

## Description of three new yellow *Hilara* species (Diptera: Empididae) from Southeast Asia

Igor V. SHAMSHEV<sup>1,2</sup> & Patrick GROOTAERT<sup>2</sup>

<sup>1</sup> Permanent address: All-Russian Institute of Plant Protection, shosse Podbel'skogo 3, 188620 St.Petersburg – Pushkin, Russia (e-mail: shamshev@mail.ru); temporary at Royal Belgian Institute of Natural Sciences, Brussels.

<sup>2</sup> Department of Entomology, Royal Belgian Institute of Natural Sciences, Rue Vautier 29, B-1000 Brussels, Belgium (e-mail: Patrick.Grootaert@naturalsciences.be).

### Abstract

Three yellow *Hilara* species are described as new to science: *Hilara seeluang* (Thailand), *H. vietnamensis* (Viet Nam) and *H. trani* (Viet Nam).

**Keywords:** Empidoidea, Empididae, *Hilara*, new species, Thailand, Viet Nam.

### Introduction

*Hilara* species with yellow thorax or with at least the sides of the thorax yellowish are not so common. In the present paper we describe three yellow species from Southeast Asia: one species from Northeast Thailand, being the sixth recorded species for the country (GROOTAERT & VERAPONG, 2001) while the two species from the North of Viet Nam represent the first records of *Hilara* in Viet Nam (SMITH, 1975).

In the Palaearctic Realm, some 250 *Hilara* species are known up to now. In contrast, only 58 species are known from the Oriental realm (GROOTAERT et al., 2003). The records from the various countries in the Oriental realm can be summarised as follows: 27 species have been described from Burma (FREY, 1952), 4 from India and Pakistan (BRUNETTI, 1920), 3 from Nepal (SMITH, 1965), 3 from Taiwan (BEZZI, 1912, 1914), 5 from Northeast Thailand (GROOTAERT & VERAPONG, 2001) and 19 from China mainland (BEZZI, 1912, 1914; YANG & YANG, 1997; YANG & WANG, 1998; YANG & LI, 2001; YANG & ZHANG, 2003; GROOTAERT, YANG & ZHANG, 2003),

The relationships of the *Hilara* species from the Orient with other biotic realms are still unclear.

It is evident that an important collecting effort is necessary to get an idea of the diversity of the genus in the region. Recent empidoid collecting in

mountainous areas in tropical South China suggests that many new species are expected in mountainous regions in the whole of Southeast Asia (GROOTAERT, in preparation).

### Systematic accountant

#### *Hilara seeluang* sp. nov.

(Figs 1-2)

**Material examined.** Holotype male: **Thailand**, Loei province, Na Haeo, Field Research Station, 1 male, 16-23.XII.2001; Paratype female, 23-30.XII.2001 (alt. 500 m; Malaise trap in mixed deciduous forest, leg. VERAPONG KIATSOONTHORN & P. GROOTAERT).

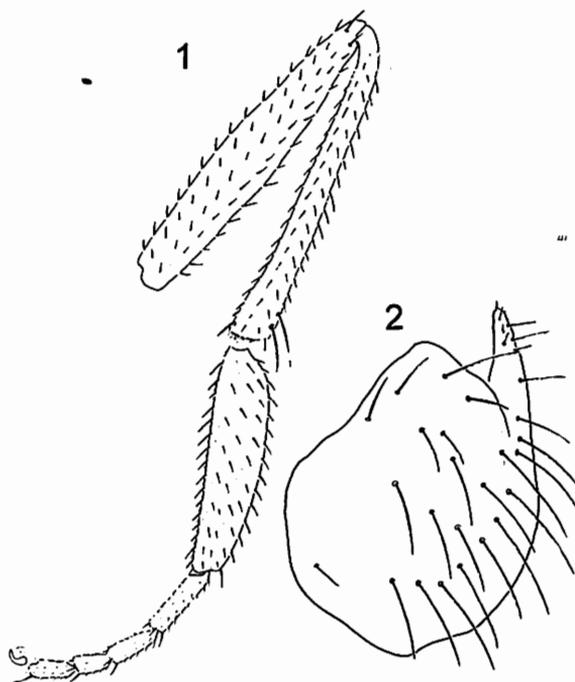
**Derivatio nominis:** The specific name "seeluang" refers to the yellow colour of the thorax (see luang means yellow colour in Thai).

