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REVIEW OF THE SOUTH KOREAN SPECIES OF *PLUTOTHRIX* FÖRSTER, 1856 (HYMENOPTERA: PTEROMALIDAE), WITH DESCRIPTION OF THREE NEW SPECIES

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Summary. South Korean species of the genus *Plutothrix* Förster, 1856 are reviewed. Three new species, *P. kenobii* sp. n., *P. skywalkeri* sp. n. and *P. yodai* sp. n. are described and illustrated. An identification key to all Eastern Palaearctic species of *Plutothrix* is given.

Key words: Chalcidoidea, Pteromalidae, Trigonoderinae, parasitoids, taxonomy, new species, Eastern Palaearctic.

Е. В. Целих, Дж. Ли, Д-С. Ку. Обзор южнокорейских видов рода *Plutothrix* Förster, 1856 (Hymenoptera: Pteromalidae) с описанием трех новых видов // Дальневосточный энтомолог. 2024. N 508. С. 1-18.

Резюме. Дан обзор южнокорейских видов рода *Plutothrix* Förster, 1856. Описаны и проиллюстрированы три новых вида: *P. kenobii* sp. n., *P. skywalkeri* sp. n. и *P. yodai* sp. n. Подготовлена определительная таблица всех восточнопалеарктических видов рода *Plutothrix*.

INTRODUCTION

The pteromalid genus *Plutothrix* Förster, 1856 (type species *Plutothrix foersteri* Mayr, 1904) belongs to the family Pteromalidae, subfamily Trigonoderinae (Burks et al., 2022). Up to now, it comprised thirty valid species worldwide (Tselikh et al., 2022).

Eighteen of the known species, *Plutothrix bicolorata* (Spinola, 1808); *P. canariensis* Hedqvist, 1974; *P. coelius* (Walker, 1839); *P. gribanovi* Tselikh, Várkonyi et Dale-Skey, 2022; *P. kuboii* Kamijo, 2004; *P. kusigematii* Kamijo, 2004; *P. longigaster* Tselikh, Várkonyi et Dale-Skey, 2022; *P. narendrani* Kamijo, 2004; *P. nudicoxa* Graham, 1993; *P. obtusiclava* Graham, 1993; *P. pallidiclava* Graham, 1993; *P. perelegans* Graham, 1993; *P. pilicoxa* Graham, 1993; *P. rugosa* Kamijo, 2004; *P. scrobicula* Kamijo, 2004; *P. trifasciata* (Thomson, 1878); *P. zerovae* Tselikh, Várkonyi et Dale-Skey, 2022 and *P. zhangyieensis* Yang, 1996 inhabit the Palaearctic region (Spinola, 1811; Walker, 1839; Thomson, 1878; Graham, 1969, 1993; Hedqvist, 1974; Yang, 1996; Kamijo, 2004; Noyes, 2019, Tselikh et al., 2022).

Up to now, only three species *Plutothrix rugosa*, *P. scrobicula* and *P. trifasciata* are distributed in South Korea (Tselikh et al., 2022).

The aim of this work is to describe new species of *Plutothrix* from South Korea. A key to females of all Eastern Palaearctic species of *Plutothrix* is also provided.

MATERIAL AND METHODS

Morphological terminology, including sculpture and wing venation nomenclature, follows Bouček & Rasplus (1991), Gibson (1997) and Burks et al. (2022). The flagellum consists of two anelli, the funicle is composed of six funicular segments and the clava. The following abbreviations are used: POL – posterior ocellar line, the minimum distance between the posterior ocelli; OOL – ocello-ocular line, the minimum distance between a posterior ocellus and compound eye; PST – parastigma; M – marginal vein; S – stigmal vein; PM – postmarginal vein; F1–F6 – funicular segments; C1–C4 – claval segments; Mt2–Mt8 – metasomal tergites (Mt1 – petiole). The scape is measured without the radicle; the pedicel is measured in lateral view. The distance between the clypeal lower margin and the toruli is measured from the lower margins of the toruli. Eye height is measured as maximum diameter, eye length as minimum diameter.

The study is based on examination of extensive material in the collection of National Institute of Biological Resources (Incheon, South Korea; NIBR), Science Museum of Natural Enemies (Geochang, South Korea; SMNE), Zoological Institute of the Russian Academy of Sciences (St. Petersburg, Russia; ZISP); Korea National Arboretum (Pocheon, South Korea, Korea; KNA), Entomological Laboratory of Hokkaido University, (Sapporo, Japan; EIHU); Yeungnam University (Gyeongsan, South Korea; YNU) and Zoological Museum of the Lund University (Lund, Sweden; LUZN).

TAXONOMY

Genus *Plutothrix* Förster, 1856

Plutothrix Förster, 1856: 46. Type species: *Plutothrix foersteri* Mayr, 1904 by subsequent monotypy.

Anoglyphis Förster, 1878: 49. Type species: *Anoglyphis nubilosa* Förster, 1878 by original designation. Synonymized by Kerrich & Graham (1957: 296).

Plutothrix kenobii Tselikh, Lee et Ku, sp. n.

<https://zoobank.org/NomenclaturalActs/E60F357F-D165-4655-A769-3463DD80DB1D>

Figs 8–15

TYPE MATERIAL. Holotype – ♀, South Korea: Gangwon-do, Yuggu-gun, Haeon-myeon, Mandae-ri, 30.VII 2014, coll. H.T. Shin (NIBR).

DESCRIPTION. FEMALE. Body length 4.30 mm; fore wing length 2.80 mm.

