Bulletin of Kagoshima Women's
College, No. 48 (2013): 1-4

# A New Species Belonging to the Genus *Hylaeus* from Eastern Asia and a Synonym of *Hylaeus tsingtauensis* (Hymenoptera, Apoidea, Colletidae)

**Shuichi IKUDOME**

Kagoshima Women's College
Kagoshima, 890-8565 Japan

**Abstract** A new species belonging to the genus *Hylaeus* is described from Eastern Asia: *Hylaeus* (*Hylaeus*) *nobuyukii* **sp. nov.** And based on type study, new synonymy has been established for *Hylaeus pallescens* Cockerell, 1924 = *Hylaeus tsingtauensis* (Strand, 1915), **syn. nov.**

**Key words:** new species, new synonym, distribution, taxonomy, *Hylaeus*, Eastern Asia

## Introduction

In 2010 a very unique species was described by Dathe based on only male: *Hylaeus* (*Hylaeus*) *oehlkei* from Mongolia. The male is characteristic in having some basal flagellar segments each with a keel in particular. This time, a new species, *Hylaeus* (*Hylaeus*) *nobuyukii*, was found from Japan in the specimens collected by Mr. N. Yamamoto and from China in my own collection of a survey conducted in 1995*. This new species is very similar to *Hylaeus* (*Hylaeus*) *oehlkei* in point of above feature of flagellar segments.

Up to this time, the Japanese *Hylaeus* fauna consists of twenty six species and one subspecies as follows; *Hylaeus* (*Hylaeus*) *aborigensis negoroi* Ikudome, 2004, *Hylaeus* (*Hylaeus*) *nobuyukii* **sp. nov.**, *Hylaeus* (*Hylaeus*) *paulus* Bridwell, 1919, *Hylaeus* (*Hylaeus*) *perforatus* (Smith, 1873), *Hylaeus* (*Lambdopsis*) *ikedai* (Yasumatsu, 1936), *Hylaeus* (*Lambdopsis*) *macilentus* Ikudome, 1989, *Hylaeus* (*Lambdopsis*) *nanseiensis* Ikudome, 1989, *Hylaeus* (*Lambdopsis*) *pfankuchi* (Alfken, 1919), *Hylaeus* (*Nesohylaeus*) *niger* Bridwell, 1919, *Hylaeus* (*Nesoprosopis*) *boninensis* Yasumatsu, 1955, *Hylaeus* (*Nesoprosopis*) *floralis* (Smith, 1873), *Hylaeus* (*Nesoprosopis*) *globulus* (Vachal, 1903), *Hylaeus* (*Nesoprosopis*) *insularum insularum* Yasumatsu et Hirashima, 1965, *Hylaeus* (*Nesoprosopis*) *insularum iriomotensis* Yasumatsu et Hirashima, 1965, *Hylaeus* (*Nesoprosopis*) *maetai* Ikudome, 1998, *Hylaeus* (*Nesoprosopis*) *matsumurai* Bridwell, 1919, *Hylaeus* (*Nesoprosopis*) *noomen* Hirashima, 1977, *Hylaeus* (*Nesoprosopis*) *pectoralis* Förster, 1871, *Hylaeus* (*Nesoprosopis*) *transversalis* Cockerell, 1924, *Hylaeus* (*Paraprosopis*) *hirashimai* Ikudome, 1989, *Hylaeus* (*Paraprosopis*) *incomitatus* Snelling, 1970, *Hylaeus* (*Paraprosopis*) *meridianus* Yasumatsu et Hirashima, 1965, *Hylaeus* (*Paraprosopis*) *munageus* Ikudome, 2004, *Hylaeus* (*Paraprosopis*) *yasumatsui* Snelling, 1970, *Hylaeus* (*Patagiata*) *nigrocuneatus* Cockerell, 1924, *Hylaeus* (*Prosopis*) *confusus* Nylander, 1852, *Hylaeus* (*Prosopis*) *submonticola* Ikudome, 1989.

On the other hand, in the course of a study of Asian *Hylaeus*, it has been newly established that *Hylaeus pallescens* Cockerell, 1924 known from Mongolia and the Asian part of Russia (Proshchalykin and Dathe, 2012) is a synonym of *Hylaeus tsingtauensis* (Strand, 1915) described on a female from Tsingtau (Dsingdao), China.