**Diagnosis:** A small yellow species with thorax completely yellow. Basal antennal segments and base of postpedicel yellow; apical half of postpedicel and style black. Palpi yellow. Labrum yellow with black tip. Acrostichals irregularly 3-4 seriate in middle of mesotum. Halter yellowish. Legs yellow except for the apical three segments of all legs. Basal tarsomere of fore leg swollen, about  $\frac{3}{4}$  length of tibia.

**Male.** Body 3.8 mm; wing 3.8 mm.

Head black brown in ground-colour. Occiput subshining, finely pollinose, with black bristles. Frons somewhat paler than occiput, yellowish brown, with narrow, shining, median, strike, otherwise subshining, narrow, 1.5 times broader than anterior ocellus. Fronto-orbital bristles moderately long, subequal in length to ocellar bristles. Face concolours with frons, subshining, below antennae subequal in width to frons. Antennae with scape and pedicel yellow, postpedicel yellow in basal half and brownish in apical half, style brown. Postpedicel 2.5 times longer than wide, style as long as postpedicel. Palpus entirely yellow, with several black bristles of different length, subapical one longest. Proboscis short, at most half as long as head is high; labrum largely yellow, black in apical quarter.

Thorax wholly yellow, subshining, with black setation. Anteprenotum with 2 long and 2 short bristles. Proepisternum with numerous very short bristles in lower part and 1 long bristle in upper one. Postpronotal lobe with 1 long bristle and several setulae. Mesonotum with 1 intrahumeral, 1 posthumeral, 3 notopleural, 1 supra-alar, 1 postalar and 4 scutellar (inner ones longer, cruciate) bristles; some setulae present in notopleural depression anteriorly and on supra-alar space. Acrostichals mostly arranged in 3-4 irregular rows, 2-serial on anterior margin of scutum, lacking on prescutellar depression, rather short. Dorsocentrals 1-serial, mostly subequal in length to acrostichals, 2 pairs of longer prescutellars.



Figs 1-2. *Hilara seeluang* sp. nov. male. 1, fore leg; 2, epandrial lamella. Scale 0.1 mm

Legs almost wholly yellow, tarsomeres 3-5 of all tarsi brownish. Coxae and trochanters with ordinary bristles of different length. All femora slender. Fore femur lacking prominent bristles. Fore tibia subequal in length to fore femur, with circlet of subapical bristles. Fore tarsomere 1 slightly incrassate (Fig. 1),  $\frac{3}{4}$  length of tibia and about as long as tarsomeres 2-5 combined, lacking prominent bristles. Mid femur with 1 row of 4-5 long anterodorsal bristles (longer than femur is deep) and rows of short, thin, antero- and posteroventral bristles (shorter than femur is deep). Mid tibia with about 2-3 anteroventral, 3-4 posteroventral and 1 anterodorsal hardly prominent bristles. Mid tarsus slender, lacking prominent bristles. Hind femur with more distinctly prominent dorsal bristles, 1 row of antero- and 1 row of hardly prominent posteroventral bristles (shorter than femur is deep). Hind tibia with 4 anteroventral, 2 dorsal and circlet of subapical bristles. Hind tarsus slender, lacking prominent bristles; bristle in comb is present.

Wing somewhat infusate, with veins yellowish brown, indistinct yellowish stigma, and 1 moderately long, black, basicostal bristle. Halter yellow. Squama brownish yellow with dense, brown fringe as long as squama is wide.

Abdomen with tergites brownish yellow, bearing long, brown postero-marginal bristles; sternites largely yellow, mostly with scattered, short

setation, only sternite 8 brownish yellow and with more numerous, longer bristles. Terminalia small, brownish.

**Female.** Body 3.9 mm; wing 3.9 mm. Fore tarsomere 1 slender. Legs and abdominal tergites with somewhat shorter bristles. Otherwise as in male, except for sexual differences. Cerci largely brown, yellow in base. Tip hypandrium pointed without any ornamentation.