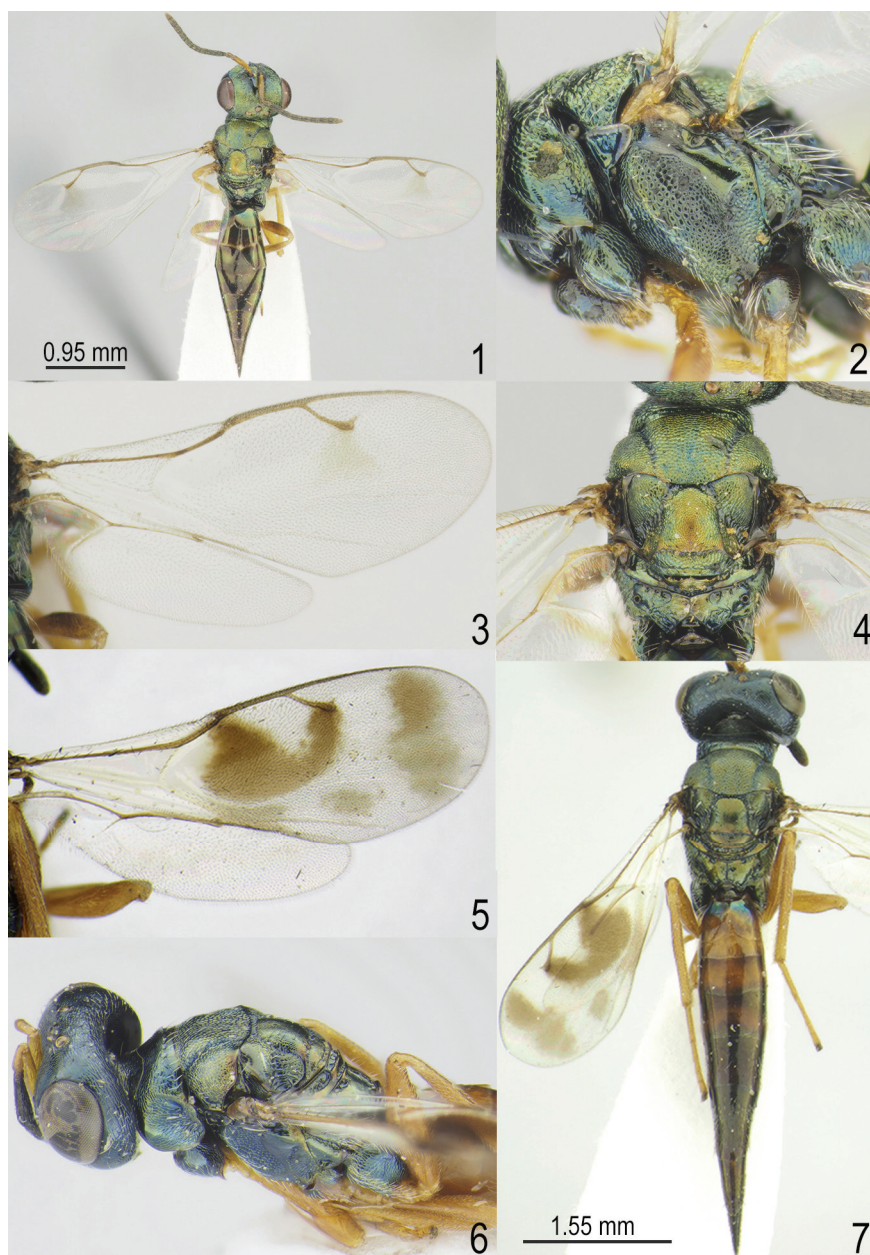
Head metallic bluish-green with diffuse violet lustre; antenna with scape and pedicel yellowish-brown, flagellum brown. Mesosoma metallic bluish-green, in dorsal view with diffuse coppery lustre, in lateral view with diffuse violet-coppery lustre; propodeum brown, laterally partly bluish-green. All coxa and all femora yellowish-brown; all tibiae and all tarsi yellow. Fore wing with dark fuscous cloud below stigmal vein, venation yellowish-brown. Metasoma with Mt2 basally metallic blue with diffuse violet lustre, apically brown, Mt3-Mt6 brown.

Head reticulate; clypeus smooth and shiny. Mesosoma reticulate, but scutellum finely reticulate; dorsellum and propodeum weakly alutaceous; upper mesepimeron with lower part alutaceous, upper part smooth; metapleuron alutaceous. Metasoma weakly alutaceous and shiny.

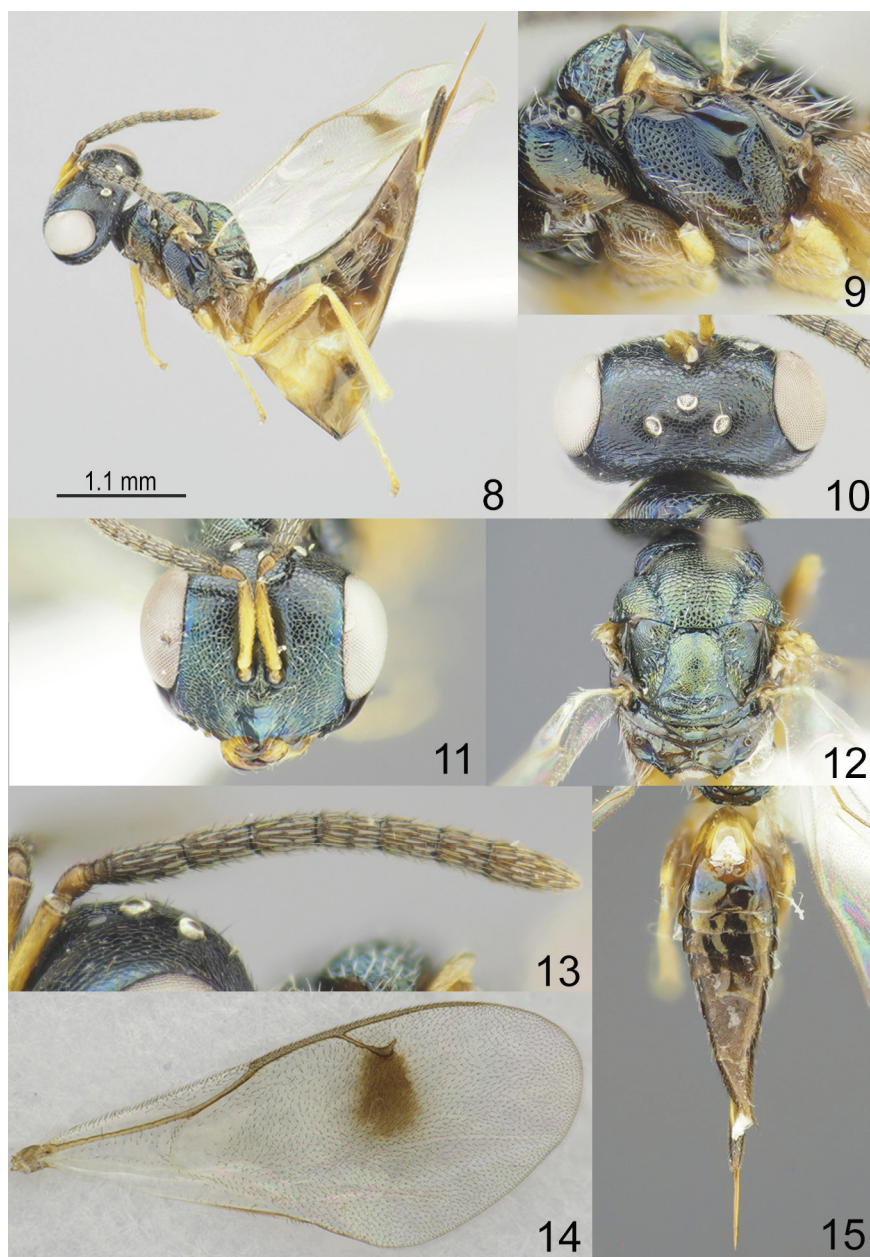
Head in dorsal view 2.07 times as broad as long and 1.33 times as broad as mesoscutum; in frontal view 1.15 times broader than high. POL 1.08 times OOL. Eye height 1.50 times eye length and 3.05 times as long as malar space. Distance between antennal toruli and lower margin of clypeus 0.67 times distance between antennal toruli and median ocellus. Antenna with scape 0.74 times as long as eye height and 1.10 times as long as eye length; pedicel 1.83 times as long as broad and 0.70 times as long as F1; combined length of pedicel and flagellum 1.20 times breadth of head; flagellum almost filiform; all anelli transverse; F1–F6 longer than broad; F1 with 3 rows of sensilla; clava 2.44 times as long as broad and shorter than F5–F6, with small micropilosity area on C3 and C4.

