingensis* is less than one-third the length of the metasoma and the basitarsus of the mid leg is black. However, the length of the ovipositor sheath of our specimens is less than half of the metasoma and the basitarsus of the mid leg is white. This differences suggests intraspecific variation related with area.

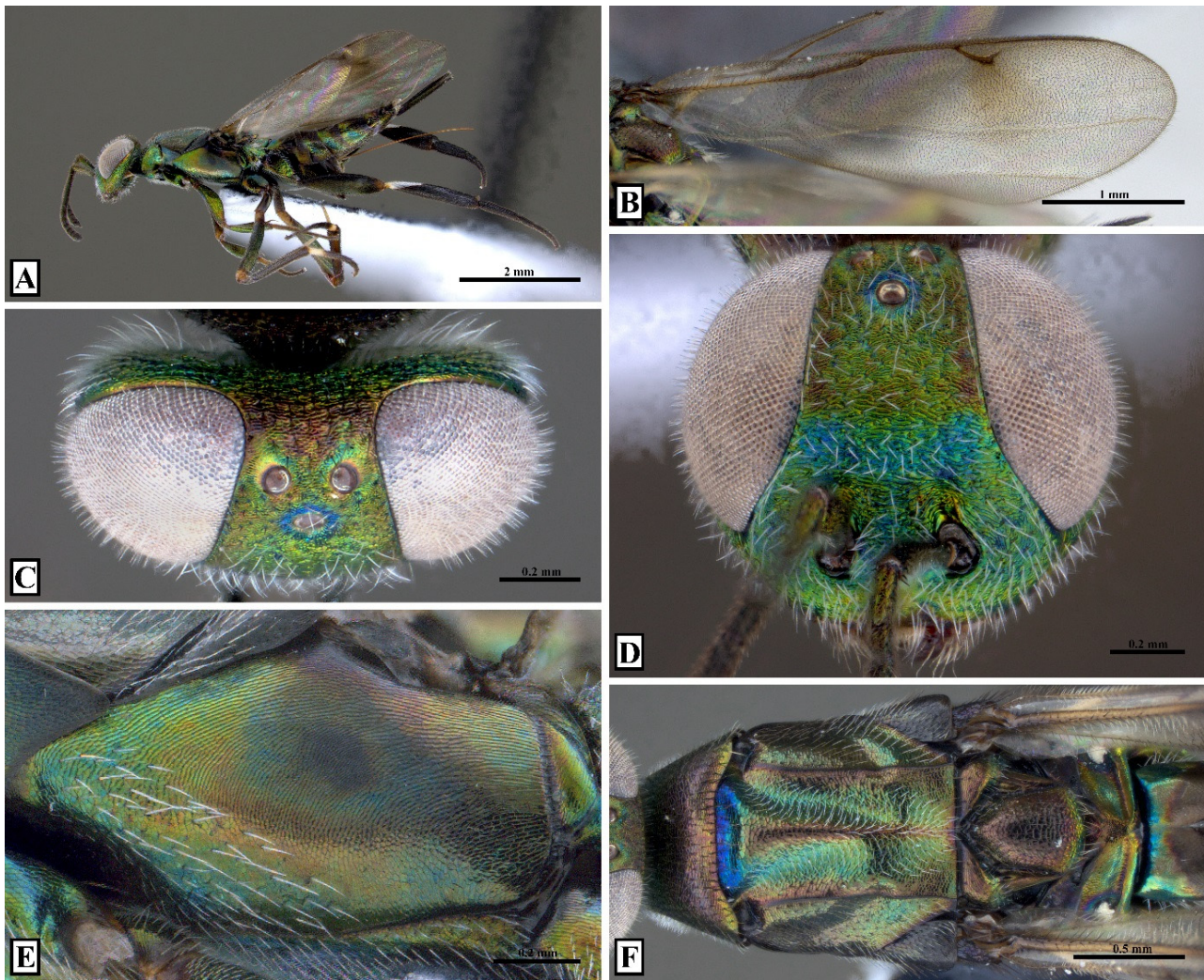


Fig. 1. *Metapelma beijingensis*, ♀. A: Habitus, lateral; B: Fore wing; C: Head, dorsal; D: Head, frontal; E: Acropleuron; F: Mesosoma, dorsal.

Metapelma pacificum Niko'skaya, 1952 긴꼬리큰납작벼룩
좀벌(신칭)(Fig. 2A-F)

Metapelma pacifica Niko'skaya, 1952: 486. Holotype: ♀,
TL: Primor'ye Kray, Russia; TD: ZISP.

Diagnosis. Female (habitus: Fig. 2A). Body length 8-11.3 mm, excluding ovipositor. Head (Fig. 2C, D) primarily metallic blue except frons U-like dark purple medially to golden luster laterally, and vertex also similar color to frons but anchor-like pattern; apical half of lower face purple with blue and golden spot in part (Fig. 2C, D); vertex transversely coriaceous to frons meshlike coriaceous-reticulate; with white setae hairlike

to slightly lanceolate; in dorsal view with interocular distance about $0.37\times$ head width; OOL: POL: LOL: MPOD = 0.8-0.9: 1.3-1.4: 1.4-1.6: 1.0. Scape dark except anterior half brown. Pronotum (Fig. 2F) entirely dark with variably bluish or violaceous medially and purplish or coppery posteriorly; shallowly coriaceous-imbricate. Mesoscutum (Fig. 2F) mostly dark greenish-blue except along inner parapsidal line and inner margin adjacent to axillae golden green; entirely meshlike coriaceous. Acropleuron (Fig. 2E) with anteroventral region metallic blue to posterodorsal region purple; meshlike reticulate anteriorly to coriaceous-imbricate posteriorly. Fore wing (Fig. 2B) hyaline to brown with inconspicuous dark