#### **Discussion.**

*H. seeluang* sp. nov. belongs to the *chorica-litorea* group *sensu* COLLIN, 1961. Superficially it resembles the yellow *H. huanjijie* GROOTAERT, YANG et ZHANG, 2003 described from Guangdong in South China. The latter has however a very different structure of the pregenital segments with an excavation on tergite 7 that articulates with a protuberance on sternite 8. The latter articulates on its turn with a protuberance on the anterior margin of the epandrial lamella. Such unique structures are not present in *H. seeluang* sp. nov. *H. huanjijie* lacks also the bristle in comb suggesting that it belongs to a hitherto unknown species group. *H. seeluang* possesses the bristle in comb.

As a species with a completely yellow thorax, *H. seeluang* can easily be separated from the other five known species in Thailand that all have a black thorax.

*H. seeluang* was caught in a Malaise trap placed in a mixed deciduous forest with lots of bamboo near the Field Research Station of Srinakharinwirot. A description of the site can be found in GROOTAERT & VERAPONG (2003).

#### *Hilara vietnamensis* sp. nov.

(Figs 3-4)

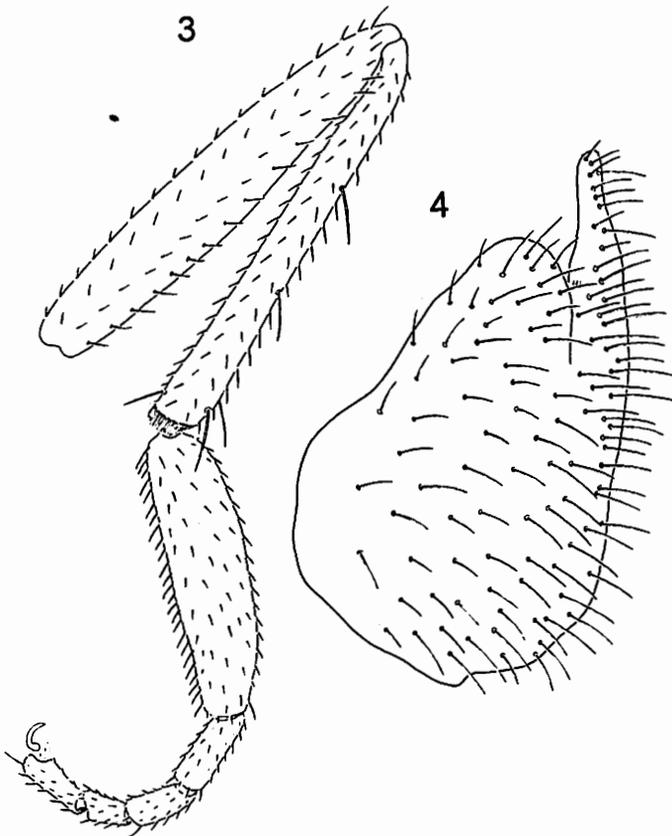
**Material examined.** Holotype male, Viet Nam, Lai Chau Prov., Binh Lu, Cau Trang (18 km from Sa Pa), 2 Jun 2003, coll. TRAN A.D., TAD0340.

**Derivatio nominis:** The name refers to the country of origin.

**Diagnosis:** A small yellow species with sides of thorax yellow, but mesonotum mainly black. Basal antennal segments brown; postpedicel and style black. Palpi yellow. Labrum brown. Acrostichals biseriate. Halter black. Legs with yellow coxae, fore femur brownish yellow, rest of legs brownish to black. Basal tarsomere of fore leg swollen, about  $\frac{3}{4}$  length of tibia.

**Male.** Body 3.7 mm; wing 3.8 mm.

Head black in ground-colour. Occiput and frons velvety black. Occiput with black bristles. Frons broad, above antennae nearly 4.0 times as broad as anterior ocellus. Fronto-orbital and ocellar bristles missing. Face black, subshining, broad. Antennae with scape and pedicel brown, postpedicel and style black. Postpedicel nearly 3.0 times longer than wide, style 1.5 times shorter than postpedicel. Palpus entirely yellow, with numerous black bristly hairs of different length and 1 very long subapical bristle. Proboscis long, labrum entirely brown, nearly as long as head is high.