Mesosoma 1.45 times as long as broad. Scutellum 0.97 times as long as broad, frenal area distinct. Propodeum without nucha, 0.28 times as long as scutellum; median carina present. Fore wing 2.50 times as long as maximum width; basal cell pilose on upper part; basal vein pilose; speculum closed below; part below PST pilose; PST 0.78 times as long as M, M 0.74 times as long as P and 1.77 times as long as S.

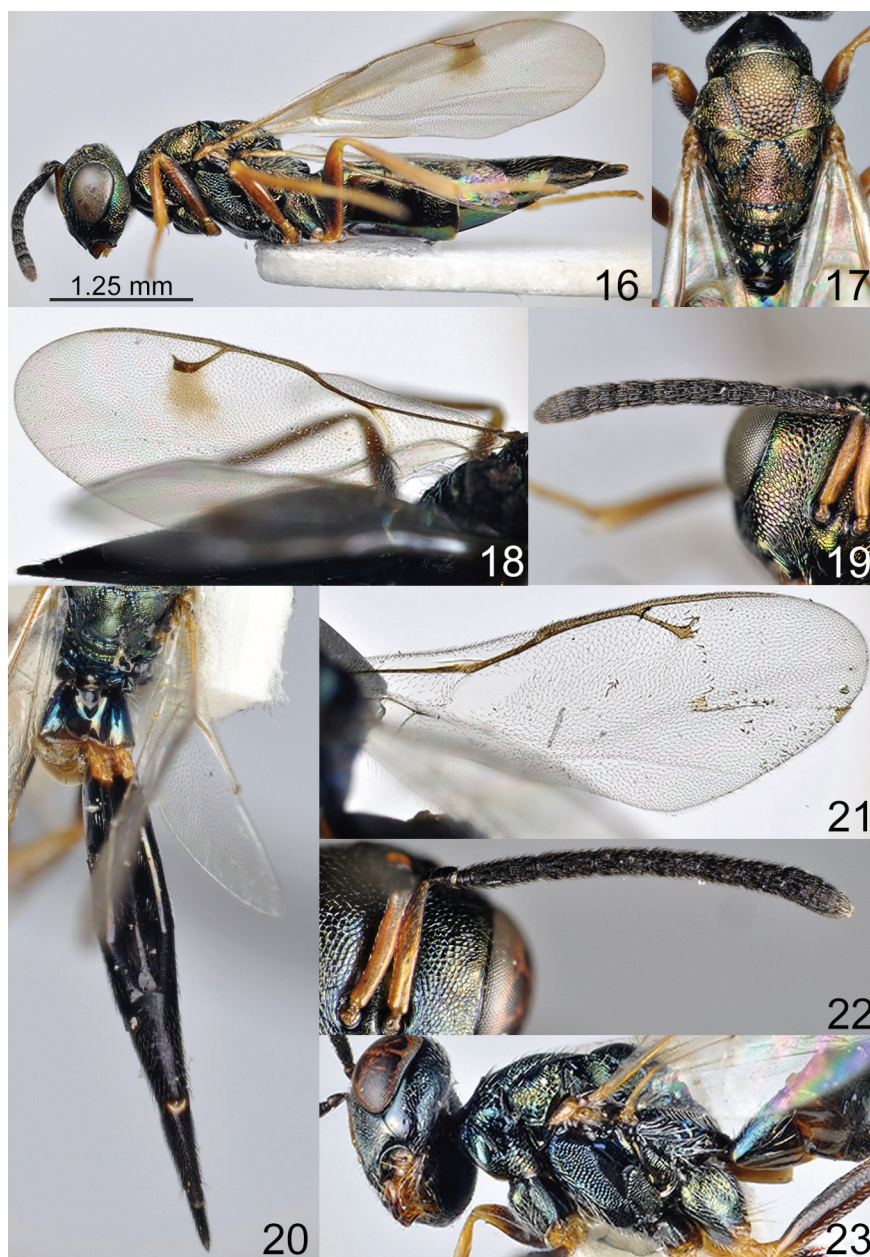
Metasoma lanceolate, 2.90 times as long as broad, 1.57 times as long as mesosoma and 1.09 times as long as mesosoma and head; Mt2 deeply emarginate medially, Mt8 1.76 times as long as broad. Ovipositor sheath projecting beyond apex of metasoma.



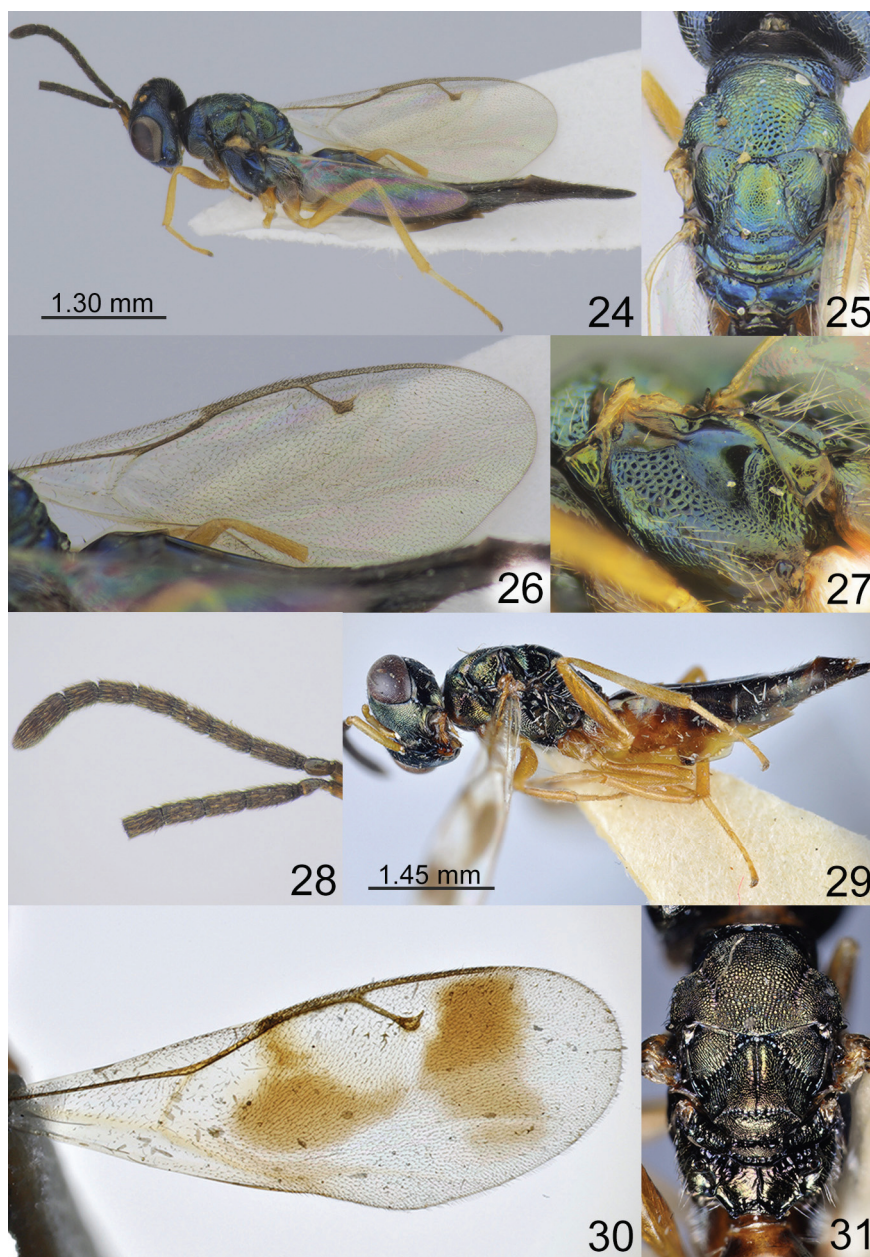
Figs 1–7. *Plutothrix* spp. 1–4 – *Plutothrix coelius* (Walker, 1839), non-type, female: 1 – body, dorsal view; 2 – mesosoma, lateral view; 3 – wings; 4 – mesosoma, dorsal view; 5–7 – *Plutothrix gribanovi* Tselikh, Várkonyi et Dale-Skey, 2022, holotype, female: 5 – wings; 6 – head and mesosoma, dorso-lateral view; 7 – body, dorsal view.