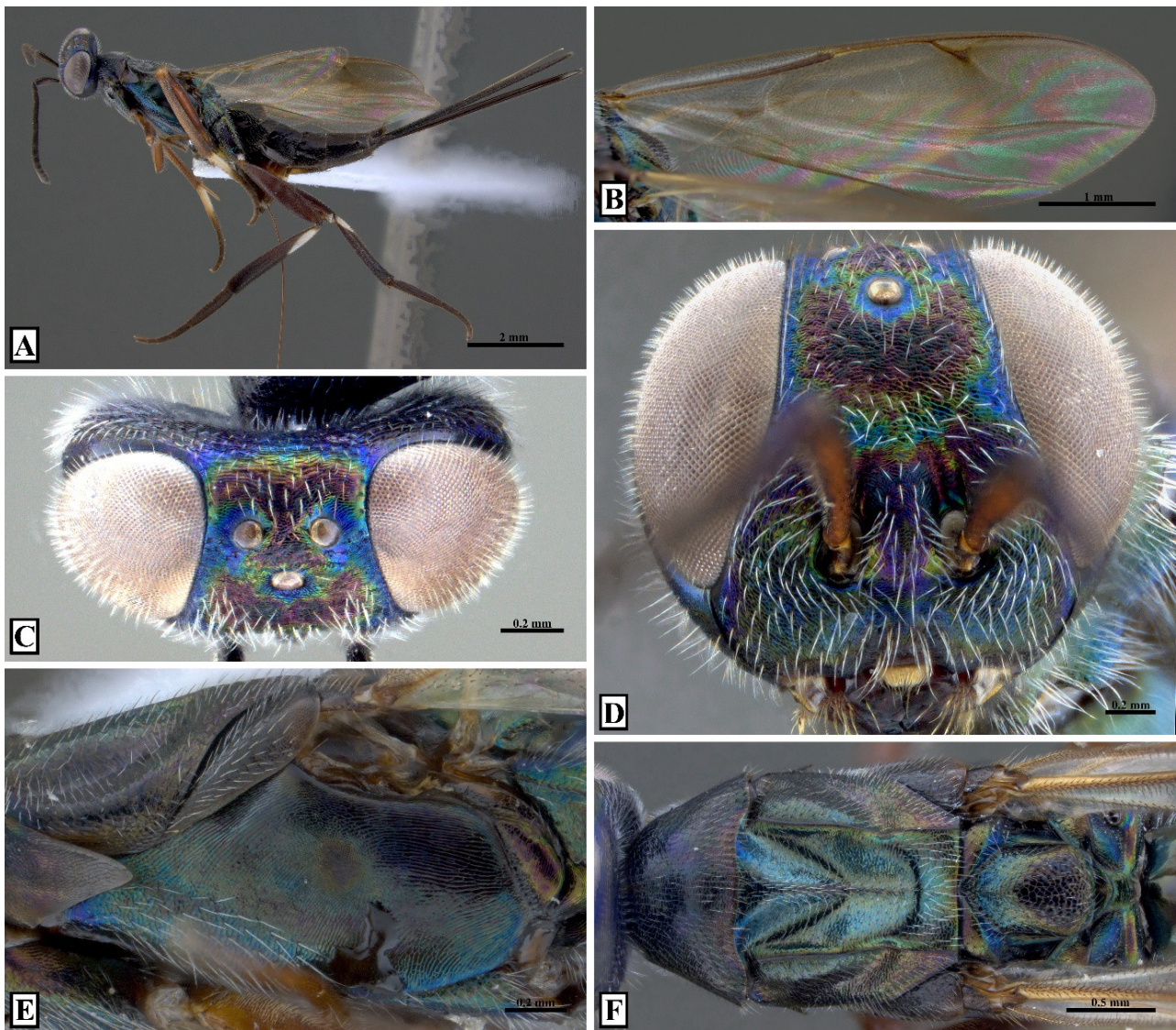


Fig. 2. *Metapelma pacificum*, ♀. A: Habitus, lateral; B: Fore wing; C: Head, dorsal; D: Head, frontal; E: Acropleuron; F: Mesosoma, dorsal.

infusate under stigma vein; with cc: mv: pmv: stv = 5.5-5.6: 2.6-2.9: 4.0: 1.0. Scutellum (Fig. 2E) dark purple except anterior margin blue to admargin greenish-blue but laterally and posteriorly golden to golden-green. Metatibia (Fig. 2A) reddish to dark except basal about two-fifth white. Gaster (Fig. 2A) slightly longer than mesosoma; ovipositor sheath distinctly longer than gaster.

Male. Unknown.

Material examined. SOUTH KOREA. GB: 1 ♀, Namsan-ri, Hyeongok-myeon, Kyeongju-si, 28.vii.-11.viii.2005 (M.T.), J.T.Man; 1 ♀, ditto, 18.vii.-25.viii.2005 (M.T.), J.T.Man; GN: 1 ♂, Grand Park, Ok-dong, Nam-gu, Ulsan-si, N 35°15'32.08" E127°29'55.56", 23.vii.-18.viii.2013 (M.T.), N.S.Bang.

Distribution. South Korea (new record), Russia (Primor'ye Kray).

Biology. Unknown.

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