Figs 3-4. *Hilara vietnamensis* sp. nov. male. 3, fore leg; 4, epiandrial lamella. Scale 0.1 mm.

Thorax largely reddish yellow, subshining, with black setation; antepnotum brownish dorsally; scutum (except for notopleural depression and postalar callus) dull brown black; mediotergite of postnotum brownish; mesopleuron with sutures brownish in varying extent. Antepnotum with 2 long and 4 very short bristles. Proepisternum with numerous very short bristles in lower part and 3-4 short bristly hairs in upper one. Postpronotal lobe with 1 hardly prominent bristle and few setulae. Mesonotum with prominent, long bristles, including 1 intrahumeral, 1 posthumeral, 3 notopleurals, 1 supra-alar, 1 postalar and 4 scutellars; some setulae present behind postpronotal lobe, on notopleural depression and supra-alar space. Acrostichals arranged in 2 rows, divergent; dorsocentrals 1-serial, with long prescutellars.

Legs with coxae and trochanters entirely yellow, fore femora brownish yellow (darker near tip), otherwise legs brown to black. Coxae and trochanters with ordinary bristles of different length. Fore femur slender, with rows of short antero- and posteroventral bristly hairs. Fore tibia with 2 dorsal bristles near middle. Fore tarsus with first tarsomere swollen,  $\frac{3}{4}$  length of tibia and longer than tarsomeres 2-5 combined (Fig. 3). Mid femur with 2 long

anterodorsal (1 subapical and 1 submedian) bristles and rows of short antero- (longer, especially in apical part) and posteroventral bristles. Mid tibia with 3 long anteroventral, 1 posteroventral, 1 anterodorsal, 1 posterodorsal near base and circlet of subapical bristles. Hind femur with rows of short antero- (somewhat longer near tip) and posteroventral bristles, covered with ordinary setulae dorsally. Hind tibia with 4 anteroventral, 2 posteroventral, 1 anterodorsal, 3 dorsal and circlet of subapical bristles; bristle in comb is present.

Wings infusate, with brown veins and 1 long-basicoastal bristle. Halter wholly black. Squama brownish coloured and fringed with dense, long, dark brown hairs.

Abdomen largely brown, sternites 1-3 yellowish. Tergites with long, black postermarginal bristles. Terminalia moderately large, brown. Tip hypandrium pointed without any ornamentation.

**Female.** Unknown.

#### **Discussion.**

*H. vietnamensis* sp. nov. is closely related to the following species *H. trani* sp. nov. The former has however the middle of the scutum black while the latter has the thorax completely yellow.

Both species belong to the *chorica-litorea* group *sensu* COLLIN, 1961.

#### ***Hilara trani* sp. nov.**

(Figs 5-6)

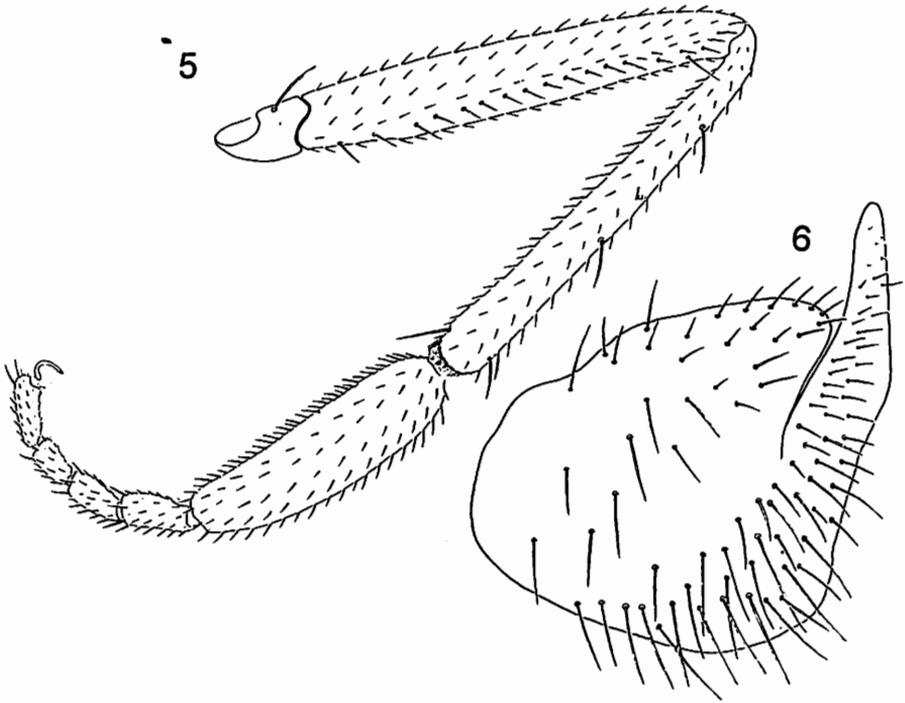
**Material examined:** Holotype male and a paratype male: Viet Nam, Lai Chau Prov., Binh Lu, Cau Trang (18 km from Sa Pa), 2 Jun 2003, coll. TRAN A.D., TAD0340.