Figs 8–15. *Plutothrix kenobii* sp. n., holotype, female: 8 – body, lateral view; 9 – mesosoma, lateral view; 10 – head, dorsal view; 11 – head, frontal view; 12 – mesosoma, dorsal view; 13 – antenna; 14 – wing; 15 – metasoma, dorsal view.



Figs 16–23. *Plutothrix* spp. 16–19 – *Plutothrix kuboii* Kamijo, 2004, paratype, female: 16 – body, lateral view; 17 – mesosoma, dorsal view; 18 – wing; 19 – antenna; 20–23 – *Plutothrix kusigematii* Kamijo, 2004, paratype, female: 20 – metasoma, dorsal view; 21 – wing; 22 – antenna; 23 – head and mesosoma, lateral view.



Figs 24–31. *Plutothrix* spp. 24–28 – *Plutothrix longigaster* Tselikh, Várkonyi et Dale-Skey, 2022, holotype, female: 24 – body, lateral view; 25 – mesosoma, dorsal view; 26 – wing; 27 – mesosoma, lateral view; 28 – antenna; 29–31 – *Plutothrix narendrani* Kamijo, 2004, paratype, female: 29 – body, lateral view; 30 – wing; 31 mesosoma, dorsal view.

MALE. Unknown.

DIAGNOSIS. *Plutothrix kenobii* **sp. n.** belong to a group of species that have a fore wing with dark fuscous cloud below stigmal vein. This species is very similar to *P. coelius*; the differences between these species are given in the key. *Plutothrix kenobii* **sp. n.** is also similar to the Nearctic species *P. unguitta* (Girault, 1917) in having a clava with small micropilosity area on C3 and C4; fore wing with one dark fuscous cloud below stigmal vein; Mt2 deeply emarginate medially; but the new species has an eye height 3.05 times as long as malar space (*vs* eye height 2.50 times as long as malar space); F1 with 3 rows of sensilla (*vs* F1 with 2 rows of sensilla); mid coxa yellowish-brown (*vs* mid coxa metallic bluish-green).

BIOLOGY. Unknown.

DISTRIBUTION. South Korea.

ETYMOLOGY. The species is named in honour of George Lucas' "Star Wars" character – "Obi-Wan Kenobi".

***Plutothrix rugosa* Kamijo, 2004**

Figs 32–34

Plutothrix rugosa Kamijo, 2004: 303–304. Holotype female (EIHU, examined).

TYPE MATERIAL. Holotype – ♀, Japan: "Tokyo, Higashiyamato, 3.VI.1994, coll. K. Kamijo" (EIHU).

NON-TYPE MATERIAL EXAMINED. South Korea: Gangwon-do, Yanggu-gun, Haean-myeon, Mandae-ri, 11.VIII–8.IX 2021, 1 ♀, coll. Y.H. Park, M.H. Kim, D.H. Park, J.Y. Kim, (KNA); Gyeonggi-do, Pocheon-si, Soheul-eup, 37°45'9.6"N, 127°0'9.04"E, 30.VI–17.VII 2017, 1 ♀, coll. Kim, Kim, Nam, (KNA).

BIOLOGY. Unknown.

DISTRIBUTION. Russia, South Korea, Japan (Kamijo, 2004; Tselikh *et al.*, 2022).

***Plutothrix scrobicula* Kamijo, 2004**

Figs 35–37

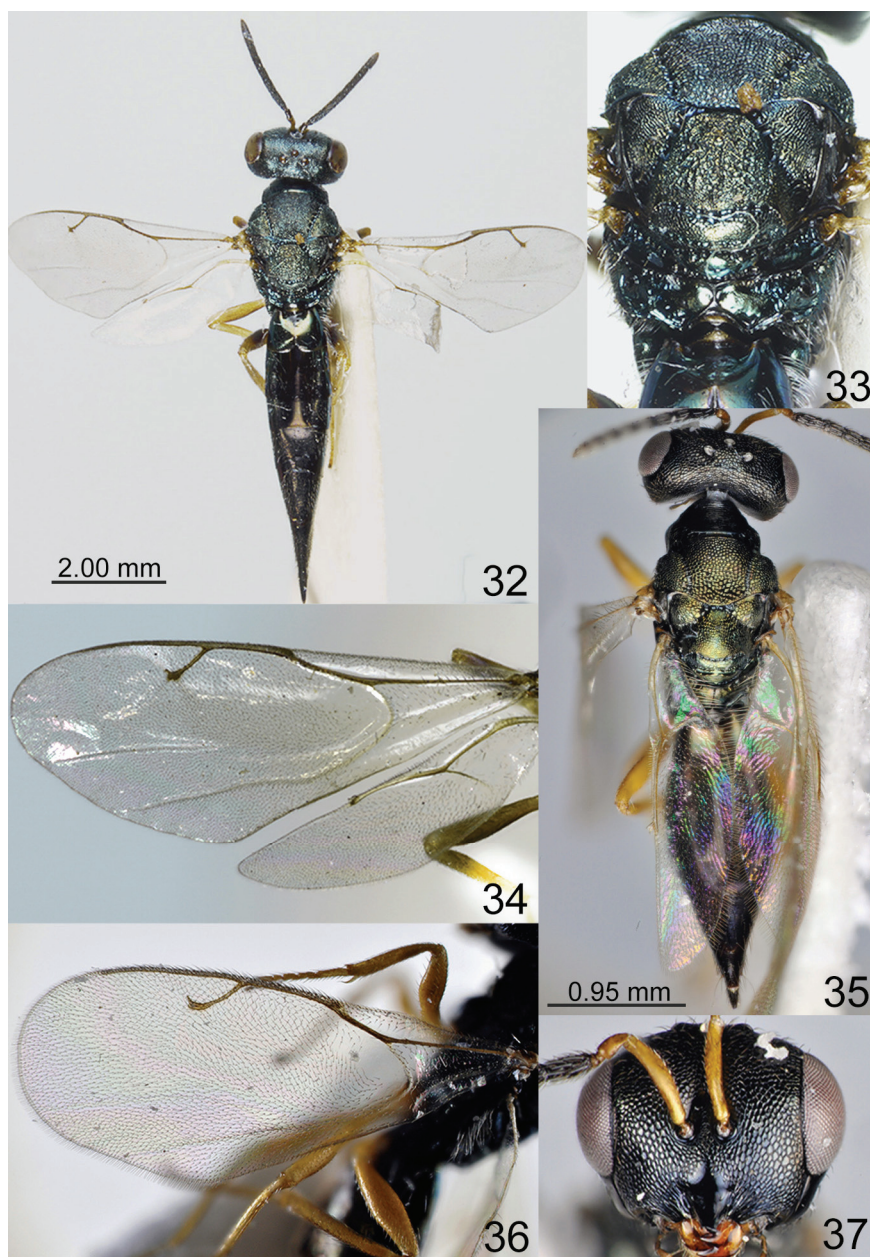
Plutothrix scrobicula Kamijo, 2004: 306–307. Holotype female (EIHU, examined).