* This work was supported by a Grant-in-Aid for Monbusho International Scientific Research Program: Field Research (No. 07041144) (Head investigator: O. Tadauchi).

## Materials and methods

Type specimens of *Hylaeus oehlkei* and *Hylaeus tsuingtauensis* were loaned from the DEI, and type specimens of *Hylaeus stentoriscapus* from the Institut für Zoologie, Martin-Luther-Universität (Halle, Germany). The specimens of *Hylaeus pallescens* was examined one (catalog number USNM 28005) which is on the data base of U.S. National Entomological Collection (NMNH). The specimens from Japan and China examined for this study are kept in the KWC. The morphological terms generally follow Ikudome (1989). The following abbreviations are used in this paper:

| | | | | | |
|---|---|---|---|---|---|
| AOD | Antennocular distance | HW | Head width | MCW | Maximum clypeal width |
| BD | Body length | IAD | Interantennal distance | MSL | Malar space length |
| BWM | Basal width of mandible | IOD | Interocellar distance | OOD | Ocellocular distance |
| CAD | Clypeoantennal distance | LFW | Lower width of face | POW | Paraocular width |
| HL | Head length | MCL | Maximum clypeal length | UFW | Upper width of face |

DEI Senckenberg Deutsches Entomologisches Institut (Müncheberg, Germany)
KWC Kagoshima Women's College (Kagoshima, Japan)
= the former Kagoshima Women's Junior College
NMNH Smithsonian Institution, National Museum of Natural History (Washington DC, U.S.A.)

## Taxonomy

### *Hylaeus* (*Hylaeus*) *nobuyukii* sp. nov.

(Japanese common name: ryûkotsu-men-hanabachi)
(Figs. 1-3)

**Diagnosis** This new species is a close relative of *Hylaeus oehlkei* which was described only on the male from Mongolia by Dathe (2010), and is very similar to the latter in having some basal flagellar segments each with a keel, but is distinctly different from the latter in having mesopleuron with denser, stronger punctures and propodeum with a sharp transverse edge.

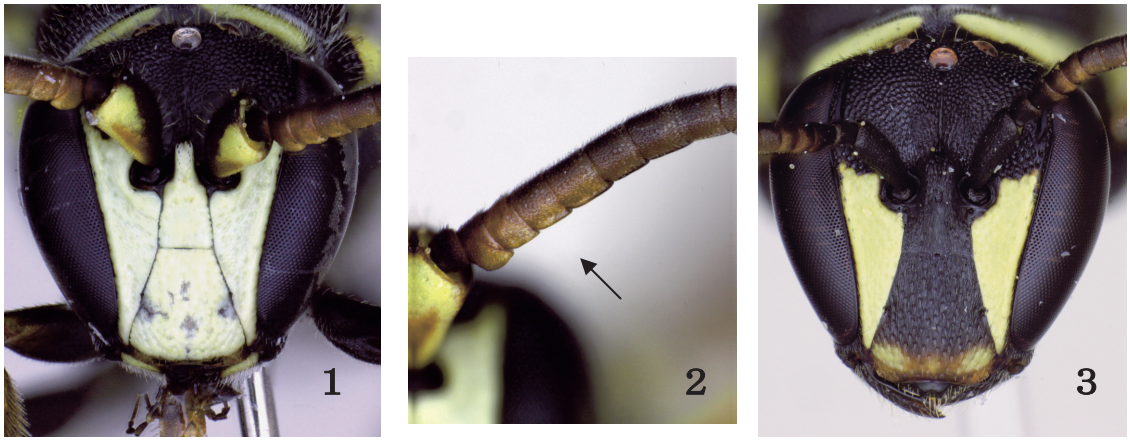
**Description**

**Male**

**Measurements** (mm). [n=6] BL 5.4-6.0 (5.75); HL 1.61; HW 1.58; UFW 0.99; LFW 0.64; MCW 0.55; MCL 0.53; IAD 0.16; AOD 0.18; POW 0.22; CAD 0.28; BWM 0.23; MSL 0.08; IOD 0.24; OOD 0.22.

**Coloration.** Black. The following maculations or portions yellow (face marks paler): clypeus; supraclypeal area; well developed lateral face marks extending beyond antennal sockets with two tips, one ending acutely along eye margins, the other weak inside; anterior portions on scapes; basal halves of mandibles (paler); band interrupted in the middle on collar of pronotum; tubercles; anterior marks on tegulae; anterior stripes on fore tibiae; basal marks on mid tibiae; basal halves of hind tibiae; all basitarsi. Undersides of antennal flagellum and small segments of all tarsi brownish. Wings slightly brownish subhyaline; veins and stigma brown.