**Derivatio nominis:** The name refers to the collector of the samples Mr. Tran Anh Duc, specialised in water bugs at National University Singapore.

**Diagnosis:** A small yellow species with thorax completely yellow. Basal antennal segments brown; postpedicel and style black. Palpi yellow. Labrum brown. Acrostichals biseriata. Halter pale brown. Legs with yellow coxae, femora largely yellow but dorsally and tip brownish; all tibiae brown, tarsi black. Basal tarsomere of fore leg swollen, about  $\frac{3}{4}$  length of tibia.

**Male.** Body 3.7-3.8 mm; wing 3.8-3.9 mm.

Head black in ground-colour. Occiput and frons velvety black. Occiput with black bristles. Frons broad, above antennae nearly 4.0 times as broad as anterior ocellus. A pair of fronto-orbital bristles, long, somewhat shorter than ocellars. Face black, subshining, broad. Antennae with scape and pedicel brown, postpedicel and style black. Postpedicel nearly 3.0 times longer than wide, style 1.5 times shorter than postpedicel. Palpus entirely yellow, with numerous black bristly hairs of different length and 1 very long subapical bristle. Proboscis long, labrum entirely brown, nearly as long as head is high.



Figs 5-6. *Hilara trani* sp. nov. male. 5, fore leg; 6, epandrial lamella. Scale 0.1 mm.

Thorax wholly yellow, with brownish tinge, viewed dorsally with darker traces along rows of acrostichal and dorsocentral bristles, subshining, with black setation. Antepronotum with 2 long and 2 very short bristles. Proepisternum with numerous very short bristles in lower part and 3-4 short bristly hairs in upper one. Postpronotal lobe with 1 hardly prominent, short bristle and few setulae. Mesonotum with well prominent, long bristles, including 1 intrahumeral, 1 posthumeral, 3 notopleurals, 1 supra-alar, 1 postalar and 4 scutellars; some setulae present behind postpronotal lobe, on notopleural depression and supra-alar space. Acrostichals arranged in 2 rows, rather close together; dorsocentrals 1-serial, widely separated from acrostichals (about width of frons).

Legs with colour pattern; fore and mid coxae entirely, hind coxae largely (brownish at apex) yellow; femora largely yellow, brownish dorsally and near tip; tibiae almost entirely brown to black, yellowish brown in extreme base; tarsi entirely black. Coxae and trochanters with ordinary bristles of different length. Fore femur slender, with rows of short antero- and posteroventral bristly hairs. Fore tibia with 2 dorsal bristles (one on basal fifth, one near

middle). Fore tarsus with basal segment swollen,  $\frac{3}{4}$  length of tibia and about as long as following tarsomeres combined (Fig. 5). Mid femur with 1 long subapical bristle anteriorly, 1 very long (about 2 times longer than femur is deep) ventral bristle near base, rows of short antero- (longer, especially in apical part) and posteroventral bristles. Mid tibia with 3 long anteroventral, 1 posteroventral, 1 anterodorsal, 1 posterodorsal near base and circlet of subapical bristles. Hind femur with rows of short antero- (somewhat longer near tip) and posteroventral bristles, covered with ordinary setulae dorsally. Hind tibia with 4 anteroventral, 2 posteroventral, 1 anterodorsal, 3 dorsal and circlet of subapical bristles; bristle in comb is present."