TYPE MATERIAL. Holotype – ♀, Japan: "Ehime Pref., Koya-yama, Odamiyama, Oda-cho, Shikoku, 2.VIII.1994, coll. E. Yamamoto" (EIHU).

NON-TYPE MATERIAL EXAMINED. South Korea: Gangwon-do, Wonju-si, Socho-myeon, Hakgong-ri, Mt. Chiak, 37°22'18"N, 128°03'02"E, 20.VI–19.VII 2013, 1 ♀, coll. J.W. Lee (YNU); Gyeongsangbuk-do, Uljin-gun, Geumgangsog-myeon, Sogwang-ri, Malaise Trap, 17.VIII 2016, 1 ♀, coll. H.G. Lee (SMNE); Gyeongsangbuk-do, Bongwaha-gun, Seokpo-myeon, Seokpo-ri, Malaise Trap, 31.IX 2016, 2 ♀, coll. H.G. Lee (SMNE and ZISP); Gyeongsangnam-do, Namhae-gun, Gohyeon-myeon, Daegok-ri, Hwabangsa temple, 34°51'06.7"N, 127°51'31"E, 19.VI 2022, 1 ♀, 2 ♂, coll. E.V. Tselikh, S.A. Belokobylskij (ZISP).

BIOLOGY. Unknown.

DISTRIBUTION. Russia, South Korea, Japan (Kamijo, 2004; Tselikh *et al.*, 2022).



Figs 32–37. *Plutothrix* spp. 32–34 – *Plutothrix rugosa* Kamijo, 2004, holotype, female: 32 – body, dorsal view; 33 – mesosoma, dorsal view; 34 – wings; 35–37 – *Plutothrix scrobicula* Kamijo, 2004, paratype, female: 35 – body, dorsal view; 36 – wing; 37 head, frontal view.

***Plutothrix skywalkeri* Tselikh, Lee et Ku, sp. n.**

<https://zoobank.org/NomenclaturalActs/5D3E074E-D3F7-476C-887B-E7099EDAF153>

Figs 38–44

TYPE MATERIAL. Holotype – ♀, South Korea: Gyeongsangnam-do, Goseong-gun, Hail-myeon, Suyang-ri, 34°58'34.8"N, 128°12'08.3"E, 18.VI 2022, coll. E.V. Tselikh (NIBR). Paratype – ♀, South Korea: Gyeongsangnam-do, Goseong-gun, Hail-myeon, Suyang-ri, 23.VI 2023, coll. E.V. Tselikh (ZISP).

DESCRIPTION. FEMALE. Body length 4.00–5.30 mm; fore wing length 2.80–3.50 mm.

Head metallic bluish-green with diffuse coppery lustre; antenna with scape yellowish-brown; pedicel and flagellum dark brown. Mesosoma including propodeum metallic bluish-green with diffuse coppery lustre. All coxa metallic bluish-green; all femora brown; all tibiae and tarsi yellowish-brown. Fore wing with long fuscous cloud below stigmal vein, venation yellowish-brown. Metasoma with Mt2 basally metallic blue with diffuse coppery lustre, apically dark brown, Mt3–Mt6 dark brown.

Head reticulate; clypeus smooth and shiny. Mesosoma reticulate, but scutellum finely reticulate; dorsellum and propodeum alutaceous; upper mesepimeron with lower part alutaceous, upper part smooth; metapleuron reticulate. Metasoma weakly alutaceous and shiny.

Head in dorsal view 2.19–2.20 times as broad as long and 1.35–1.37 times as broad as mesoscutum; in frontal view 1.24–1.26 times broader than high. POL 0.90–0.93 times OOL. Eye height 1.40–1.42 times eye length and 2.55 times as long as malar space. Distance between antennal toruli and lower margin of clypeus 0.66–0.68 times distance between antennal toruli and median ocellus. Antenna with scape 0.75–0.78 times as long as eye height and 1.05–1.10 times as long as eye length; pedicel 2.00–2.16 times as long as broad and 0.58–0.60 times as long as F1; combined length of pedicel and flagellum 1.41–1.43 times breadth of head; flagellum almost filiform; all anelli transverse; F1–F6 longer than broad; F1 with 3–4 rows of sensilla; clava 2.90–3.06 times as long as broad and shorter than F5–F6, with large micropilosity area on C2–C4.

Mesosoma 1.67–1.70 times as long as broad. Scutellum 1.09–1.12 times as long as broad, frenal area distinct. Propodeum without nucha, 0.32–0.33 times as long as scutellum; median carina present. Fore wing 2.65–2.74 times as long as maximum width; basal cell entirely pilose; basal vein pilose; speculum closed below; PST 0.55 times as long as M, M 0.80–0.86 times as long as P and 2.21–2.25 times as long as S.

Metasoma lanceolate, 7.27–7.78 times as long as broad, 2.28–2.39 times as long as mesosoma and 1.74–1.75 times as long as mesosoma and head; Mt2 deeply emarginate medially, Mt3 3.50–4.00 times as long as broad. Ovipositor sheath projecting beyond apex of metasoma.

MALE. Unknown.



Figs 38–44. *Plutothrix skywalker* sp. n., holotype, female: 38 – body, lateral view; 39 – mesosoma, dorsal view; 40 – metasoma, dorsal view; 41– wings; 42 – antenna; 43 – head, dorsal view; 44 – head, frontal view.

DIAGNOSIS. *Plutothrix skywalkeri* **sp. n.** belong to a group of species that have a fore wing with long fuscous cloud below stigmal vein. This species is very similar to *P. yodai* **sp. n.**; the differences between these species are given in the key.