**Structure.** Head slightly long; lower portion of clypeus somewhat roundly convex; peripheral areas of antennal sockets convex, evidently in lower portion in especial; upper portion of supraclypeal area very narrow and high, its width and height steeply attenuated toward frons; paraocular areas convex along eye margins; punctures on frons weak and moderately scattered; antennal scapes well stout; antennal flagellar segments with 1$^{st}$ and 2$^{nd}$ evidently broader than length, and with 1$^{st}$ to 6$^{th}$ with a keel beneath, its keel conspicuous on 1$^{st}$ to 4$^{th}$ in particular (Fig. 2); malar space narrow, about one-third as long as basal width of mandible; mesoscutum and scutellum with punctures distinct and moderately dense; punctures on mesopleuron denser and stronger than those on mesoscutum, and denser and stronger than in *Hylaeus oehlkei*; propodeal enclosure with longitudinal




**Figs. 1-3.** Heads of *Hylaeus nobuyukii* **sp. nov.** 1. male; 2. flagellar segments of male antenna; 3. female.

strong carinae anteriorly, posterior portion on the disc with a sharp transverse ridge, its ridge stronger than in *Hylaeus oehlkei*; posterior portion of propodeum abrupt; stigmatal areas of propodeum strongly, irregularly clasrated; 1st metasomal tergum smooth, well shiny, and irregularly scattered with punctures small but distinct, and its posterior marigin without puncture.

**Pilosity.** Hairs on vertex short, whitish and nearly erect; collar of pronotum with fringe of whitish hairs on posterior margin in front of view; hairs on mesonotum short, whitish but somewhat glistening goldish in some lights and suberrect to subappressed; lateroposterior portions of 1st to 4th metasomal terga each with a weak band of whitish hairs.

**Female**

**Measurements** (mm). [n=7] BL 5.9-6.1 (5.95); HL 1.69; HW 1.64; UFW 1.06; LFW 0.7; MCW 0.63; MCL 0.67; IAD 0.2; AOD 0.22; POW 0.23; CAD 0.23; BWM 0.26; MSL 0.08; IOD 0.25; OOD 0.25.

**Coloration.** Black. The following maculations or portions yellow: well developed lateral face marks ending at the upper lebel of antennal sockets; well developed band on collar of pronotum, interrupted in the middle; tubercles; anterior marks on tegulae; basal spots on mid tibiae; basal one-fourth of hind tibiae. The following portions brownish or reddish yellow dimly: lower portion of clypeus; anterobasal spots on fore tibiae. Antennal flagellum slightly brownish beneath. Wings slightly brownish subhyaline; veins and stigma brown.

**Structure.** Head slightly long; clypeus and supraclypeal area convex; upper portion of supraclypeal area narrow and high, its width and height gently-sloping toward frons; punctures on frons shallow and moderately scattered; antennal flagellar segments with 1st evidently longer than width, and with 2nd and 3rd slightly broader than length; malar space narrow, slightly narrower than in male; mesoscutum and scutellum with punctures distinct and moderately dense as in male; punctures on mesopleuron strong and dense as in male, but those on upper portions slightly larger and not so dense as in male; propodeum generally similar to male, but carinae not so strong as in male; 1st metasomal tergum similar to male, but with acupunctures.

**Pilosity.** Hairs on head and thorax generally as in male, but shorter and finer than in male; lateroposterior portions of 1st to 4th metasomal terga each with a weak band of whitish hairs, its bands obscure in one view.

**Type materials:** Holotype male: 20 m alt., Shiroyama-machi Nagasaki-shi Japan, 3 X 2012,. Paratypes: same locality and data 1♂ 2♀♀; same locality, 7 X 2012, 2♂♂ 2♀♀; same locality, 21 X 2012, 1♀; same locality, 13 X 2011, 1♀; 220 m alt., Tateyama Nagasaki-shi Japan, 4 X 2008, 1♀, 9 X 2008, 1♂ 1♀; 240 m alt., Konpirasan Nagasaki-shi Japan, 15 IX 1996, 1♂; Xiuning Huangshan City Anhui Province China, 23 IX 1995, 1♂ 1♀. Specimens from Japan are collected by N. Yamamoto, and ones from China by S. Ikudome. The holotype is deposited in the Laboratory of Biology, KWC, and paratypes in KWC, DEI (1♂ 1♀) and private collection of N. Yamamoto (1♂ 1♀).