Wings infusate, with brown veins and 1 long basicostal bristle. Halter largely black, stem yellow in basal part. Squama brownish coloured and fringed with long brown hairs.

Abdomen largely brown, segments 2 and 3 somewhat paler, yellowish brown. Tergites with long posteromarginal bristles. Terminalia moderately large, brown. Tip hypandrium pointed without any ornamentation.

**Female.** Unknown.

#### **Discussion.**

As mentioned with the previous species *H. trani* sp. nov. is closely related to *H. vietnamensis* sp. nov. The latter has however the middle of the scutum black while the *H. trani* has the thorax completely yellow. Both species belong to the *chorica-litorea* group *sensu* COLLIN, 1961.

#### **Acknowledgements**

The first author (I.S.) obtained a grant of the Belgian Federal Office for Scientific Policy. We thank Ms "Khoi" SIRILUCK INTARASRI, student at Srinakharinwirot University Bangkok for her help in sorting the samples as well as the authorities of SWU for their continuous support. The second author thanks Mr. TRAN ANH DUC for his assistance in field trips and for providing the sample from Viet Nam.

#### **References**

- BEZZI M., 1912. - Rhagionidae et Empididae ex insula Formosa a Clar. Sauter missae. *Ann. Hist.-Nat. Mus. Natl. Hung.* 10: 442-495.
- BEZZI M., 1914. - H. SAUTER'S Formosa Ausbeute. Rhagionidae et Empididae (Dipt.). *Supplementa Entomologica* 3: 65-78.
- BRUNETTI E., 1920. - *The Fauna of British India, including Ceylon and Birma. Diptera Brachycera* Vol. I. London.
- COLLIN J.E., 1961. - British flies. Volume VI Empididae. Cambridge University Press. 782 pp.
- FREY R., 1952. - Studien über ostasiatische *Hilara* - Arten (Diptera, Empididae). *Notulae Entomologicae* 32: 119-143.
- GROOTAERT P. & VERAPONG KIATSOONTHORN, 2001. - First records of the dance fly genus *Hilara* in Thailand with the description of five new species. *Natural History*

- Bulletin of the Siam Society* 49: 17-27.
- GROOTAERT P. & VERAPONG KIATSOONTHORN (2003). - Insects of Na Haeo: a preliminary survey and seasonal dynamics of dolichopodid and empidid flies. (LAW AMPORN PAN and SHIVCHARN S. DHILLION Eds.). *The Environment of Na Haeo, Thailand: Biodiversity, non-timber products, land use and conservation*. Craftsman Press Ltd, Bangkok. 121-135.
- GROOTAERT P., DING YANG & LILI ZHANG. 2003. - New species of *Hilara* (Diptera, Empididae) from Guangdong province in China. *Bulletin van het Koninklijk Belgisch Instituut voor Natuurwetenschappen, serie Entomologie* 73: 77-84.
- SMITH K.G.V., 1965. - Diptera from Nepal. *Bulletin of the British Museum of Natural History (Ent.)* 17: 63-112.
- SMITH K.G.V., 1975. - Superfamily Empidoidea Family Empididae (Empidae, Hybotidae). In Delfinado & Hardy (Eds.). *A Catalog of the Diptera of the Oriental Region*. The University Press Hawaii. 185-211.
- YANG DING & CHIKUN YANG, 1997. - Diptera: Empididae. *Insects of the three gorge reservoir area of Yangtze river*. 1469-1476.
- YANG DING & XIAO-DONG WANG, 1998. - *Diptera Empididae. Insects of Longwangshan*. 311-317.
- YANG DING & YISHU LI, 2001. - Diptera: Empididae. *Insects of Tianmushan National Reserve*. 424-428.
- YANG DING & LILI ZHANG, 2003 (in press). - *Insects from Fanjingshan landscape*.