BIOLOGY. Unknown.

DISTRIBUTION. South Korea.

ETYMOLOGY. The species is named in honour of George Lucas' "Star Wars" character – "Anakin Skywalker".

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

Figs 45–47

Plutothrix foersteri Mayr, 1904: 586. Male type, lost. Synonymy by Novitzky (1955: 31).

Trigonoderus trifasciatus Thomson, 1878: 11. Lectotype female (LUZN, examined). Designated by Kerrich & Graham (1957: 293).

TYPE MATERIAL. Lectotype – ♀, Sweden: "Fardhem 3.Jli 41", "*Trigonoderus trifasciatus* Thoms. LECTOTYPE G.J. Kerrich & M.W. Graham 1955", "Type", "TYPE NO. 134:1 Pteromalidae Zool. Mus. Lund Sweden" (LUZN).

NON-TYPE MATERIAL EXAMINED. South Korea: Gangwon-do, Hongcheon-gun, Nae-myeon, Odaesan, Malaise Trap, 26.VII 2022, 1 ♀, coll. H.G. Lee (SMNE); Wonju-si, Heungeop-myeon, Maeji-ri, Yonsei University, 5–26.IX 2014, 1 ♀, coll. H.Y. Han (KNA); Gyeongsangbuk-do, Seo-myeon, Hakpo-ri, Ulleung-gun, Malaise Trap, 01.IX–08.IX 2017, 1 ♂, coll. D.S. Ku (SMNE); Dalseo-gu, Daegok-dong, Daegu Arboretum, 35°48'3.26"N, 128°31'15.3"E, 12.IX–4.X 2012, 1 ♀, coll. S.G. Gang (KNA); Gyeongsan-si, Daehak-ro 280, Yeungnam University, 35°49'30"N, 128°45'39"E, 30.VII–25.X 2013, 1 ♂, coll. J.W. Lee (YNU); Cheongdo-gun, Gakbuk-myeon, Namsan-ri, 15.IX–21.X 2013, 1 ♀, coll. J.W. Lee (YNU); Gyeongsangnam-do, Jinju-si, Ibanseong-myeon, Daecheon-ri, 35°9'39.7"N, 128°17'41.3"E, 16.IX–1.X 2013, 1 ♀, coll. J.H. Hwang (KNA); Geochang-gun, Sinwon-myeon, Waryong-ri, Malaise Trap, 2.VII–16.VII 2022, 1 ♀, coll. D.S. Ku, J.H. Lee, H.J. Jeong, (SMNE); Geochang-gun, Mari-myeon, Daedong-ri, Malaise Trap, 08.IX–23.IX 2021, 7 ♀, 4 ♂, coll. J.H. Lee, H.J. Jeong (SMNE); Geochang-gun, Science Museum Natural Enemy, Malaise Trap, 21.IV–05.V 2021, 20.V–03.VI 2021, 03.VI–16.VI 2021, 27.VII–10.IX 2022, 21.V–04.VI 2022, 27.VII–10.IX 2022, 10.IX–24.IX 2022, 6 ♀, 8 ♂, coll. D.S. Ku, J.H. Lee (SMNE); Jeollanam-do, Wando-gun, Gunoe-myeon, Daemun-ri, Malaise Trap, 09.IX–12.X 2017, 1 ♀, coll. H.G. Lee (SMNE).

BIOLOGY. Unknown.

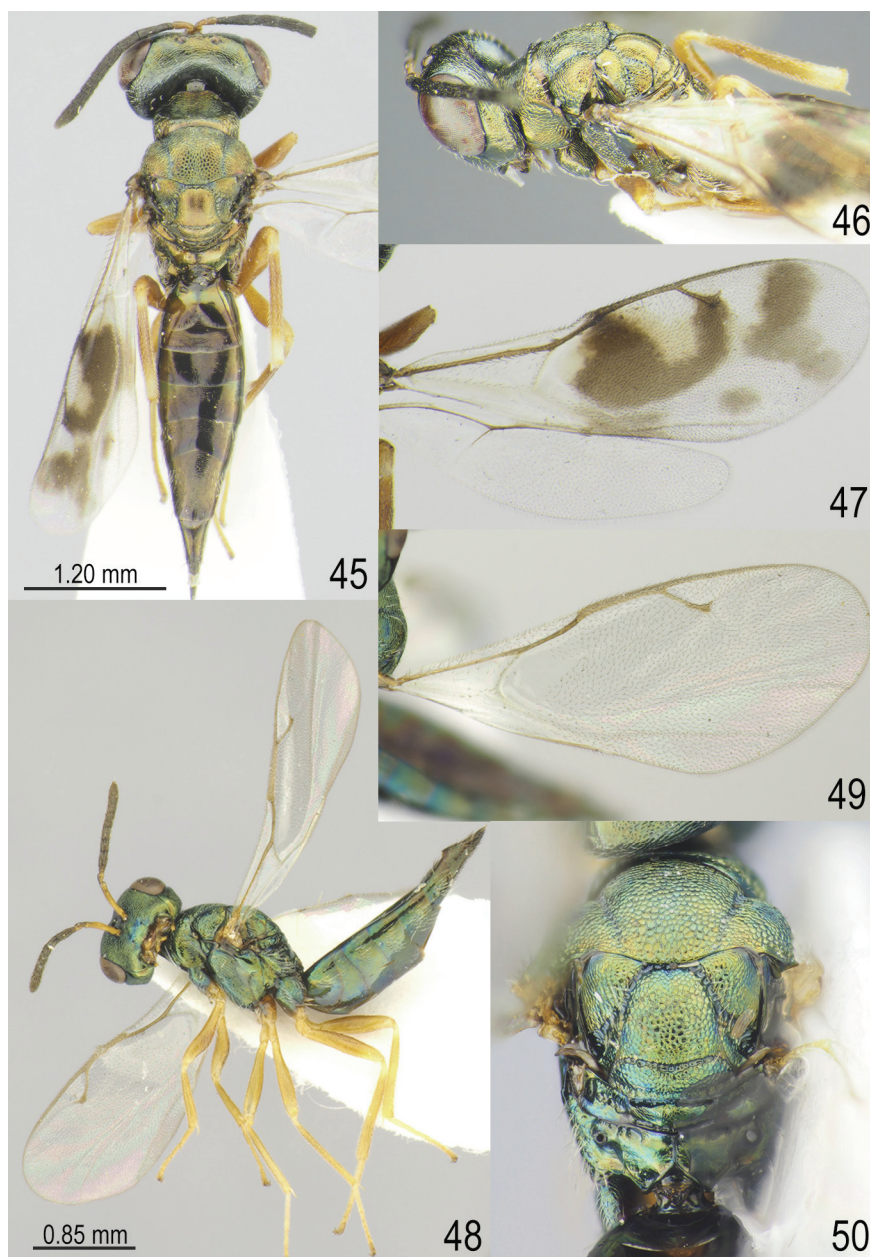
DISTRIBUTION. Europe, Russia, Kazakhstan, South Korea (Tselikh *et al.*, 2022).