**Remarks:** Besides the above-mentioned features, the male of this new species is distinguished from *Hylaeus oehlkei* in the following points: maculations on upper portions along eye margins, mandibles and collar of pronotum are more developed; carinae on propodeum are evidently stronger even posterior portion.
**Distribution:** Japan (Nagasaki) and China (Anhui Pv.).
**Floral association:** *Perilla frutescens*, *Rosmarinus officinalis* (Labiatae); *Celosia argentea* (Amaranthaceae).
**Etymology:** The specific name, *nobuyukii*, is dedicated to Mr. Nobuyuki Yamamoto who is the first collector of this species in Japan so far as I know.

## Synonymy

***Hylaeus* (*Hylaeus*) *tsingtauensis* (Strand, 1915)**

*Prosopis tsingtauensis* Strand, 1915 - Ent. Mitt. Berlin 4: 62. ♀. Holotype DEI. CHN: Tsingtau (Dsingdao).

*Hylaeus pallescens* Cockerell, 1924 - Ann. Mag. Nat. Hist. (9)14: 279-280. ♀. Holotype USNM. RUS: Okeanskaja, Siberia; Proshchalykin and Dathe, 2012: 16. **Syn. nov.**

*Hylaeus* (*Hylaeus*) *stentoriscapus* Dathe, 1986 - Annls hist.-nat. Mus. natn. Hung. 78: 271-273. ♂♀. Holotype Univ. Halle (Saale). MON: Uvs, Charchiraa uul; Selenge. Synonymized by Proshchalykin and Dathe, 2012: 16.

**Comments:** Recently Proshchalykin and Dathe (2012) noted the synonymy of *Hylaeus stentoriscapus* Dathe, 1986 with *Hylaeus pallescens* Cokerell, 1924. This species was found as widely distributed in the southern parts of Asian Russia, from Tomsk Province in the west to Primorsky Territory in the east. Further studies of Asian *Hylaeus* showed that this species had been described earlier by Strand (1915) from China as *Prosopis tsingtauensis*. Meanwhile it was also found in Beijing (Chaoyang Park and Huyu Natural Science Area) and from Luoyang, Henan Province (Ascher and Dong leg.) (Dathe, personal communication).

## Acknowledgments

I am very grateful to Dr. H. H. Dathe (DEI) for loan of materials and valuable scientific comments in the course of this study. My thank is also due to Mr. Nobuyuki Yamamoto (Nagasaki, Japan) who is a collector of bees for giving me the valuable specimens of *Hylaeus*. I also indebted to Dr. R. Murao (Kyushu University) for technical assistance on the photography.

## References

Cockerell, C. D. A., 1924. Descriptions and records of bees. - CII. *Annals and Magazine of Natural History.* Ser. 9, **14**(81): 273-283.

Ikudome, S., 1989. A revision of the family Colletidae of Japan (Hymenoptera: Apoidea). *Bulletin of the Institute of Minami-kyushu Regional Science*, *Kagoshima Women's Junior College*, (5): 43-314.

Dathe, H. H., 1986. Die Bienengattung *Hylaeus* Fabricius in der Monglei (Hymenoptera, Colletidae). *Annales historico-naturales Musei nationalis Hungarici*, **78**: 265-300.

Dathe, H. H., 2010. Studien zur Systematik und Taxonomie der Gattung *Hylaeus* F. (6). Arten asiatischer Hochgebirge und Anmerkungen zu weiteren asiatischen Arten (Hymenoptera, Anthophila, Colletidae). *Linzer biolo. Beitr*., **42**(1): 43-80.

Proshchalykin, M. Yu. and Dathe, H. H., 2012. The bee of the genus *Hylaeus* Fabricius 1793 of the Asian part of Russia, with a key to species (Hymenoptera: Apoidea: Colletidae). *Zootaxa* 3401: 1-36.

Strand, E., 1915. Apidae von Tsingtau (Hym.), gesammelt von Herrn Prof. Dr. W. H. Hoffmann. *Entomol. Mitteilungen*, IV. **1**(3): 62-78.