***Plutothrix yodai* Tselikh, Lee et Ku, sp. n.**

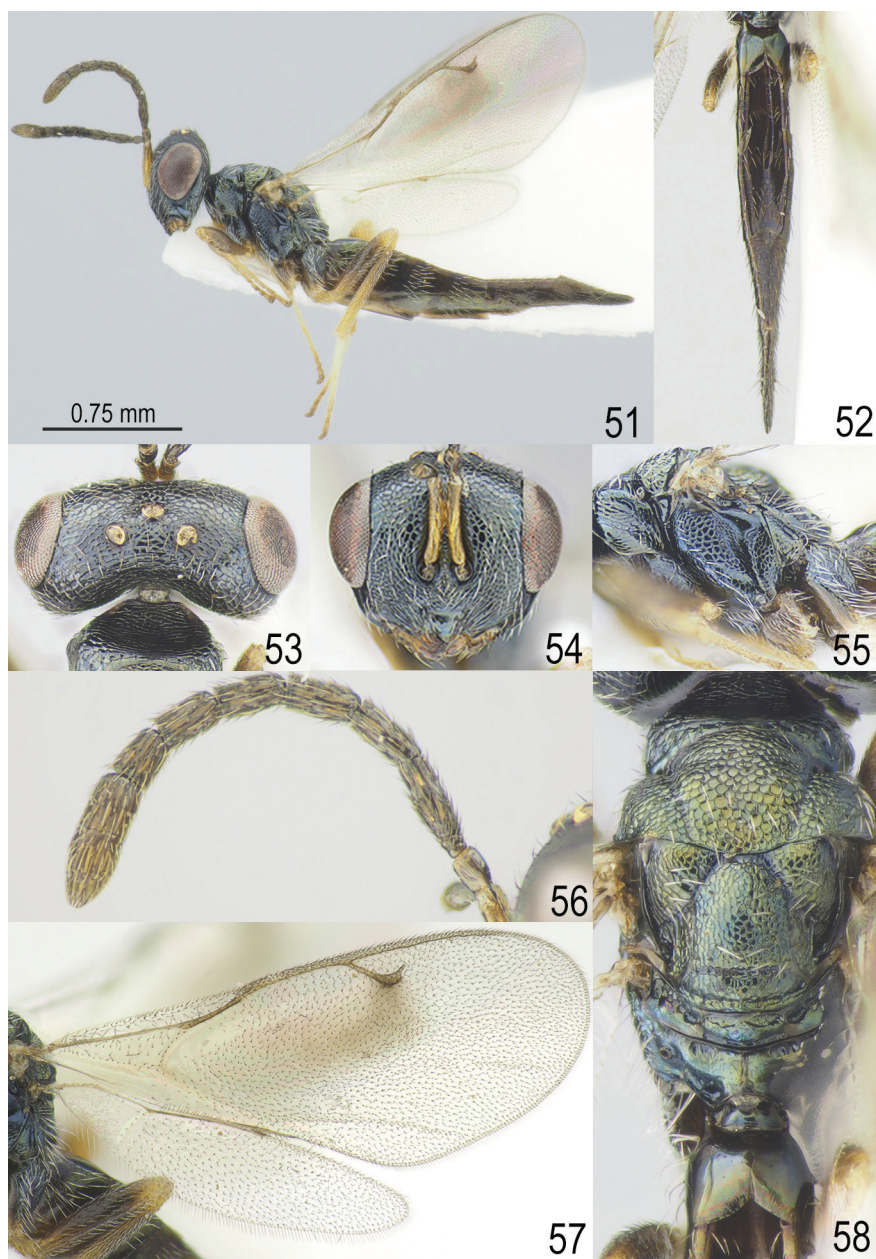
<https://zoobank.org/NomenclaturalActs/BA9A7D3A-2220-4924-A2F9-09D82BD06442>

Figs 51–58

TYPE MATERIAL. Holotype – ♀, South Korea: Gyeongsangnam-do, Geochang-gun, Mari-myeon, Daedong-ri, Malaise Trap, 23.IX–06.X 2021, 1 ♀, coll. J.H. Lee



Figs 45–50. *Plutothrix* spp. 45–47 – *Plutothrix trifasciata* (Thomson, 1878), non-type, female: 45 – body, dorsal view; 46 – head and mesosoma, dorso-lateral view; 47 – wings; 48–50 – *Plutothrix zhangyiensis* Yang, 1996, non-type, female: 48 – body, lateral view; 49 – wing; 50 – mesosoma, dorsal view.



Figs 51–58. *Plutothrix yodai* sp. n., holotype, female: 51 – body, lateral view; 52 – metasoma, dorsal view; 53 – head, dorsal view; 54 – head, frontal view; 55 – mesosoma, lateral view; 56 – antenna; 57 – wings; 58 – mesosoma, dorsal view.

H.J. Jeong, (NIBR). Paratypes – 2 ♀, South Korea: Gyeongsangnam-do, Goseong-gun, Hail-myeon, Suyang-ri, 34°58'34.8"N 128°12'08.3"E, 18–21.VI 2022, 1 ♀, coll. Tselikh (SMNE and ZISP); Geochang-gun, Namsang-myeon, Jeoncheok-ri, 35°37'15.3"N 127°57'51.4"E, 21.VII 2024, 1 ♀, coll. Tselikh (ZISP); Goseong-gun, Gaecheon-myeon, Bukpyeong-ri, 35°05'01.2"N 128°15'28.1"E, 29.VII 2024, 1 ♀, coll. Tselikh (ZISP).

DESCRIPTION. FEMALE. Body length 2.70–3.80 mm; fore wing length 1.95–2.60 mm.

Head metallic dark blue; antenna with scape yellowish-brown; pedicel and flagellum brown. Mesosoma including propodeum metallic bluish-green with diffuse coppery lustre. Fore and hind coxae metallic bluish-green, mid coxa yellowish-brown; all femora brown; all tibiae and tarsi yellowish-brown. Fore wing with long fuscous cloud below stigmal vein, venation yellowish-brown. Metasoma with Mt2 basally metallic blue with diffuse coppery lustre, apically dark brown, Mt3–Mt6 brown.

Head reticulate; clypeus smooth and shiny. Mesosoma reticulate, but scutellum finely reticulate; dorsellum alutaceous, propodeum smooth; upper mesepimeron with lower part alutaceous, upper part smooth; metapleuron alutaceous. Metasoma weakly alutaceous and shiny.

Head in dorsal view 2.08–2.14 times as broad as long and 1.36–1.52 times as broad as mesoscutum; in frontal view 1.14–1.20 times broader than high. POL 0.95–0.96 times OOL. Eye height 1.32–1.40 times eye length and 2.77–3.00 times as long as malar space. Distance between antennal toruli and lower margin of clypeus 0.67–0.71 times distance between antennal toruli and median ocellus. Antenna with scape 0.73–0.80 times as long as eye height and 0.80–1.05 times as long as eye length; pedicel 1.78–1.95 times as long as broad and 0.57–0.75 times as long as F1; combined length of pedicel and flagellum 1.42–1.49 times breadth of head; flagellum almost filiform; all anelli transverse; F1–F6 longer than broad; F1 with 2 rows of sensilla; clava 2.70–2.90 times as long as broad and longer than F5–F6, with small micropilosity area on C3–C4.

Mesosoma 1.60–1.81 times as long as broad. Scutellum 1.00–1.13 times as long as broad, frenal area distinct. Propodeum without nucha, 0.33–0.37 times as long as scutellum; median carina present. Fore wing 2.58–2.69 times as long as maximum width; basal cell entirely pilose; basal vein pilose; speculum closed below; PST 0.45–0.57 times as long as M, M 0.78–0.83 times as long as P and 2.05–2.13 times as long as S.

Metasoma lanceolate, 6.48–8.66 times as long as broad, 2.12–2.44 times as long as mesosoma and 1.46–1.61 times as long as mesosoma and head; Mt2 deeply emarginate medially, Mt8 3.13–4.00 times as long as broad. Ovipositor sheath projecting beyond apex of metasoma.

MALE. Unknown.

DIAGNOSIS. *Plutothrix yodai* **sp. n.** belong to a group of species that have a fore wing with long fuscous cloud below stigmal vein. This species is very similar to *P. skywalkeri* **sp. n.**; the differences between these species are given in the key.

BIOLOGY. Unknown.

DISTRIBUTION. South Korea.

ETYMOLOGY. The species is named in honour of George Lucas' "Star Wars" character – "Yoda" is the Grand Master of the Jedi Order.

KEY TO EASTERN PALAEARCTIC SPECIES OF *PLUTOTHRIX* BASED ON FEMALES

1. Fore wing hyaline (Figs. 21, 24, 26, 32, 34, 36, 48, 49) 2
– Fore wing with 1–4 fuscous clouds (Figs. 1, 3, 5, 7, 8, 14, 16, 18, 30, 41, 45, 47, 57) 6
2. Metapleuron alutaceous (Figs. 23, 27). Metasoma 1.65–1.97× as long as head plus mesosoma (Fig. 32). Mt8 2.90–5.25× as long as broad (Figs. 20, 32) 3
– Metapleuron reticulate (Fig. 48). Metasoma 1.05–1.20× as long as head plus mesosoma (Fig. 35). Mt8 1.26–1.35× as long as broad (Fig. 35) 5
3. Combined length of pedicel and flagellum 1.06–1.15× breadth of head. Scutellum irregular rugose (Fig. 33). Fore wing with PST 0.9–1.0× as long as M (Fig. 34)
..... *P. rugosa* Kamijo, 2004
– Combined length of pedicel and flagellum 1.30–1.57× breadth of head. Scutellum reticulate (Fig. 25). Fore wing with PST 0.65–0.70× as long as M (Figs. 21, 26) 4
4. Antenna with F1 2.50–2.80× as long as broad, with 4–5 rows of sensilla (Fig. 22). Fore wing with M 1.70–1.80× as long as S (Fig. 21). All coxae metallic dark bluish-green with diffuse coppery lustre, all femora dark (Fig. 23). Mt8 2.90–3.50× as long as broad (Fig. 20) *P. kusigematii* Kamijo, 2004
– Antenna with F1 2.15–2.35× as long as broad, with 3 rows of sensilla (Fig. 28). Fore wing with M 2.00–2.30× as long as S (Fig. 26). All coxae yellowish-brown, all femora yellow (Figs. 24). Mt8 4.30–5.25× as long as broad
..... *P. longigaster* Tselikh, Várkonyi et Dale-Skey, 2022
5. Head black (Fig. 37). Clypeus with blunt tooth (Fig. 37). Basal cell of fore wing with dense pubescence; S curved (Fig. 36). Propodeum alutaceous (Fig. 35)
..... *P. scrobicula* Kamijo, 2004
– Head metallic green or dark green with diffuse coppery lustre (Fig. 48). Clypeus with sharp tooth. Basal cell of fore wing with sparse pubescence; S strait (Fig. 49). Propodeum smooth (Fig. 50) *P. zhangyiensis* Yang, 1996
6. Fore wing with 3–4 fuscous clouds (Figs. 5, 47) 7
– Fore wing with 1–2 fuscous clouds (Figs. 3, 14, 18, 30, 41, 57) 8
7. Basal cell with some hairs on upper part; cubital vein setose (Fig. 47). Scutellum strongly convex (Fig. 46). Metasoma 3.70–3.80× as long as broad, basal part brown with metallic violet and coppery lustre, Mt8 1.72–1.80× as long as broad (Fig. 45)
..... *P. trifasciata* (Thomson, 1878)
– Basal cell bare; cubital vein bare (Fig. 5). Scutellum less convex (Fig. 6). Metasoma 4.47–5.15× as long as broad, basal part yellowish-brown, Mt8 1.90–2.10× as long as broad (Fig. 7) *P. gribanovi* Tselikh, Várkonyi et Dale-Skey, 2022
8. Scutellum with deep median furrow (Fig. 31). Fore wing with 2 fuscous clouds (Fig. 30)
..... *P. narendrani* Kamijo, 2004
– Scutellum without deep median furrow (Figs. 4, 12, 17, 39, 58). Fore wing with 1 fuscous cloud (Figs. 3, 14, 18, 41, 57) 9
9. Fore wing with long fuscous cloud from sigma to speculum (Figs. 41, 57) 10
– Fore wing with short fuscous cloud below stigmal vein (Figs. 3, 14, 18) 11

10. F1 with 3-4 rows of sensilla; clava shorter than F5-F6 (Fig. 42), with large micropilosity area on C2-C4. Fore wing with M 2.21-2.25 times as long as S (Fig. 41) *P. skywalkeri* sp. n.
- F1 with 2 rows of sensilla; clava longer than F5-F6 (Fig. 56), with small micropilosity area on C3-C4. Fore wing with M 2.05-2.13 times as long as S (Fig. 57) *P. yodai* sp. n.
11. F1 with 3-4 rows of dark brown sensilla; clava rounded (Fig. 19). Fore wing with elongate stigma (Fig. 18) *Plutothrix kubo*i Kamijo, 2004
- F1 with 2-3 rows of yellowish-brown sensilla; clava acute (Fig. 13). Fore wing with not elongate stigma (Figs. 3, 14) 12
12. Metapleuron reticulate (Fig. 2). Hind coxa metallic bluish-green (Fig. 2). Fore wing with part below PST bare; basal cell entirely pilose; fuscous cloud below stigmal vein yellowish-brown; M 1.45-1.50 times as long as S (Fig. 3) *P. coelius* (Walker, 1839)
- Metapleuron alutaceous (Fig. 9). Hind coxa yellowish-brown (Fig. 9). Fore wing with part below PST pilose; basal cell pilose on upper part; fuscous cloud below stigmal vein dark brown; M 1.77 times as long as S (Fig. 14) *P. kenobii* sp. n